

EVENT INVESTIGATION REPORT

EIR-2019-023: Investigation of AOP-015 Event South of 241-A-Farm Change Trailer

[Redacted]

Event Investigator

7/17/2019

Date

[Redacted]

PER Responsible Manager

7/17/2019

Date

PER No. WRPS-PER-2019-1004

AOP-015 Summary

Date/Time of Event	May 21, 2019 at ~0845
Location	Parking lot south of A-Farm Ingress/Egress Trailers (MO2249 and MO2250)
Personnel Affected	Two (2) personnel reported odors Evaluated at HPMC: <ul style="list-style-type: none"> • One (1)
Odor	<ul style="list-style-type: none"> • Vehicle exhaust • Propane gas-like
Symptoms	<ul style="list-style-type: none"> • Runny nose and cough, (1),
Direct Read Instrumentation (DRI) Monitoring	VOCs: < DL NH ₃ : < DL Hg: 5n/0m ³ CO: < DL
Sampling	1 bag sample was collected, results were not found above background levels.
Potential Source	Vehicle exhaust
Wind Speed / Direction	North @ 5 mph
Weather Conditions	Barometric pressure: 28.92" in Hg and rising Temperature @ 58 degrees Humidity 61%
Waste Disturbing or Tank Work in Adjacent Area	None
Other Work in Adjacent Area	None.

Investigation

At approximately 0845hrs on Tuesday, May 21, 2019, an HPT(2) encountered an odor in the parking lot south of MO2249 and MO2250, A-Farm Ingress and Egress Trailers. The HPTs were assigned to support the Vadose activities.

A pre-job occurred around 0645 am, and then workers were directed to report to A-Farm. HPT(1) and HPT(2) drove to A Farm together. Once HPT(1) parked, HPT(1) and (2) exited the vehicle, where HPT(2) noticed an odor. HPT(2) asked HPT(1) if they could smell it also, HPT(1) replied "no". HPT(2) began coughing. HPT(1) and HPT(2) walked to the survey trailer, where HPT(2)s symptoms increased and triggered a pre-existing medical condition. HPT(2) contacted their supervisor and requested to go to HPMC. The FWS for Vadose activities was unaware of the employees' situation or the odor HPT(2) experienced.

TF-AOP-015 was entered at 0920. At 0929, a construction subcontractor contacted the CSO and reported that a worker noticed a "propane" odor near the area of concern around 0832. The worker did not experience any symptoms and declined evaluation at HPMC.

At 0947 the CSO contacted HPT(2)'s supervisor to request an odor description. The odor response card HPT(2) submitted described the odor as a smoky/onion/ammonia-like. HPT(2) later described the odor like "vehicle exhaust" to their supervisor, who informed the CSO.

At 1038, a SOEN message was distributed "Response actions for the TF-AOP-015 event have been completed and the results are at or below background levels. Exiting TF-AOP-015.CSM"

Immediate Actions Taken

HPT(2) contacted their supervisor and requested to go to HPMC for evaluation. HPT supervisor contacted the CSM. TF-AOP-015 was initiated.

Discussion of Potential Source

Although the source of the odors is undetermined, a plausible source is vehicle exhaust. The grab/bag sample was analyzed, see Attachment 1. The bag sample showed approximately 120ppb (parts per billion) of Toluene. The OEL (Occupational Exposure Limits) TWA (time weighted average) for toluene is 20ppm (parts per million). The odor threshold of toluene in water is 0.04ppm, or 40ppb. Further investigation found that toluene is a constituent in vehicle exhaust.

Preliminary Extent of Condition Review/Historical Review

A search of the Event Investigation Report (EIR) database found one TF-AOP-015 entry at MO-2249 in the previous 12 months. EIR-2019-012 and WRPS-PER-2019-0520 were written, however the AOP entry was contained within MO2249, and the odor descriptors were different.

Recommendations/Proposed Corrective Actions

N/A

Attachments:

Attachment 1: Industrial Hygiene Investigation Report (IHIR)

Attachment 1: Industrial Hygiene Investigation Report (IHIR)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250)		EIR Number: EIR-2019-023
<p>1. <u>Event Summary (including number of workers involved and activity in progress):</u></p> <p>1 RCT, while traversing the parking area directly south of the 241-A Farm Change Trailers (MO-2249 and MO-2250) encountered "weird, vehicle-exhaust-like" odors and experienced asthma-like symptoms. A second RCT traversing the area at the same time did not encounter any odors or report symptoms. Another employee later reported encountering a "propene-gas-like" odor in the same area previous to the RCT's odor encounter.</p> <ul style="list-style-type: none"> • <u>Was an IHT Present during initiating event?</u> [] Yes [X] No <p><u>IH Monitoring/ Sample Survey Reports:</u></p> <p>Event response: 19-03628 "AOP-015 Response by IHT's"</p> <p><u>Weather Conditions at Time of Event:</u></p> <p>Ambient outside conditions:</p> <ul style="list-style-type: none"> • Weather station: Station 6 @ 0900 • Wind Direction and Speed: N @ 5 mph • Barometric Pressure (steady/rising/falling): 28.92"Hg and rising • Temperature (F°): 58 • Humidity: 61% 		

Attachment 1: IHIR (Cont.)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250)		EIR Number: EIR-2019-023
<p>Field Response Timeline:</p> <p>0908: Central Shift Manager (CSM) contacts AN Team Field Industrial Hygiene Professional (ANFIHP) to notify of odors reported near 241-A Change Trailers</p> <p>0910: ANFIHP and Production Operations Shift Industrial Hygiene Technician Supervisor (POSIHTS) arrive at Central Shift Office (CSO) and is briefed by CSM:</p> <ul style="list-style-type: none"> • 1 HPT reported "strange odor" and experienced "asthma-like" symptoms near 241-A Change Trailers <p>0912: POSIHTS contacts Production Operations Shift Industrial Hygiene Technicians (POSIHTs) to support response actions</p> <p>0913: POSIHTS contacts Production Operations Industrial Hygiene Technician Lead (POIHTL) to request initialization of MIRAN SaphiRe and Ohio LUMEX, and Industrial Hygiene Programs Industrial Hygiene Technician Lead (IHPiHTL) to request initialization of Inficon HAPSITE®</p> <p>0914: CSM requests response actions as per TF-AOP-015 3.1.12</p> <p>0915: CSM makes radio announcement declaration of TF-AOP-015 entry</p> <p>0917: Production Operations Industrial Hygiene Technician Supervisor (POIHTS), AY/AZ Team Field Industrial Hygiene Professional (AYAZFIHP) and EV Team Field Industrial Hygiene Professional (EVFIHP) arrive at CSO to support response actions</p> <p>0919: 241-A Farm access restriction plan confirmed by CSM</p> <p>0920: POSIHTS requests additional Production Operations Industrial Hygiene Technician (POIHT) to support field response actions.</p> <p>0920: SOEN: "Entered AOP-015 for odor near A Farm. All personnel stay clear of A Farm until further notice. CSM"</p> <p>0921: Affected personnel's supervisor contacted by CSM for description of odor, none could be provided</p> <p>0924: CSM makes additional radio announcement instructing personnel inside of 241-A Change trailers stay in place.</p> <p>0925: ANFIHP briefs POSIHT and POIHT on field response actions:</p> <ul style="list-style-type: none"> • Respiratory Protection (RPE) as per RPF TF-AOP-015 Task 2 • Monitoring as per IHP-09001 • Analyze grab samples with Miran SaphiRe, Ohio LUMEX and HAPSITE <p>0927: POSIHT and POIHT leave CSO to acquire RPE and perform field response actions</p> <p>0929: AE Field Work Supervisor contacts CSM to notify that no odors are noticeable at MO-2249</p> <p>0931: American Electric (AE) worker reports "propane odor" near odor of concern but did not experience symptoms and declined voluntary medical evaluation</p> <p>0936: Terra Graphics Engineering Technicians (TGETs) arrive at CSO with Terra Graphic Industrial Hygiene Response Van (TGIHRV) and are briefed by ANFIHP</p> <p>0938: TGETs leave CSO with TGIHRV to respond at West boundary of access restriction zone</p> <p>0939: Production Operations West Area Safety and Health Manager (POWASHM) arrives at CSO to offer support for response actions</p> <p>0939: POSIHTS contacts POSIHT and POIHT to request support in deployment of TGIHRV sampling equipment into the restricted access area</p> <p>0947: CSM contacts affected employee's supervisor to request odor description. Employee described odor as "vehicle exhaust" which triggered asthma symptoms</p> <p>0948: POSIHTS notifies CSM that POSIHT and POIHT have arrived at area of concern and are performing response actions</p> <p>1001: POSIHTS relays initial field readings from POIHT to CSM:</p> <ul style="list-style-type: none"> • 0953-0956 grab sample #1 collected, VOCs<DL, NH3<DL, Hg<DL • 0957-1000 grab sample #2 collected, VOCs<DL, NH3<DL, Hg 4ng/m³ • 1001-1003 area readings collected, VOCs<DL, NH3<DL, Hg 5ng/m³ • Grab samples in route to temporary Production Operations East Industrial Hygiene Technician Lab (MO511) <p>1009: POSIHTS relays information from POIHT: TGIHRV sampling hose was successfully deployed</p> <p>1011: POSIHTS contacts ANFIHP to notify POIHT and POSIHT have arrived at MO511 and are about to perform post-instrument-use-test</p>		




Attachment 1: IHIR (Cont.)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250)		EIR Number: EIR-2019-023
<p>1028: POIHTS reports grab samples are in-route to 2704HV Programs Industrial Hygiene Technician Laboratory for HAPSITE analysis</p> <p>1035: POIHTS reports all field instruments passed post-instrument-use-test</p> <p>1038: SOEN: "Response actions for the TF-AOP-015 event have been completed and the results are at or below background levels. Exiting TF-AOP-015. GSM"</p>		

Attachment 1: IHIR (Cont.)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250)		EIR Number: EIR-2019-023
Glossary:		
AOP	Abnormal Operating Procedure	
ANFIHP	AN Team Field Industrial Hygiene Professional	
AYAZFIHP	AY/AZ Team Field Industrial Hygiene Professional	
ASAP	As Soon As Possible	
CSM	Central Shift Manager	
CSO	Central Shift Office (274AW Room 5)	
CVST	Chemical Vapors Solutions Team	
DL	Detection Limit	
EIR	Event Investigation Report	
ESH&Q	Environmental Safety Health and Quality	
ETF	Effluent Treatment Facility	
EV	Evaporator	
EVFIHP	EV Team Field Industrial Hygiene Professional	
FEI	Fugitive Emissions Investigation	
FEST	Fugitive Emissions Sub-Team	
H ₂ S	Hydrogen Sulfide	
Hg	Mercury	
HPMC	Hollie P. Mooers Corporation	
IH	Industrial Hygiene	
IHP	Industrial Hygiene Plan	
IHP/HTL	Industrial Hygiene Programs Industrial Hygiene Technician Lead	
IHT	Industrial Hygiene Technician	
MO	Mobile Office	
N ₂ O	Nitrous Oxide	
NH ₃	Ammonia	
OE	Operating Engineer	
ORC	Odor Response Card	
PNNL	Pacific Northwest National Laboratories	
PO	Production Operations	
POIHT	Production Operations Industrial Hygiene Technician	
POIHTL	Production Operations Industrial Hygiene Technician Lead	
POIHST	Production Operations Industrial Hygiene Technician Supervisor	
POSIHT	Production Operations Shift Industrial Hygiene Technician	
POSIHST	Production Operations Shift Industrial Hygiene Technician Supervisor	
POWASHM	Production Operations West Area Safety and Health Manager	
R/C	Retrieval and Closure	
RPE	Respiratory Protection Equipment	
RPF	Respiratory Protection Form	
SM	Shift Manager	
TF	Tank Farms	
TGET	Terra Graphics Engineering Technician	
TGIHRV	Terra Graphics Industrial Hygiene Response Van	
TVA2020	Toxic Vapor Analyzer 2020	
VOC	Volatile Organic Compounds	

Attachment 1: IHIR (Cont.)

<small>Washington River Protection Solutions</small> TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250)		EIR Number: EIR-2019-023
Field IH Author:		
 <small>Print First and Last Name</small>		 <small>Phone No.</small>
		05/23/2019 <small>Date</small>

Attachment 1: IHIR (Cont.)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250)		EIR Number: EIR-2019-023
2. GCMS Sample Results:		
See Attachment A for HAPSITE (GCMS) Results		

Attachment 1: IHIR (Cont.)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT	PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2240 and MO-2250)	EIR Number: EIR-2019-023

3. Additional Information:

- **Odor Response Cards received:**

ODOR RESPONSE CARD - 241-A FARM

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- Notify Immediate Supervisor.**
- Contact Central Shift Manager:**
Provide the included information below.
- Complete map, return to Central Shift Office:**
At 100% or as available.

Odors Detected: None Symptoms:

- Notify Immediate Supervisor**
- Contact CSM, [REDACTED]**
Complete below listed information and map.
 - Your name and the work you were performing
 - Your symptoms (if any)
 - Date and time odor was noticed
 - Location of odors (mark area on map and note direction)
 - Name(s) of off-site in or near the affected area
 - Was an IIT present? No
 - Describe the odor: Sweet Sour Muddy Fatty Metallic Smoky Rotten Other
 - Cleaning Solution: Ammonia Other: _____
 - Possible Source: None
 - Your symptoms (if any): Headache Dizziness/Light-headed Nausea Cough Fatigue/Disorientation/Weakness Sore/Burning Throat Difficulty Breathing Watery/Irritated Eyes/Trouble with Vision Tingling/Numbness/Paralysis Nauseating Other: None

1. Send this card to the Central Shift Office.

ODOR RESPONSE CARD - 241-A FARM

- Contact CSM, Complete below listed information and map.**
 - Date and time odor was noticed: 0845 on 5/21/19
 - Your name and the work you were performing: [REDACTED] IIT
 - Location of odors (mark area on map and note direction)
 - Name(s) of off-site in or near the affected area: [REDACTED]
 - Was an IIT present? No
 - Describe the odor: Sweet Sour Muddy Fatty Metallic Smoky Rotten Other
 - Cleaning Solution: Ammonia Other: _____
 - Possible Source: None
 - Your symptoms (if any): Headache Dizziness/Light-headed Nausea Cough Fatigue/Disorientation/Weakness Sore/Burning Throat Difficulty Breathing Watery/Irritated Eyes/Trouble with Vision Tingling/Numbness/Paralysis Nauseating Other: None

1. Send this card to the Central Shift Office.

Attachment 1: IHIR (Cont.)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT	PER Number: WRPS-PER-2019-1004
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250)	EIR Number: BIR-2019-023

ODOR RESPONSE CARD - 242-A

Odors Detected with NO (immediate symptoms)

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager. Provide the following information where possible:
 - Date and time odors were noticed
 - Your name and the work you were performing
 - Location of odors (mark area on map and wind direction)
 - Name(s) of others in or near the affected area
 - Was an IHF present?
 - Describe the odor
 - Name of other in or near the affected area
 - Was an IHF present?
 - Possible source
3. Complete map, return to Central Shift Office as soon as possible.
4. Notify Immediate Supervisor.
5. Contact CBM. Complete below bulleted information and map.
 - Your name and the work you were performing
 - Date and time odors were noticed
 - Location of odors (mark area on map and wind direction)
 - Name(s) of others in or near the affected area
 - Was an IHF present?
 - Describe the odor
 - Name of other in or near the affected area
 - Was an IHF present?
 - Possible source
 - Your symptoms (if any)
6. Provide information on the back of card.
 - Send this card immediately to the Central Shift Office.

Page 1 of 2 A-6005-744 (REV 5)

ODOR RESPONSE CARD - 242-A

1. Contact CBM. Complete below bulleted information and map.

1. Date and time odors noticed: 05/21/2019 at 2:52 PM
2. Your name and the work you were performing: [Redacted]
3. Location of odors (mark area on map and wind direction): Unit 1, 2 (East to West)
4. Name(s) of others in or near the affected area: [Redacted]
5. Was an IHF present? Yes
6. Describe the odor:

<input type="checkbox"/> Sweet	<input type="checkbox"/> Sour	<input type="checkbox"/> Musty	<input type="checkbox"/> Earthy	<input type="checkbox"/> Metallic	<input type="checkbox"/> Emphy	<input type="checkbox"/> Rotten	<input type="checkbox"/> Onion
<input type="checkbox"/> Cleaning Solution	<input type="checkbox"/> Ammonia	<input checked="" type="checkbox"/> Other	<u>[Handwritten description]</u>				
7. Possible Source: [Handwritten description]
8. Your symptoms (if any):

<input type="checkbox"/> Headache	<input type="checkbox"/> Dizziness	<input type="checkbox"/> Nausea	<input type="checkbox"/> Cough
<input type="checkbox"/> Fatigue/Drowsiness/Weakness	<input type="checkbox"/> Sore/Burning Throat	<input type="checkbox"/> Difficulty Breathing	
<input type="checkbox"/> Watery/Irritated Eyes/Trouble with Vision	<input type="checkbox"/> Tingling/Numbness/Paralysis	<input type="checkbox"/> Rash/Itching	
<input type="checkbox"/> Other: <u>[Handwritten]</u>			

2. Send this card to the Central Shift Office.

Page 2 of 2 A-6005-744 (REV 5)

Attachment 1: IHIR (Cont.)

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		PER Number: WRPS-PER-2019-1004																
Time/Date & Event location: 0845 05/21/2019 South of 241-A Farm Change Trailers (MO-2249 and MO-2250);		EIR Number: EIR-2019-023																
<ul style="list-style-type: none"> • Summary of IH Monitoring and Sampling Data: <ul style="list-style-type: none"> a. Monitoring: <p style="text-align: center;">Event Response: 19-03628 "AOP-015 Response by IHT's"</p> <p style="text-align: center;">DRI field readings:</p> <table style="margin-left: 40px;"> <tr><td>VOC:</td><td><DL</td></tr> <tr><td>NH₃:</td><td><DL</td></tr> <tr><td>Hg:</td><td>5ng/m³</td></tr> </table> <p style="text-align: center;">Grab samples:</p> <table style="margin-left: 40px;"> <tr><td>VOC:</td><td><DL</td></tr> <tr><td>NH₃:</td><td><DL</td></tr> <tr><td>Hg:</td><td>5ng/m³</td></tr> </table> b. Sampling: N/A <p>4. Summary of Employee Reported Information (e.g., symptoms)</p> <p>One employee reported experiencing "asthma-like" symptoms</p> <p>5. Recommendations/Conclusions:</p> <p>Identification of Source of the Concern: [] Yes [X] No</p> <p>6. Other:</p> <p>The Terra Graphics Industrial Hygiene Response Van (TGIHRV) was deployed to collect data as part of the AOP-015 response (see Sec. 1 Field Response Timeline); however, no data collected during this event by the TGIHRV is reportable. The TGIHRV is still in the research and development phase and any analytical methods associated with the TGIHRV have yet to be accredited by any recognized organization (AIHA, etc.).</p> <p>S&H Program Management:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%; border: none;"> <div style="background-color: black; width: 100px; height: 20px; margin-bottom: 5px;"></div> <small>PRINT FIRST AND LAST NAME</small> </td> <td style="width: 30%; border: none;"> <div style="background-color: black; width: 150px; height: 50px; margin-bottom: 5px;"></div> </td> <td style="width: 20%; border: none;"> <div style="background-color: black; width: 60px; height: 20px; margin-bottom: 5px;"></div> <small>PRINT ID</small> </td> <td style="width: 20%; border: none;"> <p style="text-align: right; color: blue;">3/21/19</p> <small>Date</small> </td> </tr> </table>			VOC:	<DL	NH ₃ :	<DL	Hg:	5ng/m ³	VOC:	<DL	NH ₃ :	<DL	Hg:	5ng/m ³	<div style="background-color: black; width: 100px; height: 20px; margin-bottom: 5px;"></div> <small>PRINT FIRST AND LAST NAME</small>	<div style="background-color: black; width: 150px; height: 50px; margin-bottom: 5px;"></div>	<div style="background-color: black; width: 60px; height: 20px; margin-bottom: 5px;"></div> <small>PRINT ID</small>	<p style="text-align: right; color: blue;">3/21/19</p> <small>Date</small>
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Attachment 1: IHIR (Cont.)

**Attachment A
GCMS Laboratory Results**

Attachment 1: IHIR (Cont.)

HAPSITE GC-MS Bag Sample Results Survey 19-09628: A-Farm Change Trailer AOP-15 Response (EIR-2019-023).

Two bag samples were collected in response to an odor reported outside A Farm Change Trailer. These samples were analyzed using an Inficon HAPSITE GC-MS on May 21, 2019. Data was interpreted on May 21, 2019, and reported the same day. Results for the Air Blank Sample were satisfactory. The compounds listed below were found in Bag #1 at concentrations consistent with sample bag contaminants. The Bag # 2 HAPSITE Data was similar with the same compounds being found at lower concentrations. Detailed analysis of Bag # 2 was not conducted. No compounds were found at concentrations of concern (>10% OEL). Toluene was found at an estimated concentration of 120 ppb (between 12 ppb and 1.2 ppm, ACGIH 2016 TLV-TWA = 20 ppm).

Compounds Found in Samples

Compound	Clean Air Blank	Bag #1	Sample Bag Contaminant	Comments
Internal Standard #1	X	X		Added by instrument during analysis
Toluene		X	X	Found at ~120 ppb
Internal Standard #2	X	X		Added by instrument during analysis
D-Limonene		X	X	Not found above background
Silane Compound		X	X	Not found above background
C11-15 Alkane Hydrocarbons		X	X	Not found above background

If you have questions contact

