Investigation Summary

At 0929 on March 30, 2017 the Central Shift Office (CSO) received notification that three Health Physics Technicians (HPT’s) reported smelling strong odors in the SX-Farm Change Trailer, MO-298. The CSO initiated an AOP-15 event and sent notifications via the Shift Office Event Notification system (SOEN).

Aerial view of MO-298 in West Area

At approximately 0845 three HPTs were performing routine surveys at MO-298, SX-Farm change trailer. Two of the three HPTs were performing monthly routines surveying the inside of MO-298 and the third HPT present was performing weekly routines, surveying the perimeter of MO-298 and the two laundry trailers located just in front of MO-298. The HPTs surveying the inside of MO-298 entered the building around 0900 and noticed a strong odor most similar to a propane gas like smell. The HPTs called the third HPT to check if they also thought the odor was strange. All three HPTs verified that the odor was isolated to the inside of MO-298. The odor was described as being too strong to get dressed inside the trailer.

The HPT’s immediately halted their jobs and began making notifications to ST Area Day Shift Management, direct line supervisors and operators at approximately 0904. The HPTs were offered Occupational Medical Service (HPMC) evaluations by management and all three declined.
The operators contacted responded immediately, arriving at about 0910 and posting red danger tape across both entrances into MO-298. At approximately 0950 the HPTs filled out Odor Response Cards (see Attachment 1). Event Investigation Report (EIR)-2017-013 was initiated at 1318 by CSO. At 1510, notification was sent by the responding Industrial Hygienist Technicians (IHTs) affirming that direct reading instrument (DRI) and hazardous air pollutants on site (HAPSITE) sampling resulted in no contaminants above Action Levels at MO-298. At approximately 1521 CSO confirmed exit of AOP-15 and access restored to MO-298.

End of Summary

No Fact Finding Meeting was held for this event.

Weather Information

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<tr>
<th>Time</th>
<th>Temp</th>
<th>%RH</th>
<th>Pressure</th>
<th>Wind (mph)</th>
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<tbody>
<tr>
<td>0900</td>
<td>49</td>
<td>48</td>
<td>29.23</td>
<td>W @ 12 gust 24</td>
</tr>
<tr>
<td>1000</td>
<td>52</td>
<td>41</td>
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<td>WNW @ 16 gust 27</td>
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<tr>
<td>1100</td>
<td>55</td>
<td>38</td>
<td>29.26</td>
<td>NW @ 17 gust 30</td>
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Event Timeline

3/30/17

0845: HPTs arrive on job site to perform routine surveys
0900: Two HPTs surveying MO-298 notice odor and ask third HPT to verify odor
0904: Notifications of strong odors made to management and operators. HPMC evaluations declined
~0910: Operators arrive and post red danger tape across both entrances into MO-298
0929: Enter AOP-015 initiated by CSO
0950: HPTs fill-out odor response cards
1029: IH perform official sampling
1318: EIR-2017-013 Initiated by CSO
1510: Notification sent by IH confirming DRI and HAPSITE sampling resulted in MO-298 showing no contaminants above Action Levels
1521: Exit of AOP-15 and access restored to MO-298
Preliminary Extent of Condition Review

This AOP-15 entry was specific to MO-298, SX-Farm change trailer and occurred outside of Tank Farm boundaries. Given the potential source and associated potential causes, the preliminary extent of condition is bound to the immediate area.

Discussion of Potential Causes

1. No potential causes identified however, MO-298 will need to be inspected for potential vermin infestation, specifically through entrance in the skirting.

2. The HVAC system in MO-298 is out of service, causing the condition for stagnant air to be present and potentially adding to odor.

3. Reviewed release work activities for ST Area confirmed that no work was being performed that could cause odor.

Recommendations/Proposed Corrective Actions

1. Conduct Industrial Health (IH) sampling of confined space area under MO-298.

Attachments:

1. Odor Response Cards, pages 4-7
2. Central Shift Office Log Book Entry AOP-15, page 8
6. Industrial Health Investigation Report, pages 14 -18
ODOR RESPONSE CARD - 241-SX FARM

1. Contact CSM, Complete below bulleted information and map.
   - Date and time odor was noticed 4/30/17 9:30 am.
   - Your name and the work you were performing
   - Location of odor (mark area on map and wind direction)
   - Name(s) of others in or near the affected area
   - Was an IHT present? No
   - Describe the odor: Sweet, Sour, Musty, Earthy, Metallic, Smoky, Rotten, Onion, Cleaning Solution, Ammonia, Other: Pungent like odor
   - Possible Source: Unknown
   - Your symptoms (if any): Headache, Dizziness/Light-Headed, Nausea, Cough, Fatigue/Drowsiness/Weakness, Sore/Burning Throat, Difficulty Breathing, Watery/Irritated Eyes/Trouble with Vision, Tingling/Numbness/Paralysis, Rash/Itching, Other:

2. Send this card to the Central Shift Office.
ODOR RESPONSE CARD - 241-SX FARM

1. Contact CSM, Complete below bulleted information and map.
   - Date and time odor was noticed: 3-50-17/0900ish
   - Your name and the work you were performing: HPT Routines
   - Location of odor (mark area on map and wind direction): Inside charge trailer only 10-290
   - Name(s) of others in or near the affected area: 
   - Was an IHT present: No
   - Describe the odor: Sweet [ ] Sour [ ] Musty [ ] Earthy [ ] Metallic [ ] Smoky [ ] Rotten [ ] Onion [ ] Cleaning Solution [ ] Ammonia [ ] Other: similar to propane [ ]
   - Possible Source: UnKnown

2. Send this card to the Central Shift Office.
Attachment 1 - Odor Response Cards – 3 of 3
38/17
0830 - Notified by

- southeast electrical box
- west wiring secured area, performed voltage check.
- Wire feed (discovered) 27A, by 27A next to eavens on outside 38/17.
- A test criteria lotto has been installed for relamping 27A which is not power to the circuit.

1023 - Declared a Group 2 Subgroup E (a) SC 3.

- Unexpected discovery of an uncontrolled electrical hampone energy saved outside 27A.

Refer to entry 1023.
0830.

1024 - Declared a Group 18 (2) SC 4.

- Management concern for 2005 E (ETF) for LOTO not meeting expectations.
- LOTO installed on 1553 on 1030.
- Safety work checks were completed, however, management has determined that it does not meet expectations of the THF for completeness of safe condition.

1034 - Entry 1023 and 1024 notified O&FR.

Vanessa Turner, EOC

1137 - Notified Arrow. Notice use of MSA carbon combination cartridges with date codes from "3984" through "9411."

1149 - Entry P1137 notified.
Attchment 3 – Central Shift Office Log Book Exit AOP-15

1313- Entry @ 1229 Notified DOER!
Case Log

1317- Entry @ 1305 Employee did not go to HTEC for evaluation

1318- Initiated Event Investigation (EIR-2017-013)
“SX change trailer AOP-015 event”

1339- Entry @1318 Notified DOER

1331- HT completed Flammable Gas Surveillance on
AY File Form DST all readings 0% LFL.

1333- Entered LCO 3.1.A on 7/6/15 @ 08.45 hours for
AY File Forms In-Service VTP inapplicable.

1407 - The use of “pressure sources” for calibration on
wet systems requires the use of an approved
water trap in line to prevent contamination and/
or equipment damage; unless being used by a
procedure/instruction that prevents water intrusion
(i.e. valve isolating “pressure source” from system
while pressurized to prevent vacuum).

1439- Entry @ 1439 DOER

1521- Entry @ 1521 DOER-015 for SX-Fm change trailer all readings "OK".

Page 9 of 18
**Problem Evaluation Request (PER)**

**PER No** | **Date of Discovery** | **Time of Discovery (24:00)** | **Project**
---|---|---|---
WRPS-PER-2017-0582 | 03/30/2017 | 09:00 | RadCon

**Location**
SX Farm

**How Was Problem Discovered**
Surveillance: Other

**Description of Concern or Problem**
HPTs (3) detected the odor of “propane” upon entering the 241-SX change trailer to prepare to perform the routine radiation and contamination surveys inside and outside of the farm.

**Does issue require immediate actions?**
No

**Immediate actions Taken or Planned**
The HPTs immediately exited the trailer to move to a safe location outside of the trailer. Upon exit, they left the trailer door open to ventilate the trailer. Immediate notification was made to the RadCon FLM and the ST Team Day Shift Manager. Shift Manager authorized the entry into AOP-015 and restricted access to the change trailer pending investigation. None of the 3 HPTs displayed or experienced any symptoms from the odor. All 3 HPTs declined to go to 200W HPMC for medical evaluation.

**Recommended Corrective Actions**
All required actions were taken. No further actions required. Recommend this PER be tracked as a Trend Only.

**Originator Contact**
No

<table>
<thead>
<tr>
<th>Originators Name</th>
<th>Originators ID</th>
<th>Originators Phone</th>
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---

**SHIFT OPERATIONS REVIEW**

**Title**
SX Change Trailer AOP-015 Event

**Reportability**
- Non-Reportable

**Operability**

**Operability Review**
N/A

**Comp Measures Req**
N/A

**Describe actions Taken or Recommended**
Completed actions per TF-AOP-015. No additional actions taken or recommended by the PCSO.

<table>
<thead>
<tr>
<th>SO Reviewer Name</th>
<th>SO Reviewer ID</th>
<th>SO Reviewer Phone</th>
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---

**SCREENING**

**PER Significance Level**
Analysis Level

**PER with Resolution**
Not Applicable

**Ind Assessment Rev**
Occurrence Rpt #

**DOE CAP Required?**
No

<table>
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<tr>
<th>Assigned Responsible Manager</th>
<th>Facilities Rep / SSO</th>
<th>Safety Mgmt Rep</th>
<th>Potentially Recurring Issue</th>
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## PER Screening Comments

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## ORPS Code

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## Screen Chair Comments

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## PAAA REVIEW

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## PAAA Cause Analysis Review

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<th>NTS Report Date</th>
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## PAAA Screening Comments

1) Basis for PAAA screening is in file attached to PER. In file, see highlighted green text for non-compliance.
2) Approval per procedure TFC-ESHQ-PAAA-D-08 dated 7/19/2012 (paragraph 4.1.5-7).

<table>
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<th>PAAA Reviewer Name</th>
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## CAUSE ANALYSIS

### Cause Analyst

**Problem Statement**

#### Compensatory Actions

#### Cause Analysis

#### Causes

#### Extent of Condition

#### HPI Error Precursors

<table>
<thead>
<tr>
<th>Task Demands</th>
<th>Work Environment</th>
<th>Individual Capabilities</th>
<th>Natural Tendencies/ Human Nature</th>
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Has the evaluation of this PER resulted in additional information that could affect the Central Shift Office (CSO) determination of operability or reportability?

**No**

### Comments

<table>
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<th>Submitter Name</th>
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## CAUSE CODES

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### ATTACHMENTS

<table>
<thead>
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<th>Link to PER.</th>
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<tr>
<td>PAAA_Screen_ 4-03-17.pdf</td>
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### AUDIT HISTORY

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--- End of Report ---
04/06/2017 09:35 AM
### PRODUCTION OPERATIONS RELEASE SHEET

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<th>Activity</th>
<th>Supervisor</th>
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<td>200 West Area Quarterly Portable Tool Inspection (2 qtr)</td>
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1. Event Summary (Including number of workers involved and activity in progress):

At approximately 0900 on Thursday the 30th of March 2017 3 Routine HPTs detected a "stronger than normal" and "propane-like" odor upon initial entry into the 241-SX Change Trailer (MO-298). All personnel involved did not experience symptoms. All employees declined precautionary medical evaluation at the on-site medical provider.

- Was an IHT Present during initiating event? [ ] Yes [X] No

IH Monitoring/ Sample Survey Reports:

17-02043 "AOP-015: MO-298/SX Change Trailer"

Weather Conditions at Time of Event:
- Wind Direction and Speed: 294° &13mph
- Barometric Pressure (steady/hisng/falling): 29.227 "Hg and rising slightly
- Temperature (°F): 61.8°F
- Humidity: Unknown

Field Response Timeline:
0915 AN Team IH arrives at CSO on other business, is notified of potential odor response by CSM
0919 AN Team IH contacts EV Team IH for assistance
0920 AN Team IH contacts Shift IH Supervisor
0921 EV Team IH arrives at CSO and is briefed by AN Team IH:
  - 3 HPTs from rounds and routine group experiences stronger than normal odors in the SX Change trailer
  - Odor is "indescribable"
  - No symptoms, precautionary medical evaluation was offered and all affected personnel declined.
0925 CSO makes decision to enter AOP-015 as entry criteria is met
0926 AN Team IH notifies ST Team IH of AOP-015 entry and provides briefing
  - Shift IHs are going to be in route shortly
  - Please provide support at SX Change trailer location to facilitate changes in response that may occur due to new information acquired
0929 SOEN: "Entering AOP-015 for SX Change Trailer, Access is restricted. CSM"
0930 Shift IHs arrive at CSO and are briefed on response actions:
  - Acquire SCBA as per RFP TF-AOP-015 Task 1
  - Co-ordinate with ST Team IH who is at event location
  - Monitor into SX Change Trailer with MultIRAE and Lumenx
  - Acquire a minimum of 2 grab samples from interior of SX Change Trailer
  - Analyze grab samples with MIRAN Sapp/hRe for N2O
0932 Projects IH accompanied with 3rd party reviewers arrives at CSO and is briefed on all of the above
0936 PO IH Lead warms up Instruments and contacts Programs IH Lead to ensure HAPsITE is prepared to provide analysis of pending grab samples
0937 AN Team IH Contacts Hanford Weather Station
0938 AN Team IH contacts PO IH Manager via phone and provides briefing
0940 HAMTC Safety is briefed
0943 PO Shift IH notifies CSO that no masks of the size required by one of the PO Shift IHs are available at the issuing station
0944 AN Team IH contacts PO Shift IH Supervisor to request additional IHs so that someone who can fit whatever PPE the issuing station has can be found to provide response support
<table>
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<th>Time/Date &amp; Event location:</th>
<th>PER Number:</th>
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<tbody>
<tr>
<td>0900 03/30/2017 SX Change Trailer (MO-286)</td>
<td>N/A</td>
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</table>

| 0946 EV Team IH goes to issuing station and provides coaching so that “emergency response” RPE can be issued to the PO Shift IHTs. |
| 0947 AN Team IH contacts PO Shift IHT Supervisor to call off additional resources |
| 0955 ESHQ Manager arrives at CSO and is briefed |
| 0958 AYAZ Team IH arrives at CSO and is briefed |
| 0959 Odor Response Card arrives at CSO |
| • Odor is similar to Propane |
| 1000 Case Manager contacts CSO |
| 1005 AN Team IH Contacts AOP-015 Programs SME and forwards odor response card |
| 1009 EV Team IH contacts ST IH and exchanges new information: |
| • Propane odor was known to be present about a week ago |
| • Thought was dead animal related odor |
| • IHTs are prepped and ready to enter SX Change Trailer |
| 1015 2 additional Odor Response Cards arrive at the CSO. All described odors consistent with “propane-like” |
| 1019 ST IH Programs SME is updated with additional Odor Response Cards |
| 1019 ST team supervisor contacts CSO and informs communications specialist of appropriate supervisor contact to determine more information |
| 1022 Production Operations Manager arrives at CSO and is briefed |
| 1029 ST Team IH updates AN Team IH: |
| • Grab samples have been acquired and are en route to 2704 HV for HAPScITE analysis |
| • NH3: 0 ppm (<LOD) |
| • VOC: 0.000 ppm (<LOD) |
| 1033 Communication specialist briefs CSM, AN Team IH, and EV Team IH: |
| • Odors were detected upon initial entry to MO-286 (before attempting to enter 241-SX Farm to do work), set instruments down, propped door open to ventilate, then called Area Dayshift Manager |
| • Area Dayshift Manager dispatched IH to 241-SX area |
| • HPTs called direct supervisor who offered voluntary precautionary medical evaluation at on-site medical provider. 2 HPTs declined, 1 was transported to 200W HPMC clinic for evaluation. |
| • Evaluated employee was released to return to work without restriction |

1059 AN Team IH updates the Programs SME with all available information

1059 PO Shift IHT contacts AN Team IH and notifies that grab samples are delivered to 2704HV for HAPScITE analysis

1058 WPR8 General Communication: “Odors reported near SX Farm – 3/30/17”

1243 CSM notifies AN Team IH that report of HPT voluntarily visiting the on-site occupational medical provider is false and that all 3 HPTs who experienced odors have declined precautionary medical evaluation at this time.

1251 AN Team IH notifies Programs SME that information regarding on-site medical provider visit is false

1319 Programs SME contacts AN Team IH to ask “were bag samples were taken?”

1628 SDEN: “Exiting AOP-015 for SX Change Trailer; all readings below action levels, Access is restored. CSM”
2. GCMS Sample Results:

- TriHexyphenidyl: 0.07 ppm

3. Additional Information:

- Odor Response Cards received:
• Summary of IH Monitoring and Sampling Data:
  a. Monitoring: Direct Reading Instruments did not detect any VOCs or ammonia.
  b. Sampling: Bags samples were analyzed by GC/MS. Little was found other than 1 ppb trichloroethylene

4. Summary of Employee Reported Information (e.g., symptoms)

The three HPTs reported a strong, perhaps propane odor upon entering the change trailer. They did not relate any symptoms and all declined to go to HPMC. It was reported that there was a propane odor in the change trailer some days earlier.
**TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT**

**Time/Date & Event location:**
0900 03/30/2017 SX Change trailer (MO-298)

**5. Recommendations/Conclusions:**
- Identification of Source of the Concern: [ ] Yes [x] No

It is recommended that, when an AOP-015 event is reported in a building, the outside door(s) not be left open, as the IH response team will have difficulty in determining the strength or character of the odor.

**6. Other:**

Nothing else to report or consider.

---

**Print Name and Last Name**

**Signature**

**Phone No.**

**Date**

04/24/17