EVENT INVESTIGATION REPORT

Entered AOP-015 outside of AN-Farm
Event Investigation Report Number EIR-2015-013

Event Investigation Team Lead

PER Responsible Manager

PER No. WRPS-PER-2015-0449

4/27/2015
Date

4/27/2015
Date
Investigation Summary

On Thursday March 19, 2015 between 1015 and 1030 three Nuclear Chemical Operators (NCOs) in support of the AN-106 camera replacement work, smelled stronger than usual odors outside of the MO497 change trailer. The strong smell resulted in varying symptoms and further evaluation by Hanford Medical Contractor, (HPMC). When the Field Work Supervisor (FWS) was notified of the strong odor and symptoms he contacted the shift office, executed SWIMs (Stop, Warn, Isolate, and Minimize) and the Central Shift Manager entered into AOP-015 for abnormal odors outside of AN-Farm.

Industrial Hygiene (IH) responded to the shift office after receiving the Central Shift Managers (CSM) radio call announcing entry of AOP-015 for AN Farm. IH discussed location and sampling plan with CSM and then dispatched Industrial Hygiene Technicians (IHTs) to take samples inside and outside AN-Farm based on the description of where the affected NCO were at when they encountered the unusual odor. IH sampling results were returned at 1521, reporting samples at or below background levels. AOP-015 was exited and AN Farm access signs were down posted.

Additionally, it came to the attention of Washington River Protection Solutions LLC (WRPS) management that a Mission Support Alliance LLC (MSA) Teamster also in the area outside of AN-Farm at 1020 mentioned smelling a stronger than usual odor to a co-worker, but had no symptoms at the time and did not report the smell at the time of occurrence. Later Thursday evening, after working hours, the MSA Teamster experienced tightness in his chest and redness in his throat and decided as a precaution to report to Kadlec Regional Medical Center for further evaluation. Management was contacted on Friday March 20th, when the MSA Teamster reported to HPMC to document the symptoms and receive additional evaluation.

A fact finding meeting was held on March 23, 2015. In addition to the fact finding meeting, individual interviews were conducted with the Management, Central Shift Managers, Field Work Supervisor, and Industrial Hygiene. All pertinent documentation surrounding the event was obtained and reviewed.

Event Timeline

3/19/2015

0645 - FWS held pre-job briefing for AN106 to spray distributor with water wands.
0730 - Pre-Job briefing concluded. FWS held a few people back to discuss camera job. NCOs would be removing an AN106 camera and install a new one.
0800 - FWS completed pre-job brief for camera swap.
0800 – Fuel truck is beginning to make its rounds inside the farm filling Light Plants with diesel fuel.
0915 - Team is in change trailer dressing for entry for camera swap.
1000 - Team completes the camera swap, control room operator verified camera operation. NCOs begin exiting the farm through Contaminated Area corridor to riser 17 from the change trailer used for survey and supplied air removal.

1000 – Secondary diesel fuel truck is parked and idling south of MO497 change trailer near the south gate on the west side of the farm. The secondary truck has a 500 gallon tank of diesel that is being pumped into the smaller diesel truck with a 100 gallon tank inside of the farm being used to refuel Light Plants inside of AN farm.

1009 - NCO 1 doffed PPE and surveyed out equipment, exited on the south-side of MO497 change trailer to go place their tools back in the work truck.

1015-1020 - After placing equipment inside of the truck, noticed co-worker (NCO 2) by their work truck located SW of the change trailer. NCO 1 walked south east to NCO 2 for post job and to await the FWS 1. As NCO 1 approached NCO 2, NCO 1 encountered a strong and unusual odor and immediately asked NCO 2 if they smelled it. NCO 2 responded that they smelled it, but that it didn’t seem as strong of a smell to them (NCO 2 had their back turned to the wind direction). NCO 1 quickly developed a headache and burning sensation in their nose, and proceeded to get away from the odor by retreating northbound where two IHTs were encountered heading southbound.

1018-1020 – Two individuals from IH encountered NCO 1. Brief exchange of communication is had in passing. NCO 1 mentions just encountering a smell. IH responds that they thought it smelled like diesel and maybe anti-freeze and pointed to fuel exchange that is happening south of MO497.

1020 – NCO 1 returns to MO497 to inform FWS of headache and odor that was encountered. NCO 2 decided that the odor is getting stronger by his truck and decides to go into the MO497 change trailer as well.

1021- FWS 1 is informed of stronger than usual odor by NCO 1 and 2, calls the shift office to inform them of the unexpected odor outside of the farm, and report the symptoms of NCO 1.

1021-1039 – Central Shift Manager gathers information from Field Work Supervisor attempting to identify possible sources. The discussion between the CSM and FWS covered some of the following topics: Where exactly the smell was encountered, what the symptoms were, path forward on executing SWIMs, a description of the smell, and what apparent sources could have generated the unexpected smell (outhouses near-by, waste transfer, diesel truck running in the area, fuel exchange taking place, were all covered in the conversation). Upon not being able to illicit a description of the smell or an apparent source, CSM entered AN-Farm into AOP-015. At the time of the event neither NCO 1 nor NCO 2 could place the smell, and couldn’t identify a description for what they had smelled. Later at HPMC NCO 1 described the smell as “sour” and described the instant side-effects of the smell as similar to ammonia, but stated it did not smell like ammonia.
1025 – IH Manager is notified of unusual odor with symptoms by Central Shift Office (CSO)

1029 – IH Manager arrives at CSO. Surrounding streets outside of AN-farm are being barricaded at this point.

1030 – Fuel Truck has completed transferring diesel from larger diesel tank outside of the farm into the smaller truck being utilized inside of the farm. The hose is surveyed out and the truck leaves AN-Farm.

1032 - FWS 2 calls a manager located in 2704-HV to come get NCO 1 and transport the individual to HPMC for evaluation.

1025-1030 – NCO 3 experienced unexpected odor after parking a truck to help with the barricade boundaries north of the change trailer. While walking west to east just outside of the farm toward the change trailer NCO 3 reported to the FWS the strong unrecognizable taste, but reported no odor and did not smell anything. At this time no symptoms were present.

1039 – Radio Announcement of AOP-015

1044 – SOEN – “Entering AOP-015 for odors SW of AN Farm Change Trailer. Stay clear of the area, trucks are stationed at set boundary. Wind SE 4mph. CSM”

1045 – IH is dispatched to acquire instrumentation.

1046 – IH 1 Contacts IHT Lead for construction to coordinate walk down of transfer path

1049 – FWS 1 calls manager located in 2704-HV to find out why he hasn’t arrived to help transport. The manager reported he was within eye site and just pulling up. He communicates there was some delay in finding a government truck.

1050 – Manager arrives to help transport NCO 1 to HPMC. At this point, NCO 2 is now reporting symptoms of dizziness and joins NCO 1 in transport for evaluation at HPMC.

1107 – FWS 1 calls CSO and requests cones for establishing a barricade.

1108 – IHTs start taking bag samples. Bag 1 is taken beginning at AN farm SW gate mobbing towards wind flag and then up towards S door of MO497 then past the Job Box and bottle gas rack. Bag 2 is taken beginning in the parking lot to W of MO497 then back to the N of MO497 to the fence behind 241 AN 274 around the portable generators laundry trailer and back to the compressor building.

1112 – NCO 1 and NCO 2 arrive and check in at HPMC.

1120 – FWS 1 calls the shift office to report NCO 2 has reported symptoms and is being transported to HPMC for evaluation.

1141 – OE-in-Training arrives at AN-FARM to relieve FWS 1.
1200-1230 – NCO 3 reports symptoms of headache (during fact finding NCO 3 stated he later felt numbness in his tongue) to FWS and is taken to HPMC.

1306 - NCO 1 and NCO 2 are released from HPMC with no work restriction.

1309 – NCO 3 Taken to HPMC, reported symptoms of a headache.

1509 – NCO 3 is released from HPMC with no work restrictions.

1600 – CSM Exits AOP-015 for AN-Farm, Readings from IH are reported at or below background level.

2120 - MSA Matrix Teamster develops symptoms of shortness of breath, irritated throat, and chest constriction. Contacts management about symptoms.

2130 - MSA Matrix Teamster reports to Kadlec Regional Medical Center Emergency Room for further evaluation. Blood samples and x-ray were performed and he was observed to have a redness in his throat and released.

3/20/2015

0900 - MSA Matrix Teamster reports to HPMC for further evaluation. Contacts management about symptoms.
NCO 1 Path Description and Visual Aid:

After donning PPE inside of MO497 change trailer, NCO 1 exited on the south-side and proceeded to work truck. After placing equipment inside of the truck, noticed NCO 2 by their work truck located SW of the change trailer. NCO 1 walked south east to NCO 2 for post job and to await the FWS. As NCO 1 approached NCO 2, NCO 1 encountered a strong and unusual odor and immediately asked NCO 2 if they smelled it. NCO 2 responded that they smelled it, but that it didn’t seem to be as strong of a smell to them (NCO 2 had their back turned to the wind direction). NCO 1 quickly developed a headache and burning sensation in their nose, and proceeded to get away from the odor by retreating north bound where two IHTs were encountered heading south bound. NCO 1 mentioned to the IHT’s the strong unusual odor and symptoms and asked them to look into it. The IHTs pointed out that there was a fuel truck in the immediate area that was idling while also pumping diesel fuel inside of the farm.

After heading north to move away from the odor the NCO 1 went back into the change trailer through the north entrance and alerted the Field Work Supervisor of the smell and the symptoms that had developed.
NCO (2) Path Description and Visual Aid:

NCO 2 remained by the work truck positioned southwest of the MO497 change trailer and over the course of the next 3-5 minutes determined that the odor originally reported by NCO 1 was getting stronger. As a result, NCO2 decided to go into the change trailer to get out of the area of the odor.
NCO 3 Path Description and Visual Aid:

NCO 3 experienced the odor after parking a truck to help with the barricade boundaries north of the change trailer. While walking west to east just outside of the farm toward the change trailer NCO 3 reported to the FWS a strong unrecognizable taste, but reported no odor and did not smell anything (Individual was breathing through mouth not nose). NCO 3 does not believe the taste was attributed to air, diesel, antifreeze, or outhouses in the area. NCO 3 reports symptoms of headache and numbness in his tongue. The FWS insisted on NCO 3 going to HPMC evaluation. NCO 3 went to HPMC and was later released without restriction.
MSA Teamster Description and Visual Aid:

Employee reports that while staging the water tanker he noticed some odors in the vicinity of AN-Farm at the north gate. He mentioned this to his co-worker and continued working. He reports that he did not experience symptoms at that time and thought no more about it. Later in the evening he noticed a tightening/constriction in his chest and an irritated throat. He reported to Kadlec Medical Center where blood samples and x-ray were performed and he was observed to have a redness in his throat and released. The following morning he reported to HPMC where further observation confirmed his throat to be red. Following observation and evaluation the employee was cleared to return to work.
Compensatory Measures

1. Radio communication of AOP-015 entry at AN-Farm.
2. SOEN Entry into AOP-015 at AN-Farm.
3. FWS implemented safe evacuation of AN-Farm, per TF-AOP-015 procedure.
4. IHT responded and took sampling bags to lab for testing.

Discussion of Potential Causes

Based on a review of the following, the source of the odors encountered by the three NCOs and the MSA Teamster was not able to be definitively determined.

- Review of work planning in the AN Farm and immediate area would suggest the strongest potential causes to be an idling fuel truck that was completing a diesel transfer into the farm within approximately 15 yards of NCO 1 and NCO 2 and also upwind of NCO 3 and the MSA employee. Additional work going on in AN-Farm was a waste transfer that was taking place on the north side of the farm, but the work was conducted in the downwind position. However, IH samples showed nothing above background along the waste transfer line, and nothing above background just southwest of the MO497 change trailer.
- Two IH technicians in support of the job reported smelling diesel fuel and what they believed to be antifreeze burning as well.
- It was observed by the OE-in-training that the outhouses located outside of AN-Farm could have been maintained better and were producing an offensive odor.
- Input from affected workers was non-descriptive which makes identifying a particular source difficult. The following terms were used to describe the smell throughout the investigation process; but all four affected individuals could not pinpoint it to one specific description: “sulfur”, “rotten eggs”, “sour”, “ammonia-ish”, and “sweet”.
- Review of information and investigative IH monitoring and sampling of the area. All samples came back at or below background.
- Waste transfer was in the northern part of the farm down-wind from the reported smell.
- There were no waste disturbing activities being conducted upwind inside of AZ-Farm at the time the smell was encountered. The exhauster for AZ farm was in an upwind position from where the smell was encountered.

Preliminary Extent of Condition Review

The AOP-015 entry was specific to the AN Farm, with no fugitive emission sources detectible and the potential cause being unknown the preliminary extent of conditions is bound to the AN Farm.
Discussion of Barriers That Could Have Impacted the Cause

1. Limit odor producing work in the area such as idling vehicles in the area as well as diesel fuel transfers when possible.
2. It was observed that the outhouses were producing an obnoxious odor. Better upkeep and maintenance on the outhouses could help limit introducing un-wanted smells in the area.

Recommendations/Proposed Corrective Actions

1. Evaluate effectiveness of Pre-Job briefings to ensure FWS are adequately addressing potential odor emitting sources in the area, as well as co-located work that could create odors before starting work.
2. Clarify and establish the expectations for FWS with respect to transporting individuals to HPMC for evaluation in a timely manner.

Conditions Adverse to Quality

1. One individual was not utilizing a radio and as a result did not clear the area when the AOP-015 was initiated. FWS failed to identify the individual located in the control room who did not clear the area in a timely manner. This employee reported no unusual smell, or symptoms, and did not seek evaluation by HPMC.
2. FWS allowed staff to stage in a “belly” or lower level area that was in the upwind position.
3. There was a long duration between the time NCO 1 reported symptoms and when they were transported to HPMC for evaluation.

Attachments (As they apply):
1. Event Investigation Attendance Form
2. Shift Logbook
3. Odor Response Card
4. MSA Teamster Event Report
5. IH Investigation Report
6. Wind Data
Event Investigation Attendance Form

**Date:** 3/23/15

**Event Title:** AOP-05 ENTRY OUTSIDE OF AN FORM SW CORNER

**Event Number:** EIR-2015-013

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3:46 AM
0845: Called to report that ran into the driver's mirror of one of his rigs. Manager seen. Sent, notified due to.

0940: Entered ACP-015 for an odor smelled on the SW corner of an AN change trailer.

Smelled the odor but could not identify what it smelled like. Is getting a headache and feels that her throat and nose were becoming irritated. Boundary was set at gravel entrance at Buffalo and gravel between A7 and AN.

Is the FWS who called in the event and are being taken to HP. Wind is from the SE at 4 mph. HP and safety has been dispatched to take a sample and originally said no symptoms. When ???
1115 - Scene sent for 1040 entry with regard to... and being taken to HAMC. SOED was also sent for AOP-015 entry. Radio announcement was made. DOE FR Sr Mgr and were notified.

1141 - has arrived at SABAN Farm to relieve.

1157 - Late entry for 1150. Reports that she called 911 for a suspicious package at the mail shop in C wing of AT6. She called 911 at 1150 and cleared C wing. The package was from Germany with no employee name, no return address, and stuffing sticking out. 911 sent a K-9 unit that cleared the package. Package was software, not reportable. Called DOE FR Sr Mgr.

1236 - originally called at 1021 for the 1040 entry.

1241 - Initiated event investigation 2015-013 for AOP-015 Entry outside of AN Farm.

POL [REDACTED] &R-PER-2015-

SOEN Sent DOE FR notified.

1301 - From 1040 entry, is now experiencing a headache and is being taken to HAMC for evaluation. SOEN sent. Notified DOE FR and DOE FR notified.

1306 - reports that and were released to return to work with no restrictions. SOEN sent.
1504 - was released to return to work with no restrictions. SOEN sent. DOE FR notified.

1522 - IHT completed Flammable Gas Surveillance of AP Farm. All readings were 0% of the LFL.

- Next AP SR 3.7.1 Due Net 3/24/15.


1600 - AN Farm AOP-015 Sample results are at or below background levels. Exiting AOP-015. SOEN宋。Radio announced made. Notified DOE FR.

1704 - It has been identified that turnover dumped all TSR SRs that were put in. At turnover with each ADM. I verified source data and arrested turnover. At turnover with all doses reverted to

Yesterday:

1706 - Relieved as CSMBY.

1706 - Released to CSM.

1800 - Verified source data for SR 3.5.1. in AN, AP, and ACF storage.

SR 3.1.2 in AN/AP and SY Farm. AC still in AN and AP.

Factory and SR 3.7.1 in AP Farm. All SRs were updated in BOM and appear to have saved. Notified via retrieval of 1204 and 1830 entries.

2000 - Late entry 2000. 2202A notified CSM that evaporator campaign monitoring is required per their procedure.

Station 311 monitor in 224.14 central control room per 7E-31E-226.

2230-242-A initiated seal water flow.

2330-242-A secured seal water flow.
0001 - Forwarding Red Arrows from previous week:

LCD / Time Monitoring

- Entered LCD 3.1.6.1 on 1/10/15 @ 1100 hours for AY/AZ Farms In-Service VTP Q/S. LCD 3.1.6.2.1 due NLT 3/25/15 @ 0807 hours, LCD 3.1.6.2.3 due NLT 3/14/16. (POSO-001 pg. 225 @ 1545)

- Entered LCD 3.1.8 on 1/10/15 @ 1100 hours for AY/AZ Farms Standby VTP Q/S. LCD 3.1.8.2.2 due NLT 3/14/16. (POSO-001 pg. 225 @ 1550)

Stop Works

- Stop Work initiated regarding the use of respiratory protection equipment used within arc flash protection boundaries may be used, after the work scope has been evaluated and documented on the work record by the electrical Anti. Management has committed to have the respiratory protection tested and the results of the test documented and given to the Stop Work POC as per schedule and revise TFC-ESHQ-5.4-C.05 to include appropriate respiratory configuration. (POC: PER-2013-1673)(BOSO-013 pg. 75 @ 1510)

- Stop Work issued by and on the use of respiratory protection chemical cartridges when temperatures are less than 32F. (POC: WPPS-PER-2015-0277) (POSO-001 pg. 203 @ 0740)

Red Arrows

- Approval of work activities (e.g. cover block removal] that would impact the timely transfer of SN out of AY-102 to AW-105 is required from the Production Operations Manager or Deputy Production Operations Manager. (POSO-001 pg. 115 @ 1234)

- Hearing protection is required for the use of new SCBA racks with shoulder mounted alarms if more than two bottles are changed out per shift until Safety and Health Noise Dosimetry is evaluated. (POC: POSO-001 pg. 159 @ 1158)

- Do Not Perform Operational activities using Safety Instrumented Systems (SIS) components associated with the following until evaluated and approved for use by Chief Engineer:

  | 241-AN-A | 241-AN-B | 241-AZ-01A | 241-AZ-VF | 241-AZ-02A | 241-AZ-01A |
  | POSO-001 pg. 182 @ 1945 |

- Prior to performing electrical work on elevators (i.e., 2750-E), an initial investigative work package is required to verify power sources. (POC: POSO-001 pg. 234 @ 1735)

- The AC leakage tester is out of calibration and will not be available for the first quarter tool inspection PM’s. An equivalent test method shall be a visual inspection and continuity check of the portable power tools in accordance with 5-MISC-299 until the AC leakage tester is returned to service. (POC: POSO-001 pg. 230 @ 1109)

- AP-Farm SR 3.7.1 Flammable Gas monitoring has been revised to a frequency of 5 Days. This Red Arrow will be closed upon DSA/TSR revision and implementation. (POSO-002 pg. 16 @ 1358)

- No lifting of materials or equipment with a fork lift that is not on a pallet or does not have designated fork lift lifting points without safety's evaluation and concurrence until current practices/procedures have been evaluated (POC: POSO-002 pg. 16 @ 1602)
0419 - D-SNPT WORK

CHART FOR PAPERWORK

- ELDERS TO SELF TREAT WITH HAP, MAINTAIN AND SAFETY
- CHART TO BE TREATED ON-SITE, CONSIGNS, SIGN SHUTTLE

0426 - AFTER THE MANNER ESTABLISHMENT OF C-102 TO

AN-101 Retention Activity due to Planned Shutdown

ORIGINAL IS IN RETENTION, SIGN SHUTTLE

0436 - WASTE RETENTION OPERATIONS ARE COMPLETED AND NEAR

REMAIN HAS BEEN RETURNED TO AN-FARM. RADIO CALL

MADE AND SIGN SHUTTLE RECEIVED, WITH BS-3011, RS.4.4

0537 - WANTED THE REP RUN FINGER AND SAFETY HAS EXPIRED, OR

0606 - ENTERED

0638 - RECEIVED AS COMB BY [REDACTED]

0638 - ASSIGNED DUTIES AS COMB

0810 - REPORT ON NO. NOT INCIDENT REPORTED, WITH MANAGER

It was reported

that in the early morning, a worker noticed a zap

from her computer when plugging her phone charger into the USB port on her computer.

This entry should be noted as an electrical malfunction, not an injury.

0959 - C-Egress #4 back in service

1030 - Late entry for today

10:00 a.m. 3/19/15. USA Employee drove himself to Kaelke Thursday

evening to be seen in the emergency room due to feeling throat irritation from the AEP-015 event. He was located at the AN Farm north gate-filling a water tank. He was released to return to work. On Friday, he went to HPAC to report his concern. He was evaluated and released to return to work.

His manager was notified.

1217 - Extended expiration date to 9/24/15 for Standing Orders
1. Contact CSM, complete below bulleted information and map.
   - Date and time odor was noticed    3-19-15 10:15 AM
   - Your name and the work you were performing
   - Location of odors (mark area on map and wind direction)
   - Name of others in or near the affected area
   - Was an IHT present? Yes, but they said "it's just diesel" and left
   - Describe the odor □Sweet □Sour □Musty □Earthy □Metallic □Smoky □Rotten □Onion
     □Cleaning Solution □Ammonia □Other
     □Sh
   - Possible source
   - 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 □Nose & Sinus burning

2. Send this card to the Central Shift Office.
**TANK FARM**

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2. Employee Name: [Redacted]  
3. HIB No.: [Redacted]  
4. Job Title/Occupation: Teamster  
5. Experience on This Job/Equipment:  
   - [ ] < 3 months  
   - [ ] 3-12 months  
   - [ ] Over 12 months  

6. Witness Names: [Redacted]  
7. Date Reported: 3/19/2015  
8. Date of Event: 3/19/2015  
9. Location of Event: (Room/Branch/Area/Facility): AT tank farm at North gate  
10. Time of Event: 10:20  
11. Time Employee Began Work: 0:00  
12. Manager, Supervisor, or Foreman Name(s)/Phone Number: [Redacted]  
13. Division and Department: [Redacted]  
14. Cost Center: 2LR00  
15. Dept. I.D. (6 DIGITS): [Redacted]  
16. Company/Contractor Name: [Redacted]  
17. Other Contractor Name: [Redacted]  
18. ARRA Funded Worker: [ ] Yes [ ] No  

19. (Check all the Event Types that apply):  
   - [ ] Injury/Illness  
   - [ ] Spill  
   - [ ] Property Damage:  
      - Est. Cost: $  
      - Property ID No.: (if applicable)  
   - [ ] Potential Exposure  
   - [ ] Fire  
   - [ ] Near Miss  
   - [ ] Excavation  
   - [ ] Motor Vehicle Accident:  
      - Est. Cost: $  
      - Vehicle ID No.:  
   - [ ] Lock and Tag  
   - [ ] Radiation Contamination  
   - [ ] Operator of Equipment/Vehicle  
   - [ ] Electrical  
   - [ ] Other  
   - [ ] Vehicle License Plate No.:  

20. Activity in progress at time of accident (i.e., what employee’s work assignment was the day of injury):  
   Staging a Buffalo water tank trailer to the gate.  

21. Events - Describe the event sequentially, beginning with initiating events and ending with nature, extent of injury/damage (i.e., laceration left index finger), and treatment provided. (Attach a separate sheet for any additional information.)  
   Employee reported that while staging the water tanker he noticed some odors in the vicinity of 241 AT at the north gate. He mentioned this to his co-worker and continued working. He reports that he did not experience symptoms at that time and thought no more about it. Later in the evening he noticed a tightening/constriction in his chest and an irritated throat. He reported to Radic MC where blood samples and x-ray were performed and he was observed to have a redness in his throat and released. The following morning he reported to AMNY where further observation confirmed his throat to be red. Following observation and evaluation the employee was cleared to return to work.  

22. INJURY/IILLNESS ONLY  
   Was a work restriction placed on employee as a result of this incident? [ ] Yes [ ] No  
   Does the work restriction preclude the employee from work activities he/she regularly performs at least once a week? [ ] Yes [ ] No  
   Please explain:  
   Was employee wearing PPE? [ ] Yes [ ] No  
   What Type? GIA PPE  
   Was a JHA performed on this job? [ ] Yes [ ] No  
   If vehicle accident, was the employee wearing seat belt? [ ] Yes [ ] No  
   Did the injury/illness require additional medical treatment beyond that provided by AMNY? [ ] Yes [ ] No  
   If yes, name and address of medical provider (i.e., physician’s or chiropractor’s name) Radic Emergency Room  
   If hospitalized overnight, name and address of hospital:  

Official Use Only (when filled in)  

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<table>
<thead>
<tr>
<th>EVENT REPORT (continued)</th>
</tr>
</thead>
</table>

23. Accident Causes
A. Conditions (Causing and/or Contributing to Event)
AOA-015 event at Z41AN

B. Employee Actions (Contributing to Event)
Performing assigned work activities

C. Factors influencing A, or B.
None

D. Apparent Cause Code

24. Prevention - Actions Taken (Describe measures taken to prevent a similar event. See instructions for further guidance.)
None

25. Prevention - Actions Recommended (Describe corrective actions that are planned. See instructions for further guidance.)
None

PER # Planned Completion Date:

26. In detail explain what happened

27. Any recommendations on how to prevent this type of event?

28. Safety Professional
   - The corrective actions identified in this event report are appropriate to prevent recurrence.
   - Corrective actions are completed or tracked to closure in ESTARS.
   Comments:

29. I wish to file a worker’s compensation claim for this event at this time.
   Employees Initials

At this time, I do not wish to file a worker’s compensation claim for this event. I understand I can change my mind and complete an application for benefits for this event within the limitations below.
- Within one year and a day from the date of an injury
- Within two years of the medical diagnosis of an occupational illness

30. Signatures
   - Manager, Supervisor, Foreman
   - Witness(es), as shown on Page 1
   - Employee
   - Occupational Safety & Health
   - Injury & Illness Coordinator
   - WC Claim Number

Level 2 Manager:

OFFICIAL USE ONLY (when filled in) A-8003-580 (REV 7)
IH Investigation Report

TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT

Time/Date & Event location:    10:15 241AB/M0497 parking area 3/15

1. Event Summary (including number of workers involved and activity in progress):
   • Was an IHT Present? [ ] Yes [ ] No  IHT’s were present but not monitoring. See IHT statement
   • Was Respiratory Protection Being Worn by Affected Worker(s)? [ ] Yes [ ] No RPE was worn on work
     evolution, but had been doffed before experiencing odors outside of the farm.

2. Summary of Employee Reported Information (e.g., symptoms):
   • Attached Completed Odor Response Card  Initial odors reported were no-distinct and indescribable.

3. Identification of Source of the Concern: [ ] Yes [ ] No

4. Timeline of the Event:
   1025 IH Manager is notified of unusual odor with symptoms by CSO
   1029 IHT arrives at CSO, CSM:
      Surrounding streets being blocked to prevent further exposure
      Odors in parking lot of AN change trailer
      POI at event scene name and phone number provided
   1030 IH calls Shift IHT to begin odor investigation involvement
      Shift IHT is predisposed so IHT supervisor finds 2 additional IHTs from Prod Ops for immediate response
   1033 PO IHTs arrive at CSO
   1034 IHTs send PO IHTs to Mask Station to acquire SCBA
   1036 CSM declares AOP-015
   1039 Radio announcement of AOP-015
   1041 IHT requests retrieval IHT support to walk-down retrieval transfer path
   1042 IH1 contacts construction/retrieval tech supervisor to coordinate extra techs to walk retrieval path.
   1044 GOEN: "Entering AOP-015 for odors SW of AN Farm Change Trailer. Stay clear of the area, trucks are
     stationed at set boundary. Wind SE 4 mph. CSM"
   1045 IHT acquires instrumentation for PO IHTs
   1046 IHT contacts IHT lead for construction to coordinate construction IHTs for transfer path walk down
   1052 Shift IHTs start Miran and Lumex in 272AW IH lab
   1052 IHT goes to mask station to secure SCBA for construction IHT’s
   1053 IH2 and PO IHTs leave 272AW to event scene
   1059 PO IHTs and IH2 arrive at event scene and are briefed by POC
      Flag in SW corner of AN farm indicated wind completely stagnant
      POI HTs don SCBA and begin monitoring with ppb RA, ITX, and Lumex
   1102 Construction IHTs receive SCBA from mask station head to 272AW to ACE in
   1104 IH1 calls shift office to request IHT to ACE in responding construction IHT’s
   1108 PO IHTs begin filling testar bags:
      Bag 1 beginning at AN farm SW gate moving towards wind flag and then up towards S door of MO497 then
      past the Job Box and bottle gas rack.
      Bag 2 in across parking lot to W of MO497 then back to N of MO497 to the fence behind 241AN274
      around the portable generators laundry trailer and back to the compressor building
   1116 IH manager notifies H&S Manager and requests that Case Manager be informed of 3 NCOs being
     transported to HPML
   1123 IH2 arrives at 272AW ACE’s Station to ACE responding construction IHT’s
   1126 IH2 returns to CSO to brief CSN on PO IHT monitoring results:
      VOC, NH3 and Hg readings at event scene boundary, reported odor location, and surrounding area were
      consistent with background levels.
   1133 Upon IHT request CSM requests HPT support for construction His performing transfer line walk-down
   1144 HPT arrives at mask station. Mask station closed
   1145 CSM requests operator support to issue SCBA to HPT
   1148 IH2 acquires key to mask station to support HPT acquiring SCBA.
   1158 IHT updates HPT at Mask Station with status and location of IH1 and Retrieval IHTs.
   1200 HPT shows up to event scene to head into farm and walk down the transfer line

Page 1 of 3

A-6005-744 (REV 3)
1202 PO IHT's report to CSM at C&O that bags had been delivered to IHT lab at 2704HV
1221 IHT's and HPT dress out and start the walk-down of the transfer line. Start in AN farm.
1244 IHT notifies IH that transfer line walk-down is complete and that no readings were above background.
1246 IH2 notifies CSM that transfer line walk-down complete and DRI results less than background
1253 IH Manager notified by Case Manager that 1 NCO was released without restrictions and the 2nd NCO was currently being processed
1304 3rd NCO was transported to HPMC
1311 SOEN: 2 NCOs released without restriction
1315 Odor response card received by IH from Project IH
1350 Preliminary report from program chemist: Bags contained chemical vapors at levels consistent with background, official report to follow
1521 Receive final report of bag samples including GCMS overlays
1553 Received IHT statement from IHT's on the job

5. Summary of IH Monitoring and Sampling Data:
   a. Monitoring: 15-01911 AOP-015 Response ANC Farm Transfer Line
      15-01894 03/10/2015 AN Farm 3-19-2015 AOP15

<table>
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<tr>
<th>AGENT</th>
<th>@ODOR</th>
<th>@SOURCE</th>
<th>EXPOSURE LIMIT</th>
<th>REPORTING LIMIT</th>
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<tbody>
<tr>
<td>Ammonia</td>
<td>0 ppm</td>
<td>N/A ppm</td>
<td>25 ppm OEL/35 ppm STEL</td>
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<tr>
<td>Total VOCs</td>
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<td>N/A ppm</td>
<td>2 ppm AL</td>
<td>&gt;0 ppm</td>
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<td>Mercury</td>
<td>2.4 x 10^4 mg/m³</td>
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<td>0.025 mg/m³ OEL</td>
<td>0.000016 mg/m³</td>
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<td>Nitrous Oxide</td>
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<tr>
<td>Silicone</td>
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<td>N/A ppm</td>
<td>N/A ppm</td>
<td>&gt;0 ppm</td>
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</table>

   b. Bag Sample Results:
      Report from program chemist:
      Both samples have ~50 ppb VOC's, with no detected NH3 or N2O.
      Elemental Mercury was background at 24 ng/m³
      Both samples are difficult to tell from a blank bag sample.
      No description of the odor is available at this time for inclusion with this evaluation.
      No detectable compounds of Tank Farm Origin were identified at concentration <5 ppb.
      There was a small peak (0.4 ppb) assigned to a silicone material. Silicone sprays are ubiquitous throughout the tank farms.

   c. Sampling:
      - Source [ ] Yes [x] No
      - Area [ ] Yes [x] No
      - Personal [ ] Yes [x] No
6. Weather Conditions at Time of Event: (~1010) station 6
   - Wind Direction & Speed SSE @ 4 mph
   - Barometric Pressure (steady/rising/falling) 29.42 falling slowly
   - Temperature (°F) 48°F
   - Humidity 71%

7. Recommendations/Conclusions:
   N/A

8. Other:

   Attachments:
   - Odor Response Card
   - Programs Chemist Report
   - IHF Statement

9. IH Monitoring/ Sample Survey Reports:

   IH (Print)  
   (Sign)  

   S&H Program (Print)  
   (Sign)  

   Date  

   3/24/2015  
   Date  

   3/24/2015  

Page 3 of 3
Ladies and Gentlemen,

Two bag samples were brought to H104/2704HV for Hapsite Screening.

Bag sample 1
"Bag was collected starting near the SW AN Farm Gate, moving under the wind flag, near the S door of MO497, around the Job Box to the bottle gas rack"

Bag sample 2
"In parking lot of MO497 moving to the W edge of immediate parking area, E to AN Farm fence behind 241/AN274, around the portable generators in middle of parking area, NW to the laundry trailer and NE to the compressor building"

Both samples have "50 ppb VOC's, with no detected NH3 or N2O. Elemental Mercury was background at 24 ng/m^3"

An annotated overlay chromatogram is attached.
Both samples are difficult to tell from a blank bag sample.
No description of the odor is available at this time for inclusion with this evaluation.

No detectable compounds of Tank Farm Origin were identified at concentration << 5 ppb.
There was a small peak (0.4 ppb) assigned to a silicone material. Silicone sprays are ubiquitous throughout the tank farms.
If you should require more information, please give me a call.

Industrial Hygiene Programs
WASHING, PROTECTION, SERVICES
Contractor to the U.S. Dept of Energy
Office: 509-376-0162
Cell: 509-280-7761
Only Unique Material(s) Identified

Red Trace Blank Sample Bag Components

Blue Trace Bag 1

Black Trace Bag 2

were identified at greater than 5 ppb.

No compounds of Tank Farm Origin
## Wind Data

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<th>Maximum Temperature</th>
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