

EVENT INVESTIGATION REPORT

A Farm AOP-015 Event

Event Investigation Report Number: EIR-2014-024

(Print and Sign)

Event Investigation Team Lead

Date

9/30/14

(Print and Sign)

Event Investigation Team Lead

Date

9-25-2014

(Print and Sign)

PER Responsible Manager

Date

9/30/14

A Farm AOP-015 Event

Investigation Summary

The event investigation was conducted and this event investigation report was prepared, in accordance with TFC-OPS-OPER-C-14, Rev F-1, *Initial Event Investigation Process*, and Course #357003, *Qualification Card for Event Investigation Team Leader*, by [REDACTED] under the supervision of [REDACTED]

While performing weekly routines around the outside of the A and AX tank farms, two Health Physics Technicians (HPT) smelled an unusual odor on the outside, east side of A and AX tank farms. AOP-015 was entered. One of the two workers experience symptoms and was transported to Kadlec Regional Medical Center (Kadlec) for medical treatment. The other worker was taken to HPMC Occupational Medical Services (HPMC) for evaluation and released back to work.

At approximately 7:15am, while performing routine radiological surveys outside of A/AX Tank farms in an area referred to as the "court yard" and along the eastern boundary of AX Farm while walking north, two HPTs reported to their supervisor that they had encountered an unusual odor similar to a "bad body odor" type smell. The HPTs noted a faint odor in the "court yard" with a stronger odor on the most north-easterly side of AX Farm, which one HPT indicated that the odor was most notable when traversing back on that side of the farm in the southern direction (roughly 5-10 minutes after having gone through the area to the north). They reported that they had not experienced any symptoms as a result of the odor and continued to complete their surveys of the "court yard," and proceeded to U Farm to perform routines. The HPT supervisor contacted the AZ Team Area Day Shift Manager (ADM) regarding the odor and the ADM contacted the Central Shift Office (CSO). The Central Shift Manager (CSM) entered TF-AOP-015, *Response to Reported Odors or Unexpected Changes to Vapor Conditions* (AOP-015), and management made the required notifications. The HPTs were contacted by their supervisor while beginning their routine surveys in U Farm and were requested to report to the CSO to provide details on the location and odor encountered and to complete the new AOP-015 Odor Response Card. The HPTs decided that since neither one of them was experiencing symptoms that they would finish their U Farm routines. When their routines in U Farm were completed, they reported to the CSO. Upon arriving at the CSO, one HPT (herein referred to as HPT 1) appeared to have labored breathing, which appeared to worsen and 911 was called and the employee was transported to Kadlec for medical evaluation. The other HPT (herein referred to as HPT 2) was encouraged to be evaluated at the site medical provider, HPMC. HPT 2 was evaluated by HPMC and released back to work. During his interview, HPT 2 communicated that about half way through completing their routines in U Farm he noticed that HPT 1's breathing started to change and become a bit labored but not significant enough that HPT 2 indicated a need to stop the work being performed or to seek medical attention.

In a King 5 report by [REDACTED] on the incident the afternoon of July 17, 2014, reported the following:

"According to other workers who witnessed the incident, the two people who received medical attention were working outside of the A tank farm and were not wearing respirators. A group of workers inside A farm saw one of the two fall to the ground, after which they called for assistance. None of the workers in the group that witnessed the incident was affected; all of these workers were wearing respirators."

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Investigation of this event could not verify any work teams in A Farm or other adjacent tank farms during the time of the event. A job planned by Tank Farm Projects in A Farm, as well as another job in AY Farm that was to be performed by AZ Team employees, were conducting pre-jobs during this time and were in-doors and not in the Tank Farm. Additionally, interviews with HPT 1 and HPT 2 verified that they did not see any work teams in A Farm or AX Farm. Both HPTs also confirmed that at no time during the event, when odors were encountered by the HPTs or in the CSO when labored breathing was experienced by HPT 1, that neither worker “fell to the ground” or “called for assistance.” Additionally, no workers have come forward during this investigation, during the event, or following the event to report having witnessed the HPTs as indicated by the King 5 news report.

An event investigation was initiated on July 17, 2014, but no fact finding meeting was held.

Monitoring information:

WASHINGTON RIVER PROTECTION SOLUTIONS Industrial Hygiene Program		AOP-15 VAPOR EXPOSURE COMMUNICATION FORM			
Event	Date	Odor Location:			
	Farm/Site:	Source Location:			
	07/17/2014	East of A Farm Fence-Line			
	Outside A Farm	N/A			
DRI	AGENT	@ ODOR	@ SOURCE	EXPOSURE LIMIT	REPORTING LIMIT
	Ammonia	0 ppm	ppm	25 ppm OEL/35 ppm STEL	>0 ppm
	Total VOCs	0 ppb	ppb	2,000 ppb AL	>0 ppb
	Mercury	0 ng/m ³	ng/m ³	25,000 ng/m ³ OEL	16 ng/m ³
	Nitrous Oxide	0 ppm	ppm	25 ppm AL	>0 ppm
GC/MS	AGENT	@ ODOR	@ SOURCE	EXPOSURE LIMIT	All Analytes 20 ppb
	Total All Analytes	13 ppb			
	*Nonanal	~1.4 ppb		*Detectable Compound	

Event Timeline

July 17, 2014

- 0715 HPTs notify their supervisor that while conducting routine surveys around the east side perimeter of the A/AX Tank Farms that they smelled an odd odor (similar to body odor). They informed their supervisor that they were not experiencing any symptoms and so they were going to continue with their assigned duties.
- 0721 The HPT supervisor contacts the AZ Team ADM about the odd odor. The ADM verifies that the HPTs were not experiencing any symptoms and lets the HPT supervisor know that he will inform the CSO and will enter AOP-015.
- 0725 CSM recorded the following log entry, “Entering AOP-015 for odors detected east of A Farm. Two HPTs [names redacted] reported a body odor type smell while performing weekly routines. Both declined medical surveillance.”

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- 0735 IHT supervisor contacts HPT supervisor asking if the HPTs could report to the CSO and provide additional information. Verified that the HPTs did not feel they needed to go to medical.
- 0737 CSO Event Notification (SOEN) sent stating "Entering AOP-015 for odors reported east of A Farm. All personnel stay clear of the area east of A Farm until further notice."
- 0738 IHT supervisor, IH, and Safety report to the CSO.
- 0739 HPT supervisor contacts HPTs and informs them that they need to report to the CSO to provide information to the CSM.
- 0740 IH noted the temperature was 79F, humidity 33%, Barometric pressure 29.43 in, and wind 0mph.
- 0750 Two HPT supervisors report to CSO.
- 0820 Affected HPTs arrive at CSO. HPTs indicated that a "like body odor" smell was noticed in the courtyard outside the east fence-line of A Farm up by the instrument building, near the old change trailer. IHT asked HPTs if they could indicate the location on the farm map, and HPT 2 said he would go out to the truck and get the aerial map they use for the radiological survey report because it would be easier to point out. IH provided HPTs with the HPMC Medical Protocol Card.
- 0821 HPT supervisor asked the HPTs if they were okay.
- 0822 IH asked the HPT supervisor if HPT 1 usually has labored breathing like he seemed to be exhibiting. HPT supervisor said "NO" and asked HPT 1 again if he was okay? IH then directed CSM to call 911 because the HPT needs to be transported for evaluation. HPT was continuing to try to show area odors were noted on the map and IH got up and asked if he wanted a chair to sit down, but HPT 1 said no. HPT 2 had circled the locations of the aerial maps where the odors were detected and provided it to the IHTs.
- 0825 HPT supervisor asked again if HPTs were okay. HPT 1 responded he was not okay. HPT supervisor again asked if he wanted to sit down and offered a chair and HPT 1 said no. IH wheeled a chair to HPT 1 and asked if he could please sit down. HPT 1 responded that he sees it.
- 0832 HPT 2 stated he was fine and that he didn't think he needed medical evaluation. IH strongly encouraged going to HPMC for evaluation. HPT supervisor left with HPT 2 and transported him to HPMC for evaluation.
- 0833 Ambulance arrived at CSO to evaluate HPT 1.
- 0834 IHTs arrive at location identified by the HPTs and began performing direct reading instrument monitoring and two bag samples were also collected. HPT 2 and HPT supervisor drive to east side of A/AX Farm to point out to IHTs exactly where smells were encountered prior to going to HPMC.
- 0846 SOEN notice sent stating "Production Ops HPT [HPT 1] who reported odors at A Farm was transported to Kadlec Hospital via ambulance."
- 0849 SOEN notice sent stating "Production Ops HPT who reported odors at A Farm was taken to HPMC for evaluation."

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- 0922 IHTs reported 0ppm VOCs, 0ppm ammonia, 0ppm nitrous oxide, and 0ng/m3 mercury were found during the Direct Reading Instruments (DRI) monitoring at the odor location [circled on aerial maps by HPTs] and from the polypropylene bag samples.
- 1015 HPT 2 released by HPMC to return to work with no restrictions.
- 1025 Projects IH/IHT supervisor provided the information from the IHTs supporting the work crews in A and AX Farms. The IHT that was supporting crew 1 in AX Farm had 0ppm ammonia and 0ppb VOCs throughout the duration of the job. The IHT that was supporting crew 2 in AX Farm had the highest detectable DRO reading at 0806 of 0pp, ammonia and 20 ppb VOCs, however, readings were 0ppm ammonia and 0ppb VOCs from 0900-1200 with that same work crew.
- 1215 SOEN sent stating "Event Investigation initiated for A Farm AOP-015 event. POC ."
- 1350 WRPS General Delivery email sent stating:
- TO:** *All WRPS Employees
(Please pass this message on to those who did not receive it.)*
- ISSUED:** *July 17, 2014*
- FROM:** *External Affairs*
- SUBJECT:** *July 17 vapors event*
- At about 7:15 this morning two WRPS employees outside of a tank farm smelled abnormal odors. Access to the area where the odors were detected was restricted. Work in a nearby tank farm was not impacted.*
- One of the workers reported symptoms, was transported to Kadlec Hospital for a medical evaluation and later released. As a precaution, the other worker was sent to the Hanford onsite medical provider for examination and is back at work.*
- 1402 IH contacted the CSM and informed him Hapsite analysis was completed and the results were less than background concentrations; AOP-015 could be exited.
- 1408 SOEN sent stating "All IH sample results are negative for the area east of A Farm. Exiting AOP-015."
- 1456 SOEN sent stating "Production Ops HPT [HPT 1] who reported odors at A Farm was released from Kadlec Hospital to return to work through HPMC."
- 1522 SOEN sent stating "Production Ops HPT [HPT 1] who reported odors at A Farm was not released to return to work by HPMC."

Note: HPT 1 was released by HPMC to return to work on 07-XX-2014.

Positives

1. Recognition by IH of HPT 1 progressively worsening labored breathing and prompting call to 911 for HPT 1 transport to Kadlec.
2. IH Response.

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3. Use of aerial maps used by Radiological Control for survey reports during event to identify location of odor. Input from IH indicated that the aerial maps aided in clearly identifying locations for sampling.

Compensatory Measures

- Entered AOP-015.
- Restricted access to the area east of A Farm.
- IH planned and executed IH sample plan.

Preliminary Extent of Condition Review

Extent of condition is the focus of the Chemical Vapor Solutions Team (CVST). This report will provide for process improvement and details to the CVST of the incident.

Discussion of Potential Causes

Potential causes of this event are undetermined based on the result of the investigation. No work with potential for creating vapors was being performed in the vicinity. Ventilation systems in A and AX Farms were operational (see Attachment 4). WRPS has several efforts ongoing to address chemical vapors. This report is a synopsis of one response.

Discussion of Barriers That Could Have Impacted the Cause

Unknown

Recommendations/Proposed Corrective Actions

1. Evaluate use of aerial photos rather than maps to identify location of odors with the odors response card in preparing IH response/sampling event.

Actionee: CVST

Lessons Learned

To be addressed, if required, by the causal analysis via a corrective action under WRPS-PER-2014-1289.

Attachments (as they apply):

1. List of personnel contacted
2. Photos/Sketches of affected area as notated by HPTs
3. CSM Log Book Entries
4. AZ Round Sheet – Ventilation System Status on 07-17-14

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Attachment 1
List of Personnel Contacted

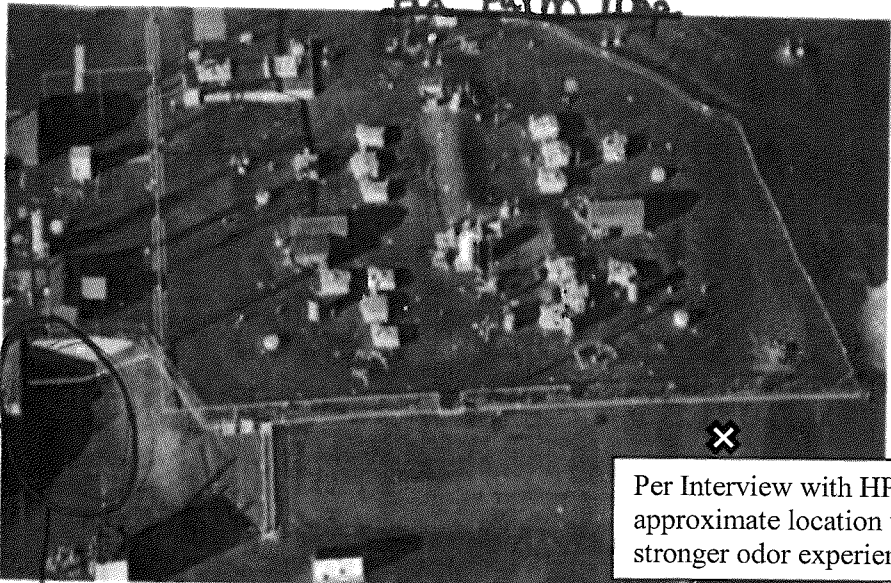
1. Central Shift Office Manager from 07-17-14
2. HPT Supervisor 1
3. HPT Supervisor 2
4. HPT 1
5. HPT 2
6. IHT
7. IH Supervisor
8. ESHQ HAMTC Safety Representative
9. Production Operations Shift Production Team Manager
10. Production Operations Production Control Manager
11. AZ Team Area Day Shift Manager

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Attachment 2
 Photos/Sketches of affected area as notated by HPTs

WASHINGTON RIVER PROTECTION SOLUTIONS LLC RADIOLOGICAL SURVEY REPORT (Submitted for Approval)		RSR No. BOS-1400934	Page 2 of 5							
Map/Sketch										
		<p>A Farm Map</p> <p>→ Location HPT circled on map indicating where edors were observed</p>								
				Map Name: 241-A Perimeter Map Description: Weekly routine survey						
Legend	<input checked="" type="checkbox"/> Direct Measurement	<input type="checkbox"/> Air Sample	<input type="checkbox"/> Smear	<input type="checkbox"/> LAW	<input type="checkbox"/> Neutron Dose Rate	<input type="checkbox"/> Transferability	<input type="checkbox"/> Field	<input type="checkbox"/> Contact	<input type="checkbox"/> Other Distance	<input type="checkbox"/> Other Measurement
	----- (designation inside) ----- Radiological Area Boundary							Note: Dose Rates in mrem/hr unless otherwise noted.		
Date Submitted: 07/10/2014 09:13:00										
BD-6003-343-S8 (Rev. 2)										

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Attachment 2 (Continued)

WASHINGTON RIVER PROTECTION SOLUTIONS LLC RADIOLOGICAL SURVEY REPORT (Submitted for Approval)		RSR No. RPS-1400934	Page 3 of 5
Map/Sketch			
AX Farm Map			
			
			Per Interview with HPT 2 this approximate location where stronger odor experienced
<i>by location HPT circled on map indicating where odors were observed</i>			
Map Name: 241-AX Perimeter		Map Description: Weekly routine survey	
Legend	<input checked="" type="checkbox"/> Direct Measurement	<input type="checkbox"/> Air Sample	<input type="checkbox"/> Smear
	<input type="checkbox"/> LAW	<input type="checkbox"/> Neutron Dose Rate	<input type="checkbox"/> Transferability
	<input type="checkbox"/> Field	<input type="checkbox"/> Contact	<input type="checkbox"/> Other Distance
	<input type="checkbox"/> Other Measurement		
----- (designation inside) ----- Radiological Area Boundary			Note: Dose Rates in mrem/hr unless otherwise noted.
Date Submitted: 07/10/2014 09:13:00		HD-6003-343-SS (Rev. 2)	

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Attachment 3
CSM Log Book Entries

1/10/14
1657 - Released as CSM by [REDACTED]
1657 - Released [REDACTED] (CSM) [REDACTED]
2010 - Enter AOP-008 for winds greater than
20 mph, SAEH sent, Radio Announcement made
7/17/14 A.O. [REDACTED]
0458 - Exit [REDACTED] for winds less than
20 mph, SAEH sent, Radio Announcement made
0459 - Retrieval activities secured, POR 107
exhauster stack readings normal, All Farm HHT
sweeps completed. Normal access to C and AN
Forms is restored
0459 - Retrieval - done
0459 - [REDACTED]
0715 - [REDACTED] reports a bee sting on his left
ankle. Sting occurred at home. Going
to HRC for evaluation. No work related.
0720 - Noted [REDACTED] Safety and
EoC. See backup of 0715 entry.
0725 - Entering AOP-015 for bees detected
east of A-Farm. Two HPR ([REDACTED]
[REDACTED] reported a bee, was type
sting while performing weekly routines.
Both declined medical surveillance.
0730 - SAEH sent for 0725 entry.
Noted [REDACTED] note.
0735 - 911 called for HPT. No bees for
breathing difficulties. [REDACTED] respects
0831 - Noted bee sick [REDACTED] of 911 call
0842 - Noted [REDACTED] of
911 call and transport of bee to
Katie via ambulance. [REDACTED] being
taken to HRC for evaluation. SAEH's
sent. [REDACTED] notifying HRS regarding

- 7/11/14 B Shift
- 0901 - EOC notified as hospital transport.
- 0924 - 2015 report all zones for direct reading instruments for area east of A farm and the road pad. 20 samples obtained and delivered to be analyzed.
- 1031 - Notified by [redacted] of contamination found in the dirt under 702-04 extender on the south side of B Plant. Levels found were 3,000 dpm by wipeable and 94,000 dpm 100cm by direct reading. Notified Environmental on call [redacted] Levels found did not met RPA action levels and are below reportable limits.
- 1040 - RPA north and south 100cm 5' are 0%.
- 1041 - Further information on 1031 entry. Contamination found NWS 17, 2 CA.
- 1107 - HPT evaluated at HPRC after reporting odors east of A farm released to return to work.
- 1110 - Notified NRE Facility [redacted] of 1107 entry.
- 1136 - CBT obtained A/B/C Clin gas readings all read 0% LFL.
- Next RPA farm 3R371 die NCT 7/24/14 @ 0950
 - Next RPA farm 3R372 die NCT 7/24/14 @ 0958
- 1143 - Entered LCO [redacted] at 7:04 3.1A on @ 1435 hours for R1/R2 Farms 2nd VTP 0% LCO 3.1A 2.1 die NCT @ 0750 hours LCO 3.1A 2.3 die (2010-03-03 pg 157 @ 1435).
- 1215 - Event investigation 2014-024 included for A Farm AOP-015 event from today. POC [redacted] sent.
- 1340 - 702-A2 dipon trailer is 0% for maintenance. Sent sent.

216

7/19/14 B Shift

- 1321 - HPT transported to [redacted] has been released to return to work through HPMC.
- 1330 - C-102 and AH-101 HZ stands posted.
- 1335 - Standing Order: OPS 14 072 rev 3 issued to create the requirement for mandatory [redacted] while present sampling.
- 1405 - All AAL sample results negative for A Farm odor event from 0725 entry. Starting AOP-015 for east of A farm.
- 1519 - HPT transported to Kalke HZ not released to return to work by HPMC.
- 1542 - Wind advisory issued effective 1700 to 0100. Winds 20-30 mph with gusts 35 to 60 mph.
- 1650 - Safety BSSS assessment approval and implemented incorporating an evaluation of Spontaneous Gases in deep storage. Closing AFB-14 001.
- 1700 - Released as CSN.
- 1702 - Released [redacted] as CSN.

- 1800 - Entry 1650. Notified DORFS. Sampled Rep-trunkles, and sent SOEM.
- 1930 - Enter AOP-008 for winds >25 mph. Secure outdoor crane activities, no breach radiometric system restrict, wind gusts in containment area. SOEM sent, Radio Measurement made.

7/21/14 A Shift

- 0354 - Ending AOP-008 for winds <20 mph. SOEM sent, Radio Measurement made.
- 0409 - Released as CSN [redacted]
- 0409 - Released [redacted] as CSN [redacted]
- 0425 - [redacted] reports that [redacted]

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Attachment 4
AZ Round Sheet – Ventilation System Status on 07-17-14

T S R Required Data

AZ Daily Rounds

702-AZ Daily Rounds

AV AZ Primary Ventilation System - MCS Readings (Cont.)

Start Date:	JUL 14 2014									
MCS Grapher	Component Number/Condition	Normal Range	Limit (Units)	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Primary Exhaust Fans "A"										
1790Eab.v	AZ-K1-2-1A Motor	ON/OFF	(ES)	ON	ON	ON	ON	ON	ON	ON
1790Eab.v	AZ-K1-2-1A SP (OK, AZK12-1A)	Setpoint *WC/MAN	2.17 WF (RPP-11411)	24.0	24.0	24.0	24.0	24.0	24.0	24.0
1790Eab.v	179-AZK13-1A	ΔT = °F	2.17 WF (RPP-11411)	22.8	23.0	24.8	23.6	24.5	23.9	24.4
1790Eab.v	179-AZK12-1A	60°F to 150°F	(ES)	47.1	47.0	47.9	48.0	47.7	48.4	48.3
1790Eab.v	179-AZK12-1A	60°F to 170°F	1.19 WF (RPP-11411)	70.9	71.8	72.9	72.0	72.4	72.6	72.4
1790Eab.v	P09-AZK14-1A	0.2" to 5.2" WC	5.9" WC (RPP-11411)	0.7	0.7	.7	.7	.7	.8	.7
1790Eab.v	P09-AZK14-3A	1.0" to 1.8" WC	(ES)	1.4	1.4	1.4	1.4	1.4	1.4	1.4
1790Eab.v	P09-AZK14-2A	0.2" to 1.8" WC	4.9" WC (RPP-11411)	0.7	0.7	.7	.7	.7	.7	.7
1790Eab.v	AZ-K1-5-1A Fan	ON/OFF	(ES)	ON	ON	ON	ON	ON	ON	ON
1790Eab.v	179-AZK15-1A	% Load	(ES)	23.1	23.0	23.2	23.1	23.1	23.4	23.6
1790Eab.v	179-AZK15-1A	< 3000 rpm	1.1800 rpm (ES)	3071.0	3078.0	3079	3076.5	3090.3	3103.4	3103.9
1790Eab.v	AZ-K1-5-1A SP (FC, AZK15-1A)	Setpoint *WC/MAN	(ES)	-14.8	-14.8	-14.8	-14.8	-14.8	-14.8	-14.8
1790Eab.v	179-AZK1-1A	-60.0" to -24.0" WC	(ES)	-14.5	-14.6	-14.9	-14.7	-14.9	-14.7	-15.0

RAII #	REMARKS

Type	CC	INUOUS	Drawings No.	TF-OR-DR-AZ	Rev/Date	A-23	Release Date	11/2014	Page	37 of 83
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