

Washington River Protection Solutions
EVENT SUMMARY

NOTE: This form provides timely notification to management and documents preliminary information of an event that may require a more formal investigation. Details may change upon further examination and analysis. The following is a current status of available information:

1. **Project:** Maintenance 2. **Report Date:** 06/17/2024

3. **Investigation Title:** C-67 Odor Response 200E Area

4. **Investigation Report Number:** EIR-2024-040

5. **Responsible Manager:** [REDACTED]

6. **Event Investigator:** [REDACTED]

7. **Area / Building / Location:** 200E

8. **Date and Approximate Time of Event:** Date: 06/10/2024 Time (military): 0810 hours

9. **Associated Action Request (AR) Number:** WRPS-AR-2024-1861

10. **Associated Occurrence Report Number (if applicable):** N/A

11. **Event Investigation Meeting Held:** Yes [] or No [X] Date: N/A Time (military): N/A

12. Activity in Progress: (What activity was under way, include procedures and work order numbers, as applicable)

One worker was walking between MO268 and MO267 in the 200 East Area (200E). Additionally, 8 other workers in the adjacent area were walking between MO533 and MO818. Both activities are considered Level 4 activities [Level 4 - Verbal directions, no work control document is generated for the work activity.], therefore, procedures and/or work order numbers are not applicable.

13. Personnel Involved: (Job positions, number of personnel, identify any support organizations or subcontractors)

6 - WRPS Electricians
1 - WRPS Maintenance Supervisor
1 - WRPS Industrial Hygiene Technician (IHT)
1 - WRPS Radiological Control Technician (RCT)

14. What Happened: (Provide a short discussion of what happened)

On 06/10/2024 at approximately 0810 hours, an IHT walking on the concrete walkway between MO268 and MO267 reported a stronger than normal sewer type/possible propane odor. There was no sampling equipment in the area, however the IHT was wearing a personal ammonia monitor (PAM) which did not record elevated ammonia readings.

At approximately 0848 hours, an RCT reported a stronger than normal propane odor near MO818. The RCT described the odor as faint and not strong.

At approximately 0934 hours, an additional seven workers walking between MO818 and MO533 reported a stronger than normal odor. Six of the nine workers completed Odor/Vapor Response Cards describing the odor as septic/sewer, propane, and rotten.

All nine workers reported no symptoms and declined precautionary medical evaluation.

15. Where Did It Happen: (Description of work area and working conditions. Include information on weather conditions, PPE, Postings, etc.)

Odors were reported in the outdoor area between MO268 and MO267, near MO818, and outside of MO577 (See Attachment 1).

At the time the odors were reported, workers were wearing standard street clothing (which is considered Level D PPE) and were in a work location that is not posted as a radiologically controlled area. Workers were not in areas requiring the use of respiratory protection or a personal ammonia monitor (PAM) (e.g., ToxiRAE or VentisPro) although the initial reporting worker was wearing a PAM.

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The Hanford Site Meteorological Station #6 and Data Fusion and Advisory System (DFAS) application, powered by SmartSite™, were utilized for outdoor weather details at the time odors were reported. The Hanford Site Meteorological Station #6 and DFAS dashboard indicated the following weather conditions at 0810 hours on 06/10/2024:

- Wind Speed: 8.1 mph (15 minute average)
- Wind Direction: 315° (from West-Northwest)
- Mixing Height: 1000 feet above grade
- Stability Class: C (slightly unstable conditions)
- Barometric Pressure: 29.28 inches Hg and rising.

16. Impact to Facility: *(Caused by the event or a description of known consequences)*

No impacts to facility safety status, operational capabilities, or facility reliability occurred.

Workers were instructed to leave the area, and access to the area was restricted from 0818 hours until 0934 hours when normal access was restored.

17. Immediate Actions Taken: *(List immediate actions taken to stabilize the scene or respond to the event)*

- Central Shift Manager (CSM) offered affected workers precautionary medical evaluation.
- CSM initiated TFC-OPS-OPER-C-67 response actions for reported stronger than normal odors.
- Access restricted to the area between MO268 and MO533 south to 274AW.
- Shift Office Event Notification (SOEN) sent. Radio announcement complete.
- CSM made required TFC-OPS-OPER-C-67 notifications.
- Production Operations shift IHT initiated TFC-OPS-OPER-C-67 response actions and monitoring per Industrial Hygiene Sample Plan (IHSP) POE-MULTI-TFCOPSOPER67.
- Event Investigation EIR-2024-040, "C-67 Odor Response in 200E Area." was initiated.

18. Compensatory Actions Taken:

None.

19. Remedial Actions Taken:

None.

20. Key Elements of the Investigation: *(Key investigation points)*

To summarize the conclusion of Industrial Hygiene Investigation Report (IHIR)-00097, "TFC-OPS-OPER-C-67 Response outside of MO266, MO267, MO268, MO533, and 274AW," investigation and direct reading instrument (DRI) monitoring could not readily identify the source of the reported odors. However, it was determined that the most likely odor source is a portable toilet located on the West end of MO2240.

Direct reading instrument (DRI) monitoring performed during TFC-OPS-OPER-C-67 response actions did not indicate further action was necessary with regard to a worker safety and health occupational exposure limit standpoint. As a result, the area was released from restricted access.

The following considerations support the IHIR-00097 conclusions:

- 1) The portable toilet located on the West end of MO2240 had a posted "Record of Sanitization" indicating service had been performed on 06/10/2024. Based upon

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typical hours of portable toilet contractor operation, it is likely that portable toilet service occurred between 0600 hours on 06/10/2024 and 0858 hours on 06/10/2024, perhaps during the time of the initiating event (0810 hours on 06/10/2024). [Anecdotal reports indicate that portable toilet service often results in the emission of odors matching the provided odor descriptors.]

- 2) The DFAS dashboard provides an Exhauster Potential Exposure Zone (PEZ) Model of exhaust plumes at the reported time of the event based on wind speed, wind direction, mixing height, and atmospheric stability class (Refer to Attachment 1). While the affected area appeared to be within the PEZ of the AW exhauster emission plume, the approximate distance the affected area is located from the AW exhauster is approximately 300 feet. A review of the DFAS application weather details dashboard and VMDS exhauster ammonia readings at the approximate time of the event determined the cause of the odor was unlikely to be from Tank Farm Exhauster emissions based on the mixing height being 1000 feet above grade and atmospheric stability class presenting slightly unstable conditions.
- 3) While the odor description is inconsistent with Tank Waste Chemical Vapors, due to the proximity to the Tank Farms, monitoring for Tank Waste Chemical Vapors was performed. Ammonia is used as a sentinel Tank Waste Chemical Vapor for chemicals of potential concern (COPC). Because nitric acid was common to nearly all processes that generated tank waste, and the most common result of those processes was reduction of nitrate ion to ammonia during the dissolution (oxidation) of irradiated fuel, ammonia is the most common COPC and is found in all tanks. Therefore, ammonia is utilized as a sentinel indicator for Tank Waste Chemical Vapor COPCs and DRIs equipped with an ammonia sensor are utilized at a minimum when monitoring for tank waste chemical vapors/COPCs. Monitoring for Tank Waste Volatile Organic Compounds (VOCs) utilizing DRIs equipped with a 10.6 eV photoionization detectors (PID) detects multiple VOC COPCs simultaneously and provides further indication for tank waste chemical vapors/COPCs. Additional COPC VOC monitoring was conducted concurrently with ammonia monitoring during the event response.

The initial reporting worker was wearing a PAM which did not record elevated ammonia readings. In addition, investigative TFC-OPS-OPER-C-67 DRI area monitoring indicated less than detectable concentrations for ammonia (< 1 ppm) and VOCs (<0.010 ppm), which are below anticipated background levels. Therefore, providing further indication the cause of the reported odors was unlikely to be resultant of Tank Farm exhauster emissions.

- 4) Memo WRPS-1904672.1, TANK FARM EXHAUST ~ CK CONCENTRATION ALARM/ ACTION LEVELS FOR AMMONIA establishes stack alarm/action set points for Tank Farm Exhausters based on the predicted ammonia concentration at unspecified ground receptors utilizing the Quantitative Risk Assessment (QRA) model. The exhauster high level alarm was established at concentrations where the predicted ground receptor ammonia concentration of 2.5 ppm (or 10% of the established Occupational Exposure Limit for ammonia) could be observed.

According to the Vapor Monitoring and Detection System (VMDS), the ammonia concentrations observed at the time of event occurrence at the following exhausters:

- POR518: 0 ppm
- POR519: 0 ppm
- 241-AW: 8.605 ppm
- POR126: 0 ppm
- POR127: 0 ppm
- 702AZ: 5.834 ppm

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The 241-AP Primary Exhauster is not currently connected to the VMDS software, and the 241-AN Primary Exhauster VMDS readings were unavailable at the time of the event occurrence. When stack monitoring via the VMDS is unavailable, and ventilation is operating, IH will conduct alternate stack readings once per calendar day in accordance with TF-OPS-IHT-037. The exhauster high level alarm conservatively established for A Complex (excluding A farm) is 460 ppm. The highest ammonia concentrations observed between 06/03/2024 and 06/10/2024 was 14 ppm at the AP exhauster and 24 ppm at the AN exhauster.

The exhauster high level alarm conservatively established for A Complex (excluding A farm) is 460 ppm. Conservatively utilizing the higher ammonia concentration observed in the AN exhauster, a predicted ground receptor ammonia concentration of 0.13 ppm (or 0.52% of the established Occupational Exposure Limit for ammonia) would be expected if AY/AZ, AN, AW, AP or AX tank farm exhauster emissions were present.

The exhauster high level alarm conservatively established for A farm is 160 ppm. According to the VMDS, the ammonia concentration observed at the time of event occurrence was 0 ppm at the POR-518 exhauster and 0 ppm at the POR-519 exhauster.

The predicted ammonia concentrations at unspecified ground receptors provides further justification the reported odor was unlikely to be resultant of Tank Farms exhauster emissions.

- 5) Based upon the odor descriptors provided by the affected workers, the odor sources were postulated to be originated from the following:
- Propane: Based on the odor descriptor "propane-like", monitoring for Hydrogen Sulfide (H₂S), Oxygen, and Lower Flammability Limit (LFL) was performed. The American Industrial Hygiene Association (AIHA) Odor Threshold for Chemicals with Established Health Standards, 2nd Edition, lists butane and propane as being associated with the odor character "Natural Gas". Propane is a colorless, odorless gas. The typical odor associated with propane is due to a foul-smelling odorant often added to propane for leak detection purposes. Typical propane odorant is sulfur-based, including mercaptan. The chemicals butyl mercaptan and dodecyl mercaptan are associated with the odor characteristic "skunk" and methyl mercaptan is associated with the odor characteristic of "rotten cabbage" and "garlic". Hydrogen sulfide monitoring provides indication of the sulfur-based propane odorant. Additional monitoring for Oxygen and LFL also aids in detection of leaks in propane bottle-gas piping and systems associated with grills.
 - Sewer or Septic gases: Based on the odor descriptor "sewer", monitoring for hydrogen sulfide and ammonia vapors was performed. The affected area has a long history of odors that have been found to be associated with sources other than tank waste chemical vapors, such as septic related systems or equipment gaseous emissions. Additional sources of septic/sewer chemical vapors include the service vehicles that routinely service the septic storage tanks. The major roadways in the 200 East, 200 West, and 600 Areas are often travelled by septic service vehicles in route to the numerous local septic storage tanks and portable toilets.
 - Biodegradation of biota: Areas identified where accumulation of biota available for biodegradation was present were not found to produce an odor matching the provided descriptors. The main constituents to monitor for when the suspected source of an odor event is environmental chemical vapors are ammonia and hydrogen sulfide due to being biodegradation byproducts that generate malodors. Therefore, when monitoring for environmental chemical vapors, DRI equipped with an

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ammonia sensor and a hydrogen sulfide sensor should be utilized at a minimum.

Hydrogen sulfide gas has an offensive distinct rotten egg odor that is perceived by the human olfactory sense at very low concentrations, with the lower range of the odor threshold value being 0.00004 ppm. While the resolution of the DRI is insufficient to detect concentrations at the lower range of the odor threshold value, they are sufficient to detect hydrogen sulfide at concentrations below their established action level and OEL. Investigative TFC-OPS-OPER-C-67 DRI monitoring indicated less than detectable concentrations of hydrogen sulfide (<0.1 ppm), ammonia (< 1 ppm), and LFL (0.0%). In addition, normal oxygen levels were observed (20.9%). Therefore, investigative TFC-OPS-OPER-C-67 DRI area monitoring indicated concentrations less than established action levels and OELs.

The TFC-OPS-OPER-C-67 response actions also confirmed all propane bottles in the affected area and upwind of the affected area were confirmed to have valves in the closed position, and leaks in the associated hoses/piping systems and connections were not detected.

21. Positive Aspects Identified:

Personnel responded promptly to the event implementing the applicable TFC-OPS-OPER-C-67 procedure and response actions.

22. Key Take Aways / Learning Opportunities:

None.

23. Event Investigation:

- ☐ An Event Investigation will be completed per [TFC-OPS-OPER-C-14](#).
- ☐ This event will be managed by another process, i.e., Operability Evaluation, Engineering Technical Evaluation, etc.
- ☒ This event does not require continuation of the Event Investigation process.

Responsible Manager Approval:

Name (First, Middle Initial, Last)

Digitally signed by _____
Date: 2024.06.17 14:48:04 -07'00'
Signature / Date

CAS Manager Approval:

Name (First, Middle Initial, Last)

Digitally signed by _____
Date: 2024.06.17 15:38:25 -07'00'
Signature / Date

Attachment 1 - DFAS Exhauster Potential Exposure Zones, Reported Odor Locations, and Potential Odor Sources



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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR)

Event Title: TFC-OPS-OPER-C-67 Response outside of MO266, MO267, MO268, MO533, and 274AW.		IHIR Number: IHIR-00097
		IHEI Number: N/A

Date: 06/10/2024	Time: 0810	Location: Outside of area in and around MO266, MO267, MO268, MO533, and 274AW.
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Event Summary and Timeline:

Event Summary:

At approximately 0810 on Monday the 10th of June 2024 one worker encountered stronger than normal "septic/sewer, propane-like" odors in-between MO533, MO266, MO267, MO268 and 274AW.

Field Response Timeline:

0816 POE IH-1 and POE IH-2 arrive at Central Shift Office (CSO)

0817 POE IH-1 and POE IH-2 discuss monitoring needs for "propane" odors

- Referenced TOC-IH-58956, "Monitoring Strategy for Response to Odors"
- Sensors needed for response actions:
 - Ammonia (NH3)
 - Volatile Organic Compounds (VOC)- 10.6 eV photoionization detector (PID)
 - Hydrogen Sulfide (H2S)

0818 Affected Worker arrives at CSO and populates Odor/Vapor Response Card, declines precautionary medical evaluation.

0821 POE IH-1 checks Data Fusion & Advisory System (DFAS), powered Smart Site™, for current weather details:

- Wind Speed: 8.1 mph
- Wind Direction: 300° (out of West-Northwest)
- Mixing Height: 1000 feet above grade
 - POE IHTs relay the current mixing height to CSM
- Stability Class: C (slightly unstable conditions)

0821 POE IHT and POE IHT Supervisor arrive at CSO

0822 POE IH-1 checks Vapor Monitoring Detection System (VMDS) exhaust ammonia readings (@ 0810):

- POR518 (241-A): 0.000 ppm
- POR519 (241-A): 0.000 ppm
- 241-AN: N/A
- 241-AW: 8.605 ppm
- POR126 (241-AX): 0.000 ppm
- POR127 (241-AX): 0.000 ppm
- 702AZ (241-AY/AZ): 5.834 ppm
- 241-AP: N/A

0823 POE IH-1 directs POE IHT to prepare H2S DRI instrumentation.

0834 POE IHT and POE IHT Supervisor depart CSO to acquire H2S DRI Instrumentation.

0834 SOEN: "Responding to reports of stronger than normal odors per TFC-OPS-OPER-C-67 for sewer/propane odors between MO268, MO533, and 274AW. Access to the area between MO268, MO533, and the north side of 274AW is restricted. CSM"

0836 POE IH-3 arrives at CSO

0840 POE IH-3 contacts Hanford Meteorological Station for weather conditions at station 6 at 0810

06/10/2024:

- Temperature: 72°F
- Relative Humidity: 39%
- Wind Direction: From WNW
- Wind Speed: 10 mph
- Barometric Pressure: 29.28 in HG and rising

0843 POE IH-1 requests IHIR number.

0844 TFC-OPS-OPER-C-67 Attachment A "Response Plan" Page 1 approved by POE IH-1 and Central Shift Manager (CSM).

0847 POE IHT-1, POE IHT-2 and POE IHT Supervisor arrive at CSO with requested DRI equipment.

0847 CSM notified that similar odors were detected near AW-Farm Change Trailer (MO-818). CSM requests Affected Worker-2 report to CSO to populate O/VRC.

0848 POE IH-1 provides POE IHT-1, POE IHT-2, and POE IHT Supervisor briefing of response actions:

- Monitor per IHSP-POE-MULTI-TFCOPSOPERC67:
 - DRI equipped with the following sensors:
 - Ammonia
 - VOC 10.6 eV PID
 - Hydrogen Sulfide
- Respiratory Protection Equipment not required, Voluntary Use

NOTE: Field Response Timeline continued on next page.

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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Event Summary and Timeline:

Field Response Timeline continued:

0849 POE IH-1, POE IHT Supervisor, POE IHTs depart CSO to perform field response actions.
0851 Affected Worker-2 arrives at CSO and populates O/VRC, declines precautionary medical evaluation.
0851 CSM notified that similar odors were encountered by 3 workers near MO577. All 3 report no symptoms and decline precautionary medical evaluation. CSM requests O/VRCs be populated and sent to CSO.
0853 CSM verifies that Affected Worker-2 had no symptoms and declined precautionary medical evaluation.
0909 POE IH-1 and POE IHT Supervisor return to CSO. POE IHT-1 and POE IHT-2 in route to perform Post-Use-Function Test on DRI equipment.
0915 PID DRI equipment passes Post-Use-Function Test.
0919 CSM contacts Issues Management(IM) to request IM Point-of-Contact (POC).
0923 H2S DRI passes Post-Use-Function Test.
0928 TFC-OPS-OPER-C-67 Attachment A "Response Plan" Page 2 signed by CSM and POE IH-1.
0930 CSM receives O/VRCs from Affected Workers near MO533. 6 O/VRCs submitted. one (1) additional O/VRC pending after Affected Worker returns from training.
0934 IM POC contacts CSM to receive EIR number assignment.
0939 SOEN: "Completed TFC-OPS-OPER-C-67 Odor Response. Normal access is restored. CSM"

Field Response Timeline Acronyms:

CSM	Central Shift Manager
CSO	Central Shift Office
DFAS	Data Fusion & Advisory System
DOE	Department of Energy
DRI	direct reading instrument
ESH&Q	Environmental, Safety, Health, & Quality
eV	electron-volts
HAMTC	Hanford Atomic Metal Trades Council
IH	Industrial Hygienist
IHT	Industrial Hygiene Technician
IM	Issues Management Organization
mph	miles per hour
OVR	Odor/Vapor Response Card
PID	photoionization detector
POE	Production Operations-East
ppm	parts per million
S&H	Safety & Health
SOEN	Shift Office Event Notification
VMDS	Vapor Monitoring Detection System
VOC	Volatile Organic Compound

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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Sampling/Monitoring Results:

Direct Reading Instrument Monitoring Results:

- Monitoring performed in and around Affected Area
 - Comments by Responding IHT- "On 06/10/2024 a field response survey was conducted in accordance with TFC-OPS-OPER-C-67 for assessment of protective actions and to possibly locate sources of 'propane/sewer-like' odors as per direction of attending Industrial Hygienist and Industrial Hygiene Technician Supervisor."

- DRI readings acquired during field response:

Location	NH ₃	VOCs	H ₂ S	O ₂	LFL
Drainage Culvert South of MO-266	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
Propane Grill Near MO-267	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
Propane Grill Near MO-268	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
MO-2350 Sewer Line Access Cover	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
MO-144 Sewer Line Access Cover	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
Portable Toilet West of MO-2240	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
Propane Grill Near MO-150	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
241A201 tank access port	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
Propane Grills Near MO-577	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
MO-157 Sewer Line Access Cover	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
Inside of skirting around MO-157	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
MO-156 Sewer Line Access Cover	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%
278AW Crawlspace Vent	< 1 ppm	< 0.010 ppm	< 0.010 ppm	20.9%	0.0%

Sampling/Monitoring Results Acronyms:

NH ₃	Ammonia
VOCs	Volatile Organic Compounds
H ₂ S	Hydrogen Sulfide
O ₂	Oxygen
LFL	Lower Flammability Limit
ppm	Parts Per Million

SWIHD References:

Event Response Site Wide Industrial Hygiene Database DRI Survey:

- # 23-07142 "TFC-OPS-OPER-C-67 at MO266 MO267 274AW area"

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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Additional Information:

Respiratory Protection Equipment was not prescribed for the Initiating Event. Accordingly, at the time of the Initiating Event, the Affected Workers were not wearing Respiratory Protection Equipment. Respiratory Protection Equipment was not required, nor worn, for Response Actions.

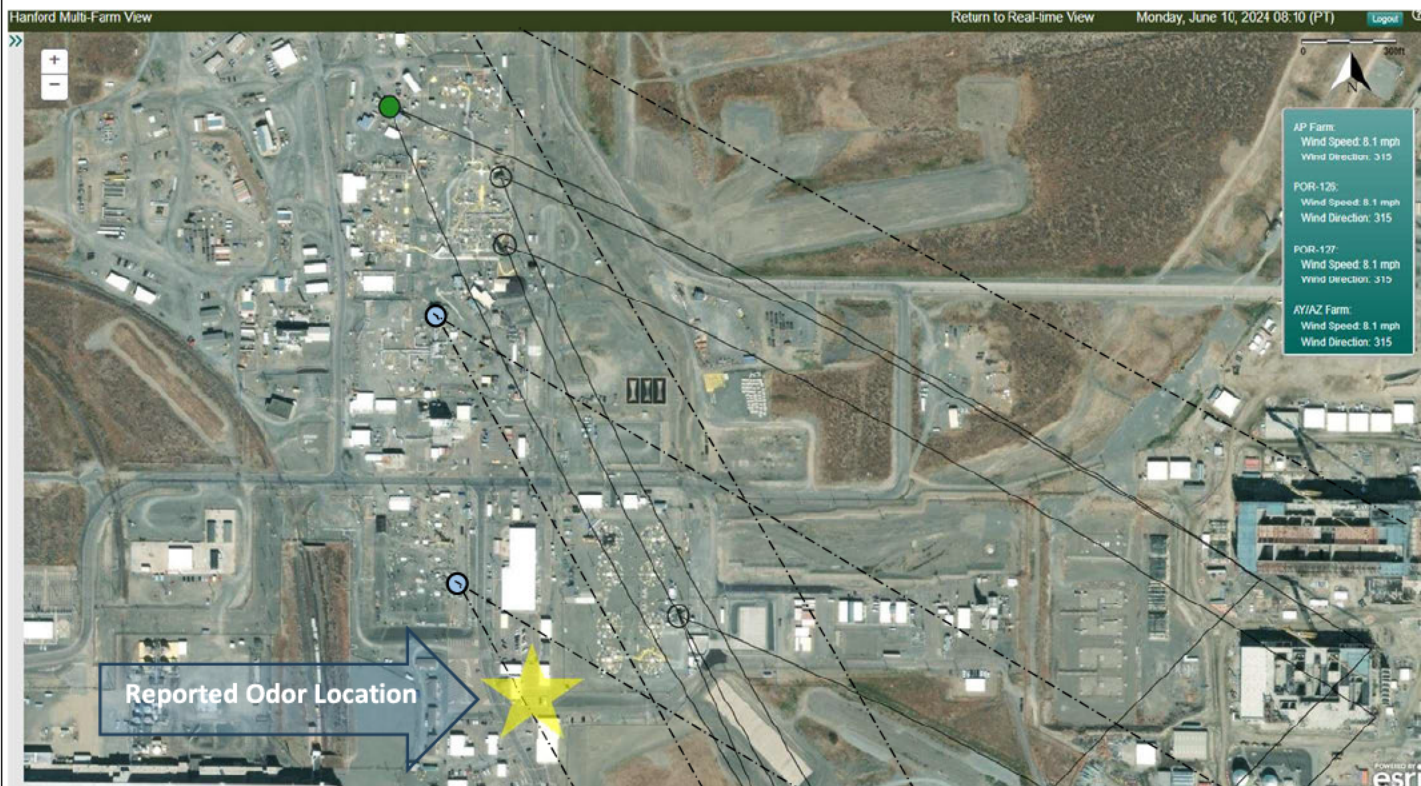
While the odor description is inconsistent with Tank Waste Chemical Vapors, due to the proximity to the Tank Farms, monitoring for Tank Waste Chemical Vapors was performed:

Ammonia is used as a sentinel Tank Waste Chemical Vapor for chemicals of potential concern (COPC). Each Hanford production process had different feedstock chemicals and generated different waste streams. Hanford production processes were also separated temporally, with different processes being performed at different times in the history of Hanford production (1943 – 1986). Some chemicals are common to all processes/waste streams (e.g., nitric acid), while others are specific to particular processes/waste streams. Some in-tank waste treatment processes (e.g., neutralization and de-nitrification) used the same chemical feed stocks (e.g., sodium hydroxide solution) in most, if not all Tank Farms. The chemistry and radiochemistry of these compounds result in waste stream similarities across all tank farms. Because nitric acid was common to nearly all processes that generated tank waste, and the most common result of those processes was reduction of nitrate ion to ammonia during the dissolution (oxidation) of irradiated fuel, ammonia is the most common COPC and is found in all tanks. It is logical to choose ammonia for the sentinel as it is a byproduct of all production processes and found in all tanks.

Therefore, when monitoring for Tank Waste Chemical Vapors/COPCs, DRI equipped with an ammonia sensor is utilized at a minimum. Additional COPC monitoring was conducted concurrently with ammonia during the event response. The COPC with DRI monitoring capabilities readily available at the Tank Farms includes VOCs. As individual agents are not identified when monitoring for VOCs, an Action Limit was developed as an indicator of Tank Farm emissions (mixture of organic vapors) that could impact workers' health and conservatively set at 2 ppm. When monitoring for Tank Waste VOC vapors, DRI equipped with a 10.6 eV PID is utilized to detect multiple VOC COPCs simultaneously.

NOTE: The 2 ppm Action Limit is not applicable to chemical use.

Review of the Data Fusion & Advisory System (DFAS) application, powered by SmartSite™, dashboard for the approximate time of the Event:



NOTE: 241-AW Farm, 241-AN Farm and POR-518/519 Exhausters are not connected to the DFAS; however, an approximate exhauster plume was added based on other modeled plumes.

NOTE: Additional Information continued on next page.

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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Additional Information:

Additional Information continued:

06/10/2024 @ 0810 (approximate time of initiating event):

- Wind Speed: 8.1 mph (15 minute average)
- Wind Direction: 315° (out of Northwest)
- Mixing Height: 1000 feet above grade
- Stability Class: C (slightly unstable conditions)

Review of the DFAS application, powered by SmartSite™, dashboard for current conditions during response actions, per TFC-OPS-OPER-C-67 4.2.8:

06/10/2024 @ 0821 (current weather data for Response actions):

- Wind Speed: 8.1 mph (15 minute average)
- Wind Direction: 300° (out of West-Northwest)
- Mixing Height: 1000 feet above grade
- Stability Class: C (slightly unstable conditions)

Meteorological information from the Hanford Weather Station for Station #6 on 06/10/2024 @ 0810:

- Temperature: 72°F
- Relative Humidity: 39%
- Wind Direction: From WNW
- Wind Speed: 10 mph
- Barometric Pressure: 29.28 in HG and rising

Vapor Monitoring Detection System (VMDS) exhauster ammonia readings on 06/10/2024 @ 0810:

- POR518 (241-A): 0.000 ppm
- POR519 (241-A): 0.000 ppm
- 241-AN: N/A
- 241-AW: 8.605 ppm
- POR126 (241-AX): 0.000 ppm
- POR127 (241-AX): 0.000 ppm
- 702AZ (241-AY/AZ): 5.834 ppm
- 241-AP: N/A

Memo WRPS-1904672.1, TANK FARM EXHAUST ~ CK CONCENTRATION ALARM/ ACTION LEVELS FOR AMMONIA establishes stack alarm/action set points for Tank Farm Exhausters. The alarm/action set points are based on a linear extrapolation of the Quantitative Risk Assessment (QRA) model prediction; conservatively established at the ammonia stack concentration that could result in various ammonia concentrations at an unspecified ground receptor:

- High Alarm → ammonia concentration of 2.5 ppm at an unspecified ground receptor
- High High Alarm → ammonia concentration of 5 ppm at an unspecified ground receptor

Memo WRPS-1904672.1, TANK FARM EXHAUST ~ CK CONCENTRATION ALARM/ ACTION LEVELS FOR AMMONIA:

Tank Farm	Exhauster	High Alarm	High High Alarm
241-A	POR518/POR519	160 ppm	320 ppm
241-AN	Primary		
241-AP	Primary		
241-AW	Primary	460 ppm	920 ppm
241-AX	POR126/POR127		
241-AY/AZ	702AZ		
241-SY	Primary	310 ppm	620 ppm

NOTE: Additional Information continued on next page.

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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Additional Information:

Additional Information continued:

Vapor Monitoring Detection System (VMDS) 06/03/2024 @ 0810 to 06/10/2024 @ 0810:

Tank Farm	Exhauster	Minimum**A	Maximum**A
241-A	POR518/POR519	0 ppm	6.305 ppm
241-AN	Primary	N/A	N/A
241-AW	Primary	0 ppm	30.377 ppm
241-AX	POR126/POR127	0 ppm	33.580 ppm
241-AY/AZ	702AZ	5.631 ppm	6.986 ppm

*A VMDS Alternate Real Time Monitoring performed 06/03/2024 to 06/10/2024 for 241-A (POR518/POR519), 241-AN, 241-AP, 241-AW, 241-AX (POR126/POR127), 241-AY/AZ, and 241-SY.

The 241-AP Primary Exhauster and 241-SY Primary Exhauster are not currently connected to the VMDS software. When stack monitoring via the VMDS is unavailable, and ventilation is operating, IH will conduct alternate monitoring for ammonia. Report TOC-IH-RPT-50042, Ammonia Monitoring- Rate of Change of Tank Vapor Source Concentration and Monitoring Frequency, recommends measuring the exhaust ventilation systems once every 4 days. Conservatively, stack readings are required once per calendar day, in accordance with ARP-T-041-00002 and are acquired in accordance with TF-OPS-IHT-037.

Vapor Monitoring Detection System (VMDS) Alternate Monitoring 06/03/2024 to 06/10/2024:

Tank Farm	Exhauster	Minimum	Maximum
241-A	POR518/POR519	0 ppm	0 ppm
241-AN	Primary	10 ppm	24 ppm
241-AP	Primary	7 ppm	14 ppm
241-AW	Primary	3 ppm	3 ppm
241-AX	POR126/POR127	0 ppm	0 ppm
241-AY/AZ	702AZ	5 ppm	7 ppm
241-SY	Primary	17 ppm	43 ppm

Odor descriptors provided by Affected Workers are inconsistent with Tank Vapors. Additionally, review of the DFAS application, powered by SmartSite™, Weather Details dashboard and VMDS exhauster ammonia readings for the approximate time of the Event, indicate the cause of the odor is unlikely to be from Tank Farm Exhauster emissions.

Monitoring Selections Based on Information Provided by Affected Workers:

Based on the odor descriptors provided the possible sources were postulated to be originated from the following possible sources:

Propane:

- Based on the odor descriptor "propane-like", monitoring for hydrogen sulfide and ammonia vapors was performed:
 - The American Industrial Hygiene Association (AIHA) Odor Threshold for Chemicals with Established Health Standards, 2nd Edition, lists butane and propane as being associated with the odor character "Natural Gas". Propane is a colorless, odorless gas. The typical odor associated with propane is due to a foul-smelling odorant often added to propane for leak detection purposes. Typical propane odorant is sulfur-based, including mercaptan. The chemicals butyl mercaptan and dodecyl mercaptan are associated with the odor character "skunk". Methyl mercaptan is associated with the odor characters "rotten cabbage" and "garlic".
- Additionally, monitoring for Oxygen and Lower Flammability Limit was performed to possibly aid in detection of leaks in propane bottle-gas piping and systems associated with grills.

NOTE: Additional Information continued on next page.

Washington River Protection Solutions
INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Additional Information:

Additional Information continued:

Sewer or Septic gases:

- Based on the odor descriptor "sewer", monitoring for hydrogen sulfide and ammonia vapors was performed:
 - The 200 East, 200 West, and 600 Areas have a long history of odors that have been found to be associated with sources other than tank waste chemical vapors, such as septic tank gaseous emissions. These odors are known to change odor profile across a gradient when diluted by ambient atmosphere with distance from a point source. Additional sources of septic/sewer chemical vapors include the service vehicles that routinely service the septic storage tanks. The major roadways in the 200 East, 200 West, and 600 Areas are often traveled by septic service vehicles in route to the numerous local septic storage tanks and portable toilets.

The WRPS Chemical Vapor Solutions Team (CVST) chartered a Fugitive Emissions (FE) sub-team. The primary focus of the FE workscope was to identify odor sources around the Tank Farms work areas, characterizing the type and concentration of the odor constituents. The FE sub-team's investigations included characterizing how septic/sewer odors change odor profile across a gradient when diluted by ambient atmosphere with distance from a point source. The major components of sewer gases can include hydrogen sulfide, carbon dioxide, methane, and ammonia. The FE sub-team's investigations found that close to the septic system (within approximately 20 ft) the odor was described as "sewer". Further away from septic system (within approximately 100 ft) the odor was described as "skunk". Even further away from septic system (within approximately 200 ft) the odor was described as "body odor".

When monitoring for septic/sewer chemical vapors, DRI equipped with a hydrogen sulfide sensor should be utilized at a minimum. Additional septic/sewer chemical vapor monitoring may be conducted concurrently with hydrogen sulfide DRI monitoring

Biodegradation of biota:

- Based on the odor descriptors "sewer" and "propane-like", monitoring for hydrogen sulfide and ammonia vapors was performed:
 - The main constituents to monitor for when the suspected source of an odor event is environmental chemical vapors are ammonia and hydrogen sulfide. Ammonia and hydrogen sulfide biodegradation byproducts that generate malodors. Therefore, when monitoring for environmental chemical vapors, DRI equipped with an ammonia sensor and a hydrogen sulfide sensor should be utilized at a minimum.

Refer to TOC-IH-58956 for more detail on the monitoring strategy for response to odors.

Additional Information Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
IARC	International Agency for Research on Cancer
CF	correction factor
CFM	cubic feet per minute
COPC	chemicals of potential concern
DFAS	Data Fusion & Advisory System
DRI	direct reading instrument
eV	electron-volts
OSHA	Occupational Safety & Health Administration
OVRC	Odor/Vapor Response Card
PEL	Permissible Exposure Limit
PID	photoionization detector
ppm	parts per million
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average
VMDS	Vapor Monitoring Detection System
VOC	Volatile Organic Compounds

NOTE: Additional Information continued on next page.

Washington River Protection Solutions
INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Additional Information:

Additional Information continued:

References:

- American Conference of Governmental Industrial Hygienists (2016). TLVs® and BEIs® Based on the Documentation of the Threshold Limit Values for Chemicals Substances and Physical Agents & Biological Exposure Indices. Cincinnati, OH: Signature Publications.
- American Industrial Hygiene Association (2013). Odor Thresholds for Chemicals with Established Health Standards, 2nd Edition.
- Honeywell (2018). Technical Note TN-106: A Guideline for PID Instrument Response. Retrieved from https://prod-edam.honeywell.com/content/dam/honeywell-edam/sps/his/en-us/products/gas-and-flame-detection/documents/Technical-Note-106_A-Guideline-for-Pid-Instrument-Response.pdf
- Occupational Safety & Health Administration (n.d.). Permissible Exposure Limits- Annotated Tables, OSHA Annotated Table Z-1. Retrieved from <https://www.osha.gov/annotated-pels/table-z-1>
- TOC-IH-58956. Monitoring Strategy for Response to Odors: Common Odor Sources in the 200 East, 200 West, & 600 Areas.

Recommendations/Conclusions:

Recommendations:

N/A

Conclusions:

As Direct Reading Instrumentation monitoring of possible odor sources did not indicate further action was necessary to protect worker safety and health, the area was released from restricted access and work was allowed to continue.

Odor descriptors provided by Affected Workers are inconsistent with Tank Vapors. Based on a review of the DFAS application, powered by SmartSite™, Weather Details dashboard and VMDS exhaust ammonia readings for the approximate time of the Event, the cause of the odor is unlikely to be from Tank Farm Exhauster emissions. The atmospheric stability at the time of the event was slightly unstable conditions and the mixing height was 1000 feet above grade.

A survey of possible sources of odors matching the provided odor descriptors did not identify a source. All propane bottles in the affected area and upwind of the affected area were confirmed to have valves in the closed position, and leaks in the associated hoses/piping systems and connections were not detected. Areas identified where accumulation of biota available for biodegradation was present were not found to produce an odor matching the provided descriptors. Although not definitive, the most likely odor source is the portable toilet located on the West end of MO2240. Said portable toilet provided a "Record of Sanitization" (as posted interior adjacent to the door) indicating that service had been performed on 06/10/2024 before the field response team arrived on location at approximately 0858 06/10/2024. Based on typical hours of portable toilet contractor operation it is likely that portable toilet service occurred between 0600 06/10/2024 and 0858 06/10/2024, perhaps during the time of the initiating event (0810 06/10/2024). Anecdotal reports indicate that portable toilet service often results in the emission of odors matching the provided odor descriptors.

Others:

N/A

Associated Documents:

iCAS Number: N/A

EIR Number: EIR 2024-040

Industrial Hygienist:

Print First and Last Name

Digitally signed by _____
Date: 2024.06.11 12:19:29 -07'00'

Signature / Date

Industrial Hygiene Level 3 Manager

Print First and Last Name

Digitally signed by _____
Date: 2024.06.11 12:41:59 -07'00'

Signature / Date

Industrial Hygiene Level 2 Manager:

Print First and Last Name

Digitally signed by _____
Date: 2024.06.12 04:58:07 -07'00'

Signature / Date

ODOR/VAPOR RESPONSE CARD

Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at [REDACTED]
3. Complete both pages of this form and include as many details as possible, including:
 - a. Approximate location, see map at right;
 - b. Wind direction, speed and description, such as stable or gusty wind;
 - c. Environmental conditions, such as hot, cold, windy, rainy;
 - d. Other work or contractors in the area;
 - e. Anything else you think is relevant.
4. Provide the completed card to your Supervisor*, Industrial Hygiene*, Union Safety Representative* or the CSM.

* If received by Supervisor, IH, or Union Safety Representative, the Supervisor/IH/Union-SR will ensure card it is provided to the CSM.

Walking from mo-577 to mo-818
Wind Direction From south to east about 5-8 mph
Warm weather
No other work in the area that I saw

ODOR/VAPOR RESPONSE CARD

1. Complete below information and map (Page 1).

• Date and time of event: 6-10-2024 8:27Am

• Check Applicable:

☒ Odor ☐ Ammonia Alarm (6 ppm) ☐ Ammonia Alarm (12 ppm) ☐ Alarm (other - describe):

• Your name and the work you were performing:

[REDACTED] + I was walking to A.W change trailer

• Other Work Underway? Describe:

• Location of event (mark area on map and wind direction):

MO-577 Wind Headed East

• Name(s) of others in or near the affected area:

A.W change trailer MO 818

• Was Industrial Hygiene present, who?

NO

• Describe the odor:

☐ Sweet ☐ Sour ☐ Smoky ☒ Septic/Sewer ☐ Musty ☐ Rotten
☐ Metallic ☐ Onion ☐ Earthy ☐ Ammonia ☐ Citrus ☐ Solvent
☒ Other (describe):

• Is source known/likely? Describe:

Propane

• Your symptoms? ☒ None

☐ Headache ☐ Dizziness ☐ Nausea ☐ Cough ☐ Fatigue
☐ Weakness ☐ Sore Throat ☐ Difficulty Breathing ☐ Eye Irritation ☐ Rash
☐ Itch ☐ Tingling ☐ Numbness ☐ Taste
☐ Other (describe):

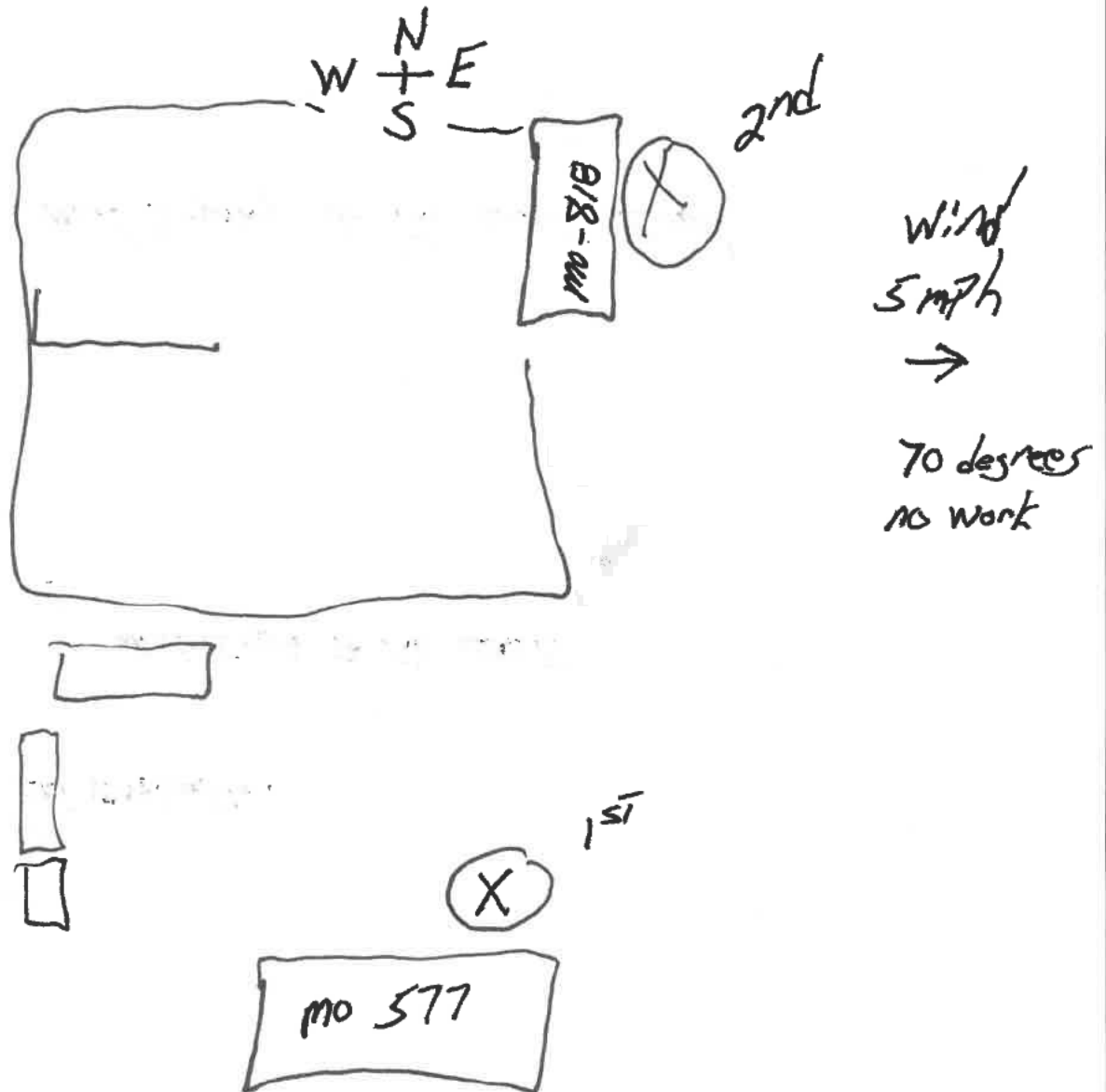
2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM.
If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.

ODOR/VAPOR RESPONSE CARD

Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at [REDACTED]
3. Complete both pages of this form and include as many details as possible, including:
 - a. Approximate location, see map at right;
 - b. Wind direction, speed and description, such as stable or gusty wind;
 - c. Environmental conditions, such as hot, cold, windy, rainy;
 - d. Other work or contractors in the area;
 - e. Anything else you think is relevant.
4. Provide the completed card to your Supervisor*, Industrial Hygiene*, Union Safety Representative* or the CSM.

* If received by Supervisor, IH, or Union Safety Representative, the Supervisor/IH/ Union-SR will ensure card it is provided to the CSM.



ODOR/VAPOR RESPONSE CARD

1. Complete below information and map (Page 1).

- Date and time of event: 6/10/24
- Check Applicable:
☒ Odor ☐ Ammonia Alarm (6 ppm) ☐ Ammonia Alarm (12 ppm) ☐ Alarm (other - describe):
- Your name and the work you were performing:
[REDACTED] Elec. ck. Verification
- Other Work Underway? Describe:
N/A
- Location of event (mark area on map and wind direction):
MO-577 - MO-818 Wind 5 mph To The east.
- Name(s) of others in or near the affected area:
[REDACTED]
- Was Industrial Hygiene present, who?
No
- Describe the odor:

☐ Sweet	☐ Sour	☐ Smoky	☒ Septic/Sewer	☐ Musty	☒ Rotten
☐ Metallic	☐ Onion	☐ Earthy	☐ Ammonia	☐ Citrus	☐ Solvent
☐ Other (describe):					
- Is source known/likely? Describe:
No, Wind Blowing To The east 5 mph
- Your symptoms? ☐ None

☐ Headache	☐ Dizziness	☐ Nausea	☐ Cough	☐ Fatigue
☐ Weakness	☐ Sore Throat	☐ Difficulty Breathing	☐ Eye Irritation	☐ Rash
☐ Itch	☐ Tingling	☐ Numbness	☐ Taste	
☐ Other (describe):				

2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM.
If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.

ODOR/VAPOR RESPONSE CARD

Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at [REDACTED]
3. Complete both pages of this form and include as many details as possible, including:
 - a. Approximate location, see map at right;
 - b. Wind direction, speed and description, such as stable or gusty wind;
 - c. Environmental conditions, such as hot, cold, windy, rainy;
 - d. Other work or contractors in the area;
 - e. Anything else you think is relevant.
4. Provide the completed card to your Supervisor*, Industrial Hygiene*, Union Safety Representative* or the CSM.

* If received by Supervisor, IH, or Union Safety Representative, the Supervisor/IH/ Union-SR will ensure card it is provided to the CSM.

MO-818
SE wind direction
approximate wind speed 5 mph
70° mild weather
Smell unknown, possible sewer.

ODOR/VAPOR RESPONSE CARD

1. Complete below information and map (Page 1).

- Date and time of event: 8:15 Am
- Check Applicable:
☒ Odor ☐ Ammonia Alarm (6 ppm) ☐ Ammonia Alarm (12 ppm) ☐ Alarm (other - describe): _____
- Your name and the work you were performing:
[REDACTED] - Turning on disconnect
- Other Work Underway? Describe: N/A
- Location of event (mark area on map and wind direction):
MO-818 AW change trailer SE wind direction
- Name(s) of others in or near the affected area:
[REDACTED]
- Was Industrial Hygiene present, who?
no
- Describe the odor:

☐ Sweet	☐ Sour	☐ Smoky	☒ Septic/Sewer	☐ Musty	☐ Rotten
☐ Metallic	☐ Onion	☐ Earthy	☐ Ammonia	☐ Citrus	☐ Solvent
☐ Other (describe): _____					
- Is source known/likely? Describe:
no
- Your symptoms? ☒ None

☐ Headache	☐ Dizziness	☐ Nausea	☐ Cough	☐ Fatigue
☐ Weakness	☐ Sore Throat	☐ Difficulty Breathing	☐ Eye Irritation	☐ Rash
☐ Itch	☐ Tingling	☐ Numbness	☐ Taste	
☐ Other (describe): _____				

2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM.
If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.

ODOR/VAPOR RESPONSE CARD

Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at [REDACTED]
3. Complete both pages of this form and include as many details as possible, including:
 - a. Approximate location, see map at right;
 - b. Wind direction, speed and description, such as stable or gusty wind;
 - c. Environmental conditions, such as hot, cold, windy, rainy;
 - d. Other work or contractors in the area;
 - e. Anything else you think is relevant.
4. Provide the completed card to your Supervisor*, Industrial Hygiene*, Union Safety Representative* or the CSM.

* If received by Supervisor, IH, or Union Safety Representative, the Supervisor/IH/Union-SR will ensure card it is provided to the CSM.

a. MO 818

B. Wind was blowing East 5-8 mph

C. Mild weather 74°

D. n/a Just fellow electricians already named

E. Smell unknown, but possibly Sewer/Septic

ODOR/VAPOR RESPONSE CARD

1. Complete below information and map (Page 1).

- Date and time of event: 6/10/24 08:15am
- Check Applicable:
 - ☒ Odor
 - ☐ Ammonia Alarm (6 ppm)
 - ☐ Ammonia Alarm (12 ppm)
 - ☐ Alarm (other - describe):
- Your name and the work you were performing:
[REDACTED] - Doing electrical work
- Other Work Underway? Describe:
N/A
- Location of event (mark area on map and wind direction):
M0818
- Name(s) of others in or near the affected area: [REDACTED]
- Was Industrial Hygiene present, who?
N/A
- Describe the odor:
 - ☐ Sweet
 - ☐ Sour
 - ☐ Smoky
 - ☒ Septic/Sewer
 - ☐ Musty
 - ☐ Rotten
 - ☐ Metallic
 - ☐ Onion
 - ☐ Earthy
 - ☐ Ammonia
 - ☐ Citrus
 - ☐ Solvent
 - ☐ Other (describe):
- Is source known/likely? Describe:
N/A
- Your symptoms? ☒ None
 - ☐ Headache
 - ☐ Dizziness
 - ☐ Nausea
 - ☐ Cough
 - ☐ Fatigue
 - ☐ Weakness
 - ☐ Sore Throat
 - ☐ Difficulty Breathing
 - ☐ Eye Irritation
 - ☐ Rash
 - ☐ Itch
 - ☐ Tingling
 - ☐ Numbness
 - ☐ Taste
 - ☐ Other (describe):

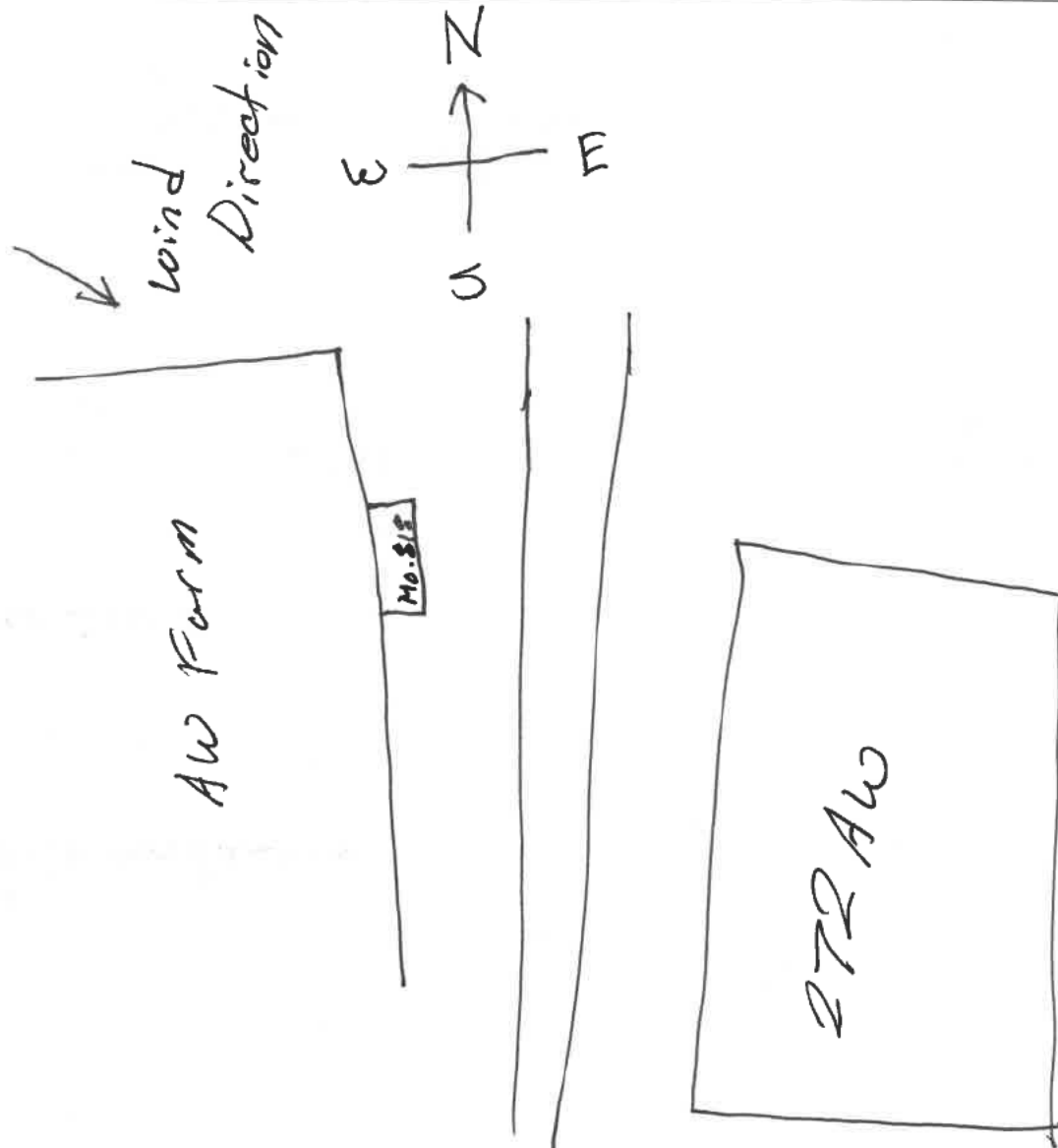
2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM.
If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.

ODOR/VAPOR RESPONSE CARD

Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at [REDACTED]
3. Complete both pages of this form and include as many details as possible, including:
 - a. Approximate location, see map at right;
 - b. Wind direction, speed and description, such as stable or gusty wind;
 - c. Environmental conditions, such as hot, cold, windy, rainy;
 - d. Other work or contractors in the area;
 - e. Anything else you think is relevant.
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* If received by Supervisor, IH, or Union Safety Representative, the Supervisor/IH/ Union-SR will ensure card it is provided to the CSM.



ODOR/VAPOR RESPONSE CARD

1. Complete below information and map (Page 1).

- Date and time of event: 6-10-24
- Check Applicable:
 - ☒ Odor
 - ☐ Ammonia Alarm (6 ppm)
 - ☐ Ammonia Alarm (12 ppm)
 - ☐ Alarm (other - describe): _____
- Your name and the work you were performing:
[REDACTED] / Circuit Verification
- Other Work Underway? Describe:
NA
- Location of event (mark area on map and wind direction):
MO-818
- Name(s) of others in or near the affected area:
[REDACTED]
- Was Industrial Hygiene present, who?
NO
- Describe the odor:
 - ☐ Sweet
 - ☐ Sour
 - ☐ Smoky
 - ☒ Septic/Sewer
 - ☐ Musty
 - ☐ Rotten
 - ☐ Metallic
 - ☐ Onion
 - ☐ Earthy
 - ☐ Ammonia
 - ☐ Citrus
 - ☐ Solvent
 - ☐ Other (describe): _____
- Is source known/likely? Describe:
NO
- Your symptoms? ☒ None
 - ☐ Headache
 - ☐ Dizziness
 - ☐ Nausea
 - ☐ Cough
 - ☐ Fatigue
 - ☐ Weakness
 - ☐ Sore Throat
 - ☐ Difficulty Breathing
 - ☐ Eye Irritation
 - ☐ Rash
 - ☐ Itch
 - ☐ Tingling
 - ☐ Numbness
 - ☐ Taste
 - ☐ Other (describe): _____

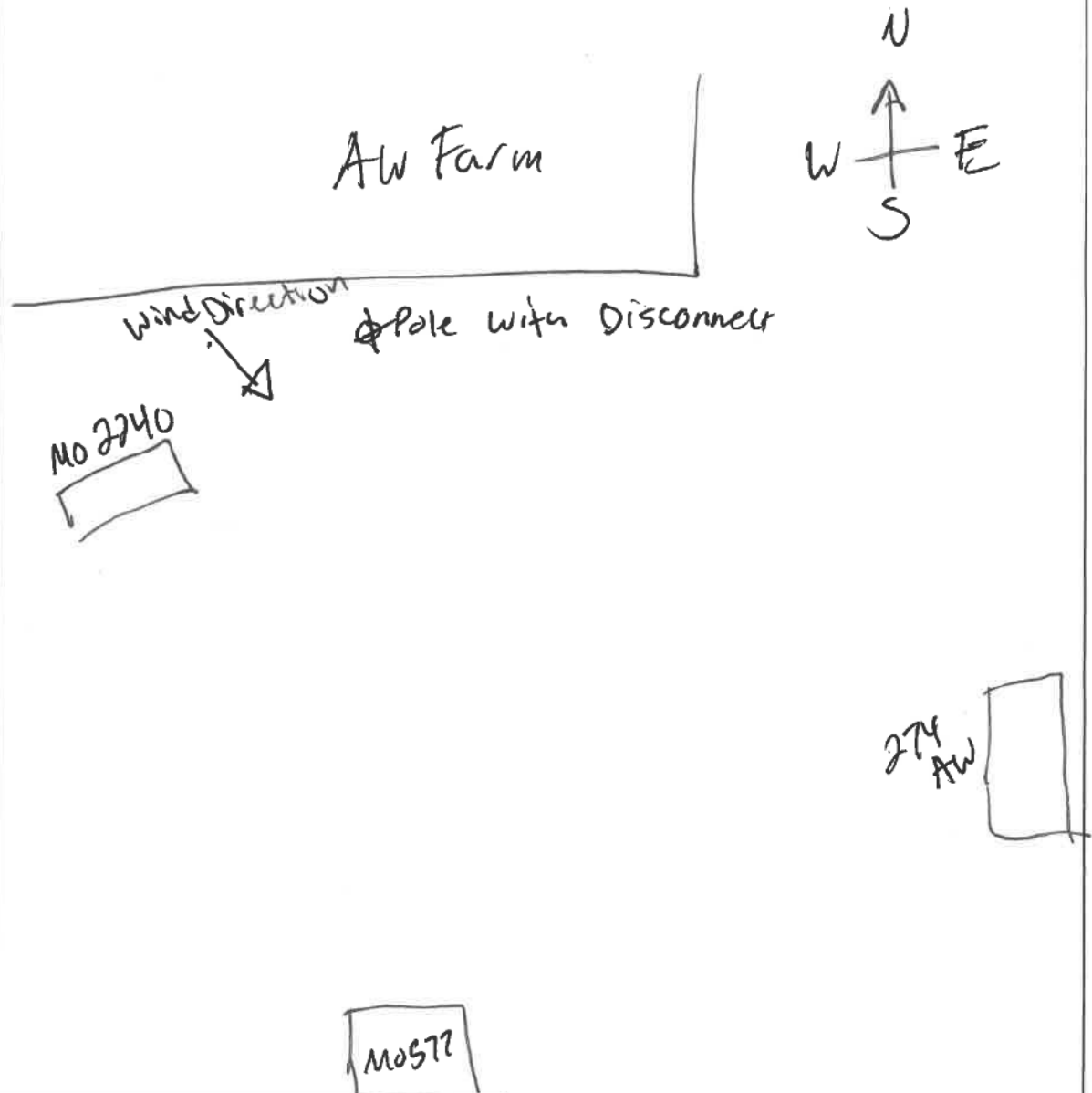
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ODOR/VAPOR RESPONSE CARD

Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at [REDACTED]
3. Complete both pages of this form and include as many details as possible, including:
 - a. Approximate location, see map at right;
 - b. Wind direction, speed and description, such as stable or gusty wind;
 - c. Environmental conditions, such as hot, cold, windy, rainy;
 - d. Other work or contractors in the area;
 - e. Anything else you think is relevant.
4. Provide the completed card to your Supervisor*, Industrial Hygiene*, Union Safety Representative* or the CSM.

* If received by Supervisor, IH, or Union Safety Representative, the Supervisor/IH/ Union-SR will ensure card it is provided to the CSM.



ODOR/VAPOR RESPONSE CARD

1. Complete below information and map (Page 1).

• Date and time of event: 6/10/24 8:15am

• Check Applicable:

☒ Odor ☐ Ammonia Alarm (6 ppm) ☐ Ammonia Alarm (12 ppm) ☐ Alarm (other - describe):

• Your name and the work you were performing:

[REDACTED] / Supervising Switching of ^{RG 6-10-24} ~~DISCON~~ Disconnect South Side AW

• Other Work Underway? Describe:

NSH

• Location of event (mark area on map and wind direction):

Traversing From MO-577 to South Side of AW by MO2240

• Name(s) of others in or near the affected area:

[REDACTED]

• Was Industrial Hygiene present, who?

NO

• Describe the odor:

☐ Sweet ☐ Sour ☐ Smoky ☒ Septic/Sewer ☐ Musty ☐ Rotten
☐ Metallic ☐ Onion ☐ Earthy ☐ Ammonia ☐ Citrus ☐ Solvent
☐ Other (describe):

• Is source known/likely? Describe:

NO

• Your symptoms? ☒ None

☐ Headache ☐ Dizziness ☐ Nausea ☐ Cough ☐ Fatigue
☐ Weakness ☐ Sore Throat ☐ Difficulty Breathing ☐ Eye Irritation ☐ Rash
☐ Itch ☐ Tingling ☐ Numbness ☐ Taste
☐ Other (describe):

2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM.
If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.