**Event Investigation Report #EIR-2020-005: “Investigation of AOP-015 Event East of AX Tent”**

<table>
<thead>
<tr>
<th>Date: 24JAN2020</th>
<th>Location: AX Farm – East side of Change Tent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time: 1422</td>
<td></td>
</tr>
<tr>
<td>Symptoms: Yes ☒ No ☐</td>
<td>Sampling Results #: 20-00967</td>
</tr>
<tr>
<td>Medical Evaluation Offered:</td>
<td>Medical Evaluation Declined: Yes ☒ No ☐</td>
</tr>
<tr>
<td>Yes ☒ No ☐</td>
<td>Individual without symptoms declined</td>
</tr>
</tbody>
</table>

**Return to Work Status**

| Number of workers returned to work without restriction | 1 |
| Number of workers returned to work with restriction | 0 |
| Number of workers referred for further evaluation | 0 |

**Transported to Site Occupational Medical Services (HPMC) Yes ☒ No ☐**

**Odor Description:** Sweet; Metallic; Cleaning Solution; Electrical; Ammonia; Plastic

**MSA Activities:**

- Biological/Herbicide ☐
- Septic Service ☐ Other: ________________

**Waste disturbing activities or Tank work in adjacent area:**

- Yes ☒ Activity or work released ________________
- No ☐

**Meteorological Data:**

<table>
<thead>
<tr>
<th>Time: 1415</th>
<th>Weather Station #: 6</th>
<th>Wind Speed: 20.9 MPH</th>
<th>Direction: (N/S/E/W) From WSW (see Figure 1)</th>
<th>Temp: 55.2 °F</th>
<th>Barometric Pressure (steady/rising/falling): 29.217”Hg Steady</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time: 1430</td>
<td>Weather Station #: 6</td>
<td>Wind Speed: 25.5 MPH</td>
<td>From WSW</td>
<td>Temp: 55.6 °F</td>
<td>Barometric Pressure (steady/rising/falling): 29.217”Hg Steady</td>
</tr>
</tbody>
</table>

**Event Summary & Timeline**

On January 24, 2020, at approximately 1422 hours, two workers performing SCBA bottle support at the east side of the AX Farm Change Tent detected a “sweet” odor. One of the personnel reported a metallic taste in their mouth and was transported to the on-site medical provider (HPMC) via the subcontractor safety representative.

At the time of the reported odors, the personnel were not working in an area requiring use of respiratory protection. All workers were instructed to leave the area, and access restrictions were placed pending Industrial Hygiene Technician (IHT) support.

IHT support responded, using Industrial Hygiene Sample Plan (IHP-09001) for TF-AOP-015, and took direct reading instrument (DRI) readings, all of which were below background levels. The access restrictions were then down-posted. (See Sample Report #20-00967)

The individual taken to HPMC was evaluated and returned to work without restriction.

An Event Investigation Meeting was not held.
Event Timeline:

**1/24/2020**

1422  Two workers performing SCBA bottle support at the east side of the AX Farm Change Tent detected a 'sweet/strange' odor

**Field Response Timeline:**

1432  Shift Operations Event Notification: "Entered TF-AOP-015 for odors reported on the west side of AX Change Tent. Access to the AX Change Tent is restricted. CSM"

1434  Shift Operations Event Notification: "Correction: Entered TF-AOP-015 for odors reported on the EAST side of AX Change Tent. Access to the AX Change Tent is restricted. CSM"

1510  Productions Operations Industrial Hygiene Manager contacts Industrial Hygienist on-call to discuss TF-AOP-015 entry
<table>
<thead>
<tr>
<th>Time</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1515</td>
<td>Production Operations Industrial Hygiene Manager contacts Production Operations Industrial Hygiene Technician Supervisor to discuss TF-AOP-015 entry</td>
</tr>
</tbody>
</table>
| 1527  | Production Operations Industrial Hygiene Manager contacts Central Shift Manager to discuss TF-AOP-015 Entry:  
  - One (1) worker experienced "sweet metallic smell"  
  - No intrusive projects ongoing  
  - Initiate response actions in accordance with TF-AOP-015 3.1.12  
    - IHP-09001  
    - Ammonia and Volatile Organic Compound area monitoring will be performed in area of concern  
    - Respiratory Protection Equipment as per RPF TF-AOP-015 Task 2 |
| 1530  | Production Operations Shift Industrial Hygiene Technician reports AreaRAE in 241-AX egress tent recorded during time of event:  
  - Volatile Organic Compounds were less than detectable [less than one hundred (100) parts per billion]  
  - Ammonia was less than detectable [less than one (1) part per million] |
| 1536  | Retrieval Closure Industrial Hygiene Manager notifies Production Operations Industrial Hygiene Manager |
| 1538  | Production Operations Industrial Hygiene Manager notifies Industrial Hygiene Programs manager that no support is needed for analysis of grab samples |
| 1546  | Shift Production Operations Industrial Hygiene Technician reports that no odors were encountered during routine area sweep at 1300 |
| 1547  | Production Operations Industrial Hygiene Manager briefs Environmental Safety Health and Quality Manager |
| 1624  | Production Operations Shift Industrial Hygiene Technician reports field results:  
  - Ammonia was less than detectable [less than one (1) part per million]  
  - Volatile Organic Compounds were less than detectable [less than ten (10) parts per billion]  
  - Elemental Mercury was less than detectable [less than twenty (20) nanograms per cubic meter]  
  - Slight "dead animal" odor encountered during follow up sweep without Respiratory Protection Equipment |
| 1635  | Central Shift Manager contacts Production Operations Industrial Hygiene Manager to discuss Industrial Hygiene Technician readings and exit criteria |
| 1640  | Production Operations Industrial Hygiene Manager updates briefing to Environmental Safety Health and Quality Manager |
| 1641  | Shift Operations Event Notification: "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:

1. Stopped Work
2. Notified CSM
3. Direction given to evacuate the change tent and proceed upwind to 242-A parking lot staging area
4. Access to area was restricted
5. One individual taken to HPMC for evaluation
6. Odor response cards were completed
7. Entered into TF-AOP-015, Response to Reported Odors or Unexpected Changes to Vapor Conditions
8. Initiated Industrial Hygiene Sample Plan IHP-09001

Compensatory Measures:

No compensatory measures taken.

Readings from Sampling and/or Monitoring:

Summary of IH Monitoring and Sampling Data:
- Monitoring: DRI Field Readings
  - VOC: < Detectable Levels
  - NH₃: < Detectable Levels
  - Hg: < Detectable Levels
- Sampling: N/A

From the Response timeline: at 1624hrs, Production Operations Shift Industrial Hygiene Technician reports field results:
- Ammonia was less than detectable [less than (1) part per million]
- Volatile Organic Compounds was less than detectable [less than (10) parts per billion]
- Elemental Mercury was less than detectable [less than (20) nanograms per cubic meter]
- Slight “dead animal” odor encountered during follow-up sweep without RPE

Listing of IH Program(s) to Consider:

None.

Facility Impact:

Although AX Farm was evacuated pending IH monitoring, the impact on work within the Farm was minimal at this time.
Discussion of Potential Source(s):

The Central Shift Manager verified that the AX Exhauster was running, and that work being performed in AX that day had already been secured. With that, discussions were had with IH on what any potential sources may be. Although Tank Vapor could not be conclusively ruled out, no readily identifiable cause of the odors was determined.

Recommendations/Factors for Evaluation:

None.

Condition(s) Adverse to Quality:

None.

Discussion of Positive Aspects of the Event:

None.

Personnel Contacted:

- Robert Campbell; Industrial Hygiene AOP-015 Reporting SME
- Kyle Beaulaurier; Central Shift Manager, C-Shift
- Mark Ellis; Central Shift Manager, D-Shift
- Todd Schmidt; FWS/PIC
- Gary Hopkins; R&C Construction Manager
- Dan Wolf; Production Ops Safety & Health Manager [Industrial Hygiene]
- Russell Grigsby; Industrial Hygienist

Attachments (as they apply):

2. Odor Response Cards (Redacted) [4 pages]
3. Industrial Hygiene Sample Plan (IHP-09001) for TF-AOP-015
4. Communication Template and Follow-Up Event Summary from TF-AOP-015, as Completed by Central Shift Manager
5. Central Shift Office Log Book Entries

Responsible Manager: [Redacted] / [Redacted] / 2/14/2020

Event Investigator: [Redacted] / [Redacted] / 2/14/2020
TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT

1. Event Summary (including number of workers involved and activity in progress):

At approximately 1400 January 24th one worker experienced "sweet metallic smell" outside of 241-AX egress tent.

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

IH Monitoring/ Sample Survey Reports:

Event response: 20-00967: Odor Response Outside AX Farm AOP-015

Weather Conditions at Time of Event:

Ambient outside conditions:

- Weather station: 6 at 1400
- Wind Direction and Speed: From South West at 21 to 36 Miles per hour
- Barometric Pressure (steady/rising/falling): 29.24 inches of Mercury and falling
- Temperature (F°): 56
- Humidity: 64%
**TF-AOP-015 Industrial Hygiene Investigation Report**

**Event Response #20-00967, “Odor Response Outside AX-Farm AOP-015”**

**Time/Date & Event Location:**
1400 01/24/2020 East of 241 AX Farm egress tent

### Field Response Timeline:

- **1432:** Shift Operations Event Notification: "Entered TF-AOP-015 for odor reported on the west side of AX Change Tent. Access to the AX Change Tent is restricted CSM".
- **1434:** Shift Operations Event Notification: "Correction: Entered TF-AOP-015 for odor reported on the EAST side of AX Change Tent. Access to the AX Change Tent is restricted CSM".
- **1513:** Production Operations Industrial Hygiene Manager contacts Production Operations Industrial Hygiene Technician Supervisor to discuss TF-AOP-015 entry.
- **1515:** Production Operations Industrial Hygiene Manager contacts Production Operations Industrial Hygiene Technician Supervisor to discuss TF-AOP-015 entry.
- **1527:** Production Operations Industrial Hygiene Manager contacts Central Shift Manager to discuss TF-AOP-015 entry.

- One (1) worker experienced a "sweet metallic smell".
- No large intrusive projects ongoing.
- Initiate response actions in accordance with TF-AOP-015 3.1.12.
  - Ammonia and Volatile Organic Compound area monitoring will be performed in area of concern.
  - Respiratory Protection Equipment as per RPF TF-AOP-015 Task 2.
- Production Operations Shift Industrial Hygiene Technician reports AreaRAE in 241-AX egress tent recorded during event:
  - Volatile Organic Compounds was less than detectable [less than one hundred (100) parts per billion].
  - Ammonia was less than detectable [less than one (1) part per million].
  - Respiratory Protection Equipment as per RPF TF-AOP-015 Task 2.
- Production Operations Shift Industrial Hygiene Manager notifies Production Operations Industrial Hygiene Manager that a Retrieval Closure Industrial Hygiene Technician Supervisor is on site if needed to support response actions.
- Production Operations Industrial Hygiene Manager notifies Industrial Hygiene Programs manager that no support is needed for analysis of grab samples.
- Production Operations Industrial Hygiene Manager reports that no odors were encountered during routine area sweep at 1500.
- Production Operations Industrial Hygiene Manager briefs Environmental Safety Health and Quality Manager.
- Production Operations Shift Industrial Hygiene Technician reports field results:
  - Ammonia was less than detectable [less than one (1) part per million].
  - Volatile Organic Compounds was less than detectable [less than ten (10) parts per billion].
  - Elemental Mercury was less than detectable [less than twenty (20) nanograms per cubic meter].
  - Slight "dead animal" odor encountered during follow-up sweep without Respiratory Protection Equipment.
- Central Shift Manager contacts Production Operations Industrial Hygiene Manager to discuss Industrial Hygiene Technician readings and exit criteria.
- Production Operations Industrial Hygiene Manager updates briefing to Environmental Safety Health and Quality Manager.
- Shift Operations Event Notification: "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."
Bag samples were not requested. HAPSITE GCMS analysis is not available.

3. Additional Information:
   - Odor Response Cards received:

   ![ODOR RESPONSE CARD - 241-AX FARM](image)

   1. Contact CSM, Complete below bulleted information and map.
      - Date and time odor was noticed: 2015
      - Your name and the work you were performing: Bottles
      - Location of odors (mark area on map and wind direction): ax tent near the bottle rack
      - Name(s) of others in or near the affected area: [Redacted]
      - Was an IDT present? Yes
      - Describe the odor: [Marked with checkboxes]
         - Cleaning Solution: Yes
         - Other: Electrical
      - Possible Source: [Blank]
      - Your symptoms (if any): [Marked with checkboxes]
         - Headache: Yes
         - Nausea: Yes
         - Fatigue/Drowsiness/Weakness: Yes
         - Difficulty Breathing: Yes
         - Other: [Redacted]

   2. Send this card to the Central Shift Office.

- Summary of IH Monitoring and Sampling Data:
  a. Monitoring:
     Event response: 20-00967: Odor Response Outside AX Farm AOP-015
     DRI field readings:
     VOC: <DL
     N riot: <DL
     Hg: <DL
  b. Sampling:
     N/A

4. Summary of Employee Reported Information (e.g., symptoms)
   1 worker reported a Sweet Metallic Smell.
   Worker transported to HPMC for medical evaluation.
   Worker released to return to work with no restrictions

5. Recommendations/Conclusions:
   Identification of Source of the Concern: [ ] Yes [X] No

9. Other:
   None

S&H Program Management:

[Redacted]

Page 5 of 5
Attachment 2: Odor Response Cards (Redacted); [page 1 of 4]

**ODOR RESPONSE CARD - 241-AX FARM**

### Odors Detected with NO Immediate symptoms

1. Notify Immediate Supervisor.

2. Contact Central Shift Manager, [Redacted].
   Provide the bulleted information below.

3. Complete map, return to Central Shift Office as soon as practicable.

### Odors Detected WITH Symptoms

4. Notify Immediate Supervisor.

5. Contact CSM, [Redacted], complete below bulleted 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 the wind direction)
   - Describe the odor
   - Name of other in or near the affected area
   - Was an IHT present?
   - Possible source

6. Provide information on the back of card.

7. Send this card immediately to the Central Shift Office.
ODOR RESPONSE CARD - 241-AX FARM

1. Contact CSM, Complete below bulleted information and map.
   - Date and time odor was noticed: 1-24-2020 14:22
   - Your name and the work you were performing: [Redacted]
   - Location of odors (mark area on map and wind direction): [Redacted]
   - Name(s) of others in or near the affected area: [Redacted]
   - Was an IHT present? No
   - Describe the odor: Sweet, Other: Ammonia plastic
   - Possible Source: I have no Idea, Other: None at this time
   - Your symptoms (if any): Headache, Nausea

2. Send this card to the Central Shift Office.
Attachment 2: Odor Response Cards (Redacted); [page 3 of 4]
Attachment 2: Odor Response Cards (Redacted); [page 4 of 4]

ODOR RESPONSE CARD - 241-AX FARM

1. Contact CSM, Complete below bulleted information and map.
   - Date and time odor was noticed: 2:15
   - Your name and the work you were performing: [Redacted]
   - Location of odors (mark area on map and wind direction): Ax tent near the bottle rack
   - Name(s) of others in or near the affected area: [Redacted]
   - Was an IHT present? Yes inside the tent
   - Describe the odor: [Sweet], [Metallic], [Cleaning Solution], [Electrical]
   - Possible Source: [Redacted]
   - Your symptoms (if any): [Dizziness/Light-Headed], [Fatigue/Drowsiness/Weakness], [Other: Red Exit]

2. Send this card to the Central Shift Office.
Attachment 3: Industrial Hygiene Sample Plan (IHP-09001) for TF-AOP-015

INDUSTRIAL HYGIENE SAMPLE PLAN

<table>
<thead>
<tr>
<th>Exposure Assessment:</th>
<th>Job Specific:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Contractor: Washington River Protection Solutions

IHSP Number: HP-06001 RB

Brief Job Description and Type of Area:
TF-AOP-015: This sample plan will be implemented at the direction of the shift manager for IH/T field response to odor event. Continuous IH/T coverage is required during evolution of event.

INSTRUCTIONS

**Action Limit (Direct reading instrument results)**

- Ammonia: 12 ppm
- VOC: 2 ppm

**Monitoring**

- **Source:** Possible odor source if noticeable increase in intensity
- **Area:** General area where employees identified the odor and
- **Personnel:** N/A

**Sampling**

Bag sampling is conducted at the direction of the industrial hygienist. Collect a minimum volume of 20L in grab air samples with polypropylene (or equivalent) bags:

- **Source:** If possible odor source if noticeable increase in intensity
- **Area:** General area where employees identified the odor
- **Personal:** Personal sampling will not be conducted as an immediate response action unless directed by the responsible IH/T

Process the grab air samples using the Hapale, Miran and Lurrex

**MONITORING**

- **Area:** monitoring will be performed for ammonia and VOCs.
- **General:** area where employees identified the odor and
- **Possible odor source if noticeable increase in intensity or positive reading

If odor source is readily apparent, e.g. vehicle exhaust, septic systems, animal odors, discontinue monitoring and inform shift office that source has been identified.

**Pre-Job Briefing Information N/A**

**Other**

- IH/T to monitor their way in, moving from upwind location if possible.
- If conducted, a minimum volume of 20L in grab air samples with polypropylene (or equivalent) bags:
  - If collected, deliver grab air sample(s) to IH Lab at 2704-HV for Hapale analysis.
  - If grab samples are collected, ensure ammonia and VOCs are detected in the polypropylene bag(s) when air samples are delivered to IH Lab at 2704-HV for Hapale analysis.
  - Sample plan may be modified per written direction from the project IH/T in accordance with field deviation guidelines of TFD-ESHQ-S IH-C-18.
  - Record comments in fielding. Transfer comments from field log to SWHD Comments field. Provide copy of field notes to project IH/T.

Additional direction for access control may be provided by the Shift Manager based upon monitoring and sampling results.

A EZ may be established or farm access restricted if air monitoring levels reach and remain above an action level.

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<table>
<thead>
<tr>
<th>Did IH Lead Review?</th>
<th>Yes [X]</th>
<th>No [ ]</th>
<th>If Yes, Lead IH INITIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>IH Author I</td>
<td>Print</td>
<td></td>
<td>Phone:</td>
</tr>
<tr>
<td>Sign</td>
<td></td>
<td></td>
<td>Date: 10/4/2018</td>
</tr>
</tbody>
</table>

| N/A IH Peer Review | Print   |        | Phone:                 |
|                    |         |        | Date: 10/4/2018        |

| N/A IH Mgmt. Sign  |         |        | Phone:                 |
|                    |         |        | Date: 10/4/2018        |
Communication Template and Follow-Up Event Summary from TF-AOP-015, as Completed by Central Shift Manager

Response to Reported Odors or Unexpected Changes to Vapor Conditions

Attachment 2 - Communication Template

One Hanford workers were taken to HPMC after reporting odors East of AX Farm Change Trailer. One workers reported symptoms, two workers reported the odor.

The employees were providing SCBA bottle support outside of the change trailer were not in an area that requires use of respiratory protection.

Workers were instructed to leave the area, and access to the area has been restricted.

NOTE - This communication template is to be completed as soon as enough information is available.

Central Shift Manager: ___________________ / ___________________ / 1/24/20
Signature Print (First & Last) Date

Response to Reported Odors or Unexpected Changes to Vapor Conditions

Attachment 3 - Follow-Up Event Summary

The following is example of detail to provide in the electronic form of Follow-Up Event Summary.

TF-AOP-015 Initial Report

Date: 1/24/2020  Time: 1422 hours  Location: AX Farm
Number of Workers Involved: 2  Sampling Results #: 20-00967

Event Summary

At approximately 1422 hours 2 workers detected a “sweet, strange” odor on the east side of AX Change Tent while providing SCBA bottle support. One worker reported a metallic taste in their mouth and was transported to HPMC via sub-contractor Safety Rep.

At the time odors were reported, the individuals were not working in an area requiring use of respiratory protection. All workers were instructed to leave the area. Access to the area was restricted.

IFTs responded to the area and took DRI readings. DRI instrument readings were below background levels, allowing the restricted area to be down posted.

The worker taken to HPMC was evaluated and released to return to work with no restriction.

An event investigation has been initiated.

Return to Work Status

| Number of workers returned to work without restriction | 1 |
| Number of workers returned to work with restriction | 0 |
| Number of workers referred for further evaluation | 0 |

NOTE - Form is to be completed once event is stabilized and all details are known.


Central Shift Manager: ___________________ / ___________________ / 1/24/20
Signature Print (First & Last) Date
### Attachment 5: Central Shift Office Log Book Entries

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Logbook Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/24/20</td>
<td>1545</td>
<td>Entered TF-AOP-015, Response to Reported Odors or Unexpected Changes in Vapor Conditions. Entered TF AOP-015 for Odors w/ symptom on east side of AX Change Tent.</td>
</tr>
<tr>
<td>1/24/20</td>
<td>1553</td>
<td>IHTs dispatched to implement Tank Waste Odor Sample Plan IHP-09001, per TF-AOP-015. NCOs dispatched to secure area east of AX Change Tent</td>
</tr>
<tr>
<td>1/24/20</td>
<td>1554</td>
<td>[Redacted] was evaluated at HPMC and released without restriction</td>
</tr>
<tr>
<td>1/24/20</td>
<td>1558</td>
<td>Notified [on-call Fac-Rep] that [redacted] was released w/o restriction</td>
</tr>
<tr>
<td>1/24/20</td>
<td>1614</td>
<td>AOP-015 Attachment 2 has been sent</td>
</tr>
<tr>
<td>1/24/20</td>
<td>1628</td>
<td>IHT [redacted] reports sampling complete; no readings above background, and instruments have been posted as good.</td>
</tr>
<tr>
<td>1/24/20</td>
<td>1640</td>
<td>Closing TF-AOP-015. Response actions for the TF-AOP-015 event have been completed and the results are at or below background levels. Exiting AOP-015. SOEN sent. Radio announcement made, and FR [on-call] notified via voicemail.</td>
</tr>
</tbody>
</table>