

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:** Production Operations **2. Report Date:** 12/18/2025  
C-67 at 242A81 - Diesel in 242A-BA Sump Following

3. **Investigation Title:** Maintenance Activities

4. **Investigation Report Number:** EIR-2025-019

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

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

7. **Area / Building / Location:** 200E/242A-81 (Water Service Building)

8. **Date and Approximate Time of Event:** **Date:** 12/06/2024 **Time (military):** 0100 hours

9. **Associated Action Request (AR) Number:** WRPS-AR-2025-0581

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)

Three workers were performing work activities associated with TO-600-130, *Operate 242-A-81 Raw Water Strainer System*, inside the 242A-81 Water Service Building.

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

- WRPS Nuclear Chemical Operators (NCO) - 3
- WRPS 242-A Supervisor Operations - 1

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

On 12/06/2024, at 0043 hours, the 242-A C-Shift Supervisor Operations directed NCO-1 to perform a backwash of Raw Water Strainer F-RW-1 and F-RW-2 in the 242A-81 Water Service Building per procedure TO-600-130, *Operate 242-A-81 Raw Water Strainer System*. At 0055 hours NCO-1 completed the backwash of Raw Water Strainers F-RW-1 and F-RW-2, and the strainer motors were placed in the "OFF" position."

At approximately 0100 hours, an RC2-PIG alarm [Used Raw Water [URW] SAMPLER FLOW LOW] initiated on the 242-A monitor control system (MCS). The 242-A C-Shift Supervisor Operations directed NCO-2 to place Raw Water Strainers F-RW-1 and F-RW-2 motors into the "ON" position. When the NCO-2 entered the 242A-81 Water Service Building to place the Raw Water Strainer F-RW-1 and F-RW-2 motors in the "ON" position. During that time NCO-2 encountered a stronger than normal "fuel-like" odor and reported it to NCO-3 and the 242-A C-Shift Supervisor Operations.

NCO-3 and the 242-A C-Shift Supervisor Operations walked from the 242-A Evaporator to the 242A-81 Water Service Building and reported observing stronger than normal "fuel-like" odor as the approached the 242A-81 Water Service Building. Once the workers entered the 242A-81 Water Service Building the 242-A C-shift Supervisor Operations briefly opened the entrance door of the 242A-81 Water Service Building, however, noted 242-A shift C-Shift Supervisor Operations closed the door, restricted access, and walked back to the 242-A Shift Office.

At approximately 0140 hours, the 242-A C-Shift Supervisor Operations notified the Central Shift Manager (CSM) of the stronger than normal "fuel-like" odor in the 242A-81 Water Service Building. The CSM restricted access to the building and initiated response per TFC-OPS-OPER-C-67, *Response to Stronger than Normal Odors*.

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The 4 workers reported no symptoms on their Odor Response Cards and declined reporting to the onsite medical provider for precautionary medical surveillance.

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

- At the 242A-81 Water Service Building in the 200 East Area.
- The 4 workers were wearing standard street clothes and were in a work location that is not posted as a radiological controlled area. Workers were performing work activities that do not require use of respiratory protection or a personal ammonia monitor (VentisPro).
- The Hanford Site Meteorological Station #6 in the 200 East Area 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 0100 hours on 12/06/2024:

- . Wind Speed: 3.2 miles per hour (mph)
- . Wind Direction: 123 ° (out of East Southeast)
- . Mixing Height: 140 feet above grade
- . Stability Class: D (neutral conditions)
- . Temperature: 32° F
- . Barometric Pressure: 29.81 inches mercury (Hg)
- . Relative Humidity: 76%

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

- Access was restricted to the 242A-81 Water Service Building for approximately 10 hours.
- No impacts to facility safety status and operational capabilities occurred.

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

- 242-A C-Shift Supervisor Operations notified the CSM of the stronger than normal "fuel-like" odor in the 242A-81 Water Service Building.
- CSM initiated TFC-OPS-OPER-C-67, *Response to Stronger than Normal Odors*, response actions.
- Access was restricted to the 242-A-81 Water Service Building.
- The CSM made required TFC-OPS-OPER-C-67 notifications.
- Production Operations Shift Industrial Hygiene Technician (IHT) initiated TFC-OPSOPER-C-67 response actions and monitoring per was performed per Industrial Hygiene Sampling Plan (IHSP), IHSP-POE-MULTI-TFCOPSOPERC67, *Industrial Hygiene Odor Evaluation*.
- The Production Operations Shift IHT reported direct-reading instrument (DRI) readings. The response DRI readings were consistent with those anticipated for diesel fuel. The DRI readings were below the action limit for diesel fuel.
- A Process Boiler Operator (PBO) performed a walkdown of the boiler fuel system at the 242A-Boiler Annex (BA) and reported no active fuel leaks.
- Event Investigation EIR-2025-019, C-67 at 242A81 - Diesel in 242A-BA Sump Following Maintenance Activities, was initiated.
- CSM notified on-call Environmental and Effluent Treatment Facility (ETF) Shift Operations Manager (SOM).

**18. Compensatory Actions Taken:**

None.

**19. Remedial Actions Taken:**

None.

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

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To summarize the conclusion of Industrial Hygiene Event Investigation Report (IHIR), IHIR-00110, *TFC-OPS-OPER-C-67 Response 242A-81 Water Service Building*, the stronger than normal "fuel-like" odors were confirmed to be diesel fuel in the 242A-BA sump that was likely resultant of recent testing activities per Work Order (WO)# 1181824, *242A-BA Test Boiler Fuel System*.

It was identified a violation of the State Waste Discharge Permit# ST0004502 for 200 Area Treated Effluent Disposal Facility (TEDF) occurred when diesel fuel was sent to TEDF via the 242A-BA sump effluent pathways, which is not approved per the permit. When the 242A-BA sump reaches the max sump liquid level, the effluent transfers to the 242A-81 Water Service Building sump and then to TEDF for final disposal.

DRI monitoring performed during odor investigation and *TFC-OPS-OPER-C-67 Response to Stronger than Normal Odors*, response actions did not indicate further actions were necessary regarding worker safety and health occupational exposure limits. The following considerations support the IHIR-00110 conclusion:

(1) On 12/04/2024, 2 pipefitters performed testing activities on the 242A-BA Boiler Fuel System per WO# 1181824, *242A-BA Test Boiler Fuel System*. Testing activities consisted of determining if the 2 Boiler Fuel System anti-siphon valves (FOS-ALV1 and 1-ASV1) were causing pressure issues for the 10 lbs and 90 lbs boilers during start-up. The 2 anti-siphon valves and associated diesel system piping were disconnected during testing activities, which are located slightly above the 242A-BA sump (Refer to Figure 1 below). Spill containment (consisting of two buckets containing absorbent pads) were placed underneath each anti-siphon valves during this work evolution. An absorbent pad was also placed underneath the piping that was directly above the 242A-BA sump.



Figure 1 - Location Where Anti-Siphon Valves Were Being Tested In The 242A-BA Building

While containment was utilized for this work evolution, it is anticipated small amounts of diesel likely entered the 242A-BA sump while performing this work evolution. The 242A-BA Process Boiler Operator/ Stationary Operating Engineer (PBO/SOE) Supervisor did indicate they noticed a small amount of diesel on the concrete directly below the two anti-siphon valves and applied absorbent material onto the diesel. The 242A-BA PBO/SOE Supervisor estimated that less than 1 gallon of diesel fuel had inadvertently entered the 242A-BA sump. During the work evolution, it was not recognized that diesel had likely spilled into the sump.

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Further, the 242A-BA typically smells like diesel as the boilers run on a diesel fuel system.

On 12/05/2024, the 242A-BA boilers were started. When the boilers are in operation the process creates additional effluents from the steam system that drain into the 242A-BA sump. The 242A-BA sump reaches the max sump liquid level, 2 float switches associated with pumps P-SUMP-1 and P-SUMP-2 automatically initiate pumping the 242A-BA sump effluents to the 242A-81 Water Service Building sump via 1 ½ inch pipe (Refer to Figure 2).

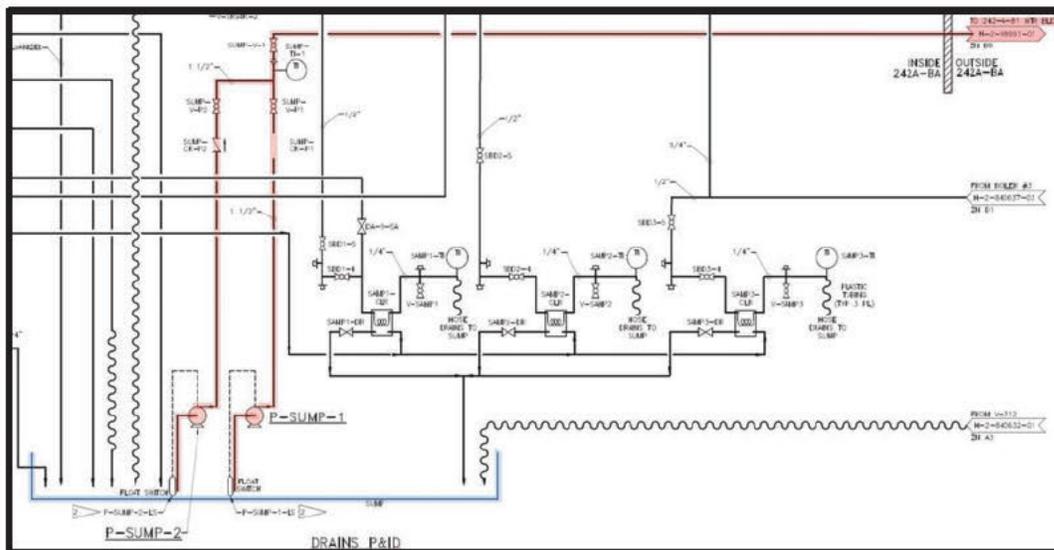


Figure 2 - Effluent Pathway from the 242A-BA Sump To The 242A-81 Water Service Building Sump

On 12/06/2024, when the affected workers entered or were near the 242A-81 Water Service Building, the odors associated with the diesel fuel intermixed within the effluent in the 242A-81 Water Service Building was likely being released through the grating openings of the 242A-81 sump (Refer to Figure 3).



Figure 3 - Sump in the 242A-81 Water Services Building

(2) The TFCOPS-OPER-C-67 response DRI readings were consistent with those anticipated for diesel fuel. The DRI readings were below the action limit for diesel fuel.

(3) The atmospheric stability at the time of the event was neutral to slightly stable conditions and the mixing height was 140 feet above grade. These atmospheric conditions typically do not result in ground level exposures from the exhausters. Additionally, Vapor Monitoring and Detection System (VMDS) exhauster ammonia readings for the approximate time of the event were below levels that could result in ground level exposures above action limits. Therefore, the cause of the odor is unlikely to be from Tank Farm Exhauster emissions.

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(4) Evaluate and implement methods to ensure diesel fuel cannot enter 242A-BA sump.

**21. Positive Aspects Identified:**

None.

**22. Key Take Aways / Learning Opportunities:**

- Utilize proper SWIM (Stop, Warn, Isolate, and Minimize) responses when odors are observed.
- It is imperative to understand effluents pathways to ensure possible constituents in the effluents meet the acceptance criteria for the State Waste Discharge permits.

**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.

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**Responsible Manager Approval:**

\_\_\_\_\_  
*Name (First, Middle Initial, Last)*

\_\_\_\_\_  
*Signature / Date*

**CAS Manager Approval:**

\_\_\_\_\_  
*Initial, Last*

\_\_\_\_\_  
*Signature / Date*

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**INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR)**

Event Title: TFC-OPS-OPER-C-67 Response 242A-81 Water Service Building		IHIR Number: <b>IHIR-00110</b>
		IHEI Number: N/A
Date: 12/06/2024	Time: 0100	Location: 242A-81 Water Service Building

Event Summary and Timeline:

**Event Summary:**

At approximately 0100 on 12/06/2024, four workers encountered a stronger than normal “fuel (diesel/gas)”, “solvent” odor inside 242A-81 Water Service Building. The Affected Workers were performing “strainer blowdown, TO-600-130”. No symptoms were reported. All workers declined precautionary medical surveillance.

**Field Response Timeline:**

- 0135 Shift Office Event Notification (SOEN): “Responding to stronger than normal odors per OPS-OPER-C-67 at 242A-81 Water Service Building. Access to the Water Service Building is restricted. [Central Shift Manager (CSM)]”
- 0140 CSM Shift Log Entry:
  - CSM notifies Direct Feed Low Activity Waste (DFLAW) Industrial Hygienist (IH) of TFC-OPS-OPER-C-67.
  - Data Fusion & Advisory System (DFAS) mixing height 140 feet.
- 0155 CSM Shift Log Entry:
  - Field Work Supervisor (FWS) notified CSM none of the individuals reported systems and all declined medical evaluation.
  - FWS will deliver Odor/Vapor Response Cards (OVRC) to Central Shift Office (CSO) once complete.
- 0219 CSM Shift Log Entry:
  - TFC-OPS-OPER-C-67 Attachment A Sheet 1 of 2 complete.
  - CSM briefed and dispatched Industrial Hygiene Technicians (IHT).
  - OVRCs received, no symptoms reported on OVRCs.

TFC-OPS-OPER-C-67 Attachment A Sheet 1 of 2 IHT Response Steps:

  - Monitor per [IHSP-POE-MULTI-TFCOPSOPERC67].
    - Direct Reading Instrument (DRI) Sensors:
      - Ammonia
      - Oxygen
      - Lower Explosive Limit (LEL)
      - Volatile Organic Compounds (VOC) utilizing 10.6 eV and 11.7 eV photoionization detector (PID)
  - Identify Source if possible.

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):**

0315 CSM Shift Log Entry:

- IHT reported reading of 2.71 ppm VOC upon entering building utilizing 11.7 eV PID.
- IHT directed to exit building.
- IHT DRI post-use function test passed. Response Results:
  - DRI sensor

	<u>Result</u>	<u>IHSP Action Limit</u>
▪ VOC 10.6 eV PID:	0.020 ppm	2 ppm
▪ VOC 11.7 eV PID:	2.71 ppm	per IH Direction
▪ Ammonia:	< 1 ppm	12 ppm
▪ LEL:	< 1% LEL	≥ 10%
▪ Oxygen:	20.9%	< 19.5% or > 23.5%
- CSM contacted DFLAW IH. DFLAW IH recommended keeping access restriction in place until further investigation can be performed.
- 242A-81 Water Service Building access restriction remains in place.

0321 CSM Shift Log Entry:

- Primary Boiler Operator (PBO) reports that there are no active fuel leaks in 242A-BA that could be responsible for the odors at 242A-81 after walking down the boiler fuel system.

0359 CSM Shift Log Entry:

- CSM contacted PBO/Stationary Operating Engineer (SOE) to discuss potential cause of odor. PBO/SOE stated:
  - Maintenance performed on fuel piping in 242A-BA over last several days.
  - Fuel piping was disconnected and serviced, and included piping that is directly above the sump at 242A-BA.
  - Containment was utilized for this work evolution; however, believes a small amount (< 1 gal) of diesel may have been spilled in sump.
  - Sump at 242A-BA drains effluent to sump at 242A-81 when boilers are in operation.
  - Boilers are currently in operation.

0432 CSM Shift Log Entry:

- CSM contacted PBO/SOE for additional clarification on diesel spilled to 242A-BA.
  - PBO/SOE verified diesel was discharged to 242A-BA sump in a volume < 1 gal.
  - 242A-BA sump discharges to 242A-81 sump, which ultimately discharges to Treated Effluent Disposal Facility (TEDF).
- CSM notified On-Call Environmental and Effluent Treatment Facility (ETF) Shift Operations Manager (SOM).

0610 DFLAW Level 3 Safety & Health (S&H) Manager contacts CSM.

- CSM updates DFLAW Level 3 S&H Manager on TFC-OPS-OPER-C-67 Response.

0630 DFLAW Level 3 S&H Manager contacts DFLAW IH:

- S&H Manger → IH: Contacted CSM for update on TFC-OPS-OPER-C-67 .
- IH → S&H Manger: Response Plan signed. Diesel in water service building sump.

0715 DFLAW Level 3 S&H Manager notifies Environmental, Safety, Health, & Quality (ESH&Q) Level 1 Manager and ESH&Q Level 1 Deputy Manager of TFC-OPS-OPER-C-67.

- Diesel spill of < 1 gallon in boiler annex (242A-BA) sump may be cause of odor event.
- Boiler annex (242A-BA) sump goes through water service building (242A-81) then to TEDF.
- Water service building on restricted access.

0725 242-A Evaporator Area Manager contacts DFLAW Level 3 S&H Manager for update on TFC-OPS-OPER-C-67.

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):**

- 0731 Production Operations (PO) Level 3 S&H Manager (Acting) and DFLAW Level 3 S&H Manager discuss TFC-OPS-OPER-C-67 Response.
- 0751 DFLAW IH updates DFLAW Level 3 S&H Manager:
- DFLAW IH recommended CSM maintain access restriction to 242A-81 at this time.
- 0817 PO Level 3 S&H Manager (Acting), DFLAW Level 3 S&H Manager, PO A/B Shift IHT Supervisor, PO C/D Shift IHT Supervisor, PO IHT Supervisor, and DFLAW IHT Supervisor:
- PO Level 3 S&H Manager → Group: C-67 response around 242A water service building. DFLAW IH and DFLAW Level 3 S&H Manager have been working on Response.
  - DFLAW Level 3 S&H Manager → Group: DFLAW Level 3 S&H Manager is point-of-contact (POC). Will contact IHs as needed for response.
- 0831 DFLAW Level 3 S&H Manager → PO Level 3 S&H Manager (Acting), PO A/B Shift IHT Supervisor, PO C/D Shift IHT Supervisor, PO IHT Supervisor, and DFLAW IHT Supervisor:
- Requests PO Shift IHT Supervisors reach out to PO Shift IHTs for information on response.
- 0842 PO A/B Shift IHT Supervisor contacts PO B-Shift IHT for turnover update.
- 0844 PO A/B Shift IHT Supervisor contacts CSM for update on response results and response plan progress.
- 0902 PO A/B Shift IHT Supervisor updates DFLAW Level 3 S&H Manager on odor location, restricted access, and clean-up plan.
- 0908 PO A/B Shift IHT Supervisor contacts 242-A Evaporator Area Manager to discuss TFC-OPS-OPER-C-67.
- 0916 PO A/B Shift IHT Supervisor → PO Level 3 S&H Manager (Acting), DFLAW Level 3 S&H Manager, PO C/D Shift IHT Supervisor, PO IHT Supervisor, and DFLAW IHT Supervisor:
- 242-A Evaporator Area Manager on-site working on clean-up plan.
  - Informed 242-A Evaporator Area Manager IHTs are available to support if needed.
  - Diesel still in sump.
  - 242-A Evaporator Area Manager is going to have the water service building doors opened to air it out.
  - DRI results were 2.7 ppm on 11.7 eV PID and 0.020 ppm on the 10.6 eV PID.
- 0916 DFLAW Level 3 S&H Manager notifies PO IH of TFC-OPS-OPER-C-67 Response:
- Diesel spill at water service building.
  - DFLAW IH developed response plan.
  - DRI results were 2.7 ppm on 11.7 eV PID and 0.020 ppm on the 10.6 eV PID.
  - Confirming diesel Action Limit (AL) on 10.6 eV PID is 4 ppm?
  - Diesel AL on 11.7 eV PID?
- 0918 DFLAW Level 3 S&H Manager → PO Level 3 S&H Manager (Acting), PO A/B Shift IHT Supervisor, PO C/D Shift IHT Supervisor, PO IHT Supervisor, and DFLAW IHT Supervisor:
- Contacted PO IH for diesel AL on 11.7 eV PID.
- 0921 PO A/B Shift IHT Supervisor contacted Responding PO C-Shift IHT for update on response source and area readings.

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):**

- 0925 PO A/B Shift IHT Supervisor → PO Level 3 S&H Manager (Acting), DFLAW Level 3 S&H Manager, PO C/D Shift IHT Supervisor, PO IHT Supervisor, and DFLAW IHT Supervisor:
- PO C-Shift IHT stated reported results were not source readings.
  - Reading obtained from approximately 7 feet in the air above the filter banks.
  - PO C-Shift IHT stated it smelled like diesel and they recognized it right away.
  - PO C-Shift IHT observed areas where it appeared the diesel was leaking into the drain.
- 0925 PO A/B Shift IHT Supervisor and CSM discuss path forward.
- 
- Once developed (after 0938), relayed PO IH ALs for diesel (4 ppm/7 ppm).
- 1001
- 0926 PO IH → DFLAW Level 3 S&H Manager:
- Diesel AL on 10.6 eV PID is 4 ppm.
  - Developing diesel AL on 11.7 eV PID.
- 0928 PO A/B Shift IHT Supervisor → PO Level 3 S&H Manager (Acting), DFLAW Level 3 S&H Manager, PO C/D Shift IHT Supervisor, PO IHT Supervisor, and DFLAW IHT Supervisor:
- PO C-Shift IHT completed Site Wide Industrial Hygiene Database (SWIHD) survey and captured detailed information in survey.
- 0932 PO IH → DFLAW Level 3 S&H Manager: Referenced [TOC-IH-58956](#) and [Honeywell TN-106](#) for 11.7 eV PID Diesel Fuel AL development.
- Diesel Fuel #2 8-hr Time Weighted Average (TWA) Occupational Exposure Limit (OEL): 100 mg/m<sup>3</sup> (11.32 ppm).
  - Diesel Fuel #2 11.7 eV PID Correction Factor (CF): 0.4
  - Equation 1. Adjusted PID Reading Display for Specific Compound:  
$$\text{Adjusted Reading} = X \text{ ppm (display)} \times CF$$
  - Equation 2. Adjusted AL for Specific Compound (high-boiling or very reactive compounds):  
$$\text{Adjusted Action Limit (display)} = \frac{X \text{ ppm (AL)}}{CF} \times \text{Safety Factor}$$
  
$$\text{Diesel Adjusted AL (11.7 display)} = \left( \frac{5.66 \text{ ppm}}{0.4} \right) \times 0.5 = \underline{7.075 \text{ ppm}}$$
  - Diesel Fuel #2 11.7 eV PID AL = 7 ppm
- 0938 DFLAW Level 3 S&H Manager → PO Level 3 S&H Manager (Acting), PO A/B Shift IHT Supervisor, PO C/D Shift IHT Supervisor, PO IHT Supervisor, and DFLAW IHT Supervisor:
- Provided PO IH AL development.
  - Diesel AL 10.6 eV PID is 4 ppm. Diesel AL 11.7 eV PID is 7 ppm.
  - ALs are applicable to breathing zone results.
  - Utilize both 10.6 eV PID and 11.7 eV PID for water service building entries over weekend.
- 1043 CSM contacts PO A/B Shift IHT Supervisor to odor event.
- 1045 PO A/B Shift IHT Supervisor updates DFLAW Level 3 S&H Manager and discusses path forward.

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):**

- 1100 DFLAW Level 3 S&H Manager → ESH&Q Level 1 Manager, ESH&Q Level 1 Deputy Manager:
- PO IH confirmed/developed diesel fuel AL for 10.6 eV PID and 11.7 eV PID.
  - Response results below ALs.
  - 242-A Evaporator Area Manager on-site.
  - PO A/B Shift IHT Supervisor communicating with CSM, 242-A Evaporator Area Manager, and PO Shift IHTs.
  - PO Shift IHTs available to support over the weekend if needed.
  - Should be able to end C-67 response shortly. Awaiting CSM call.
- 1112 CSM Shift Log Entry:
- Initiated EIR-2025-019.
  - Performance Assurance (PA) POC assigned.
- 1130 CSM contacts DFLAW Level 3 S&H Manager to discuss completion of Response Actions and TFC-OPS-OPER-C-67 Attachment A Sheet 2 of 2.
- 1212 SOEN: "Completed TFC-OPS-OPER-C-67 "Responding to Stronger than Normal Odors" at 242A81 Water Service Building. Readings were below action limits. See 242-A Shift Manager for access to the 242A81. CSM"
- 1212 CSM Shift Log Entry:
- Completed C-67 Odor Response at 242A-81 Water Service Building.
  - Per IH, AL for diesel is 7 ppm for 11.7 eV PID and 4 ppm for 10.6 eV PID general area.
  - No AL was exceeded.
  - 242-A facility will control access and pursue path forward to mitigate diesel in 242A-81 sump.
  - Department of Energy (DOE) Facility Representative (Fac. Rep.), ETF Shift Manager (SM), and Environmental notified.
- 1419 DFLAW Level 3 S&H Manager updates Level 2 IH Manager Delegate on TFC-OPS-OPER-C-67.

**Field Response Timeline Acronyms:**

AL	Action Limit	OVRC	Odor/Vapor Response Card
CSM	Central Shift Manager	PA	Performance Assurance
CSO	Central Shift Office	PBO	Primary Boiler Operator
DFAS	Data Fusion & Advisory System	PID	photoionization detector
DFLAW	Direct-Feed Low-Activity Waste	PO	Production Operations
DOE	Department of Energy	POC	point-of-contact
DRI	direct reading instrument	ppm	parts per million
ESH&Q	Environmental, Safety, Health, & Quality	S&H	Safety & Health
ETF	Effluent Treatment Facility	SM	Shift Manager
eV	electron-volts	SOE	Stationary Operating Engineer
FWS	Field Work Supervisor	SOEN	Shift Office Event Notification
IH	Industrial Hygienist	SOM	Shift Operations Manager
IHT	Industrial Hygiene Technician	TEDF	Treated Effluent Disposal Facility
LEL	lower explosive limit	TWA	Time-Weighted Average
mg/m <sup>3</sup>	milligrams per meter cubed	VOC	Volatile Organic Compound
OEL	Occupational Exposure Limit		

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**INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)**

Sampling/Monitoring Results:

**Direct Reading Instrument Monitoring Results:**

Response Monitoring performed in and around Affected Area (#24-09633):

- Comments by Responding IHT- "IHT responded to a C-67 odor event at the 242A [Water Service Building]. There was a smell of diesel fuel in [242A-81] building. upon entering the building there was an immediate smell of diesel fuel. The ppbRAE3000 [11.7 eV PID] began to pick up readings which hovered around 2 ppm. IHT went into the building further moving the instrument around attempting to find the source of the odor. The highest reading (2.71 ppm VOC) that was seen before exiting was elevated above the filter bank about 7' off the ground. At this point the IHT ended the entry into the building. No respiratory protection was worn. The fuel odor was strong. The [Nuclear Chemical Operator (NCO)] that opened the door into the building stated the odor was stronger when it was first discovered when the C-67 was initiated."

Peak Readings During Response:

Location	Ammonia	VOC (10.6 eV)	VOC (11.7 eV)	Oxygen	LEL
242A-81 Building	< 1 ppm	0.020 ppm	2.71 ppm	20.9%	< 1%

Monitoring Performed in Post TFC-OPS-OPER-C-67 Entry (#24-09639):

- Comments by IHT- "Evaporator supervisor ask for IHT support to enter water service building due to diesel odors. IHT used [ppbRAE (11.7 eV PID)] and [MultiRAE (10.6 eV PID)] to monitor the room, there was a diesel odor but readings were below action levels."

Peak Readings During Entry:

Location	VOC (10.6 eV)	VOC (11.7 eV)
242A-81 Building	< 0.010 ppm	0.240 ppm

SWIHD References:

Event Response SWIHD DRI Survey:

- #24-09633 "C-67 Event at 242A-81".

Post TFC-OPS-OPER-C-67 Entry SWIHD DRI Survey:

- #24-09639 "242A-81 Odor Monitoring".

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.

NOTE: Additional Information continued on next page.

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**INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR)** (Continued)

Additional Information:

**Timeline After Field Response:**

12/09/2024

0730 PO/242A Evaporator Safety Professional follows up with Affected Workers and walks down 242A-81 Water Service Building.

0848 PO/242A Evaporator Safety Professional updates PO IH on follow-up.

- Affected Workers stated odor at the time of the odor event was significantly stronger. The odor was encountered outside the 242A-81 doors prior to opening them.
- Faint diesel odor still present inside 242A-81. However, odor no longer perceived outside of facility.
- 242A-81 not restricted. 242A-BA is restricted as boilers are running.

**Response Monitoring:**

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. Refer to [TOC-IH-59014](#) for more information.

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

NOTE: Additional Information continued on next page.

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

Additional Information:

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

12/06/2024 @ 0100 (approximate time of initiating event):

- Wind Speed: 3.2 mph (15-minute average)
- Wind Direction: 123° (out of East Southeast)
- Mixing Height: 140 feet above grade
- Stability Class: D (neutral conditions)

Refer to Figures 1-3.

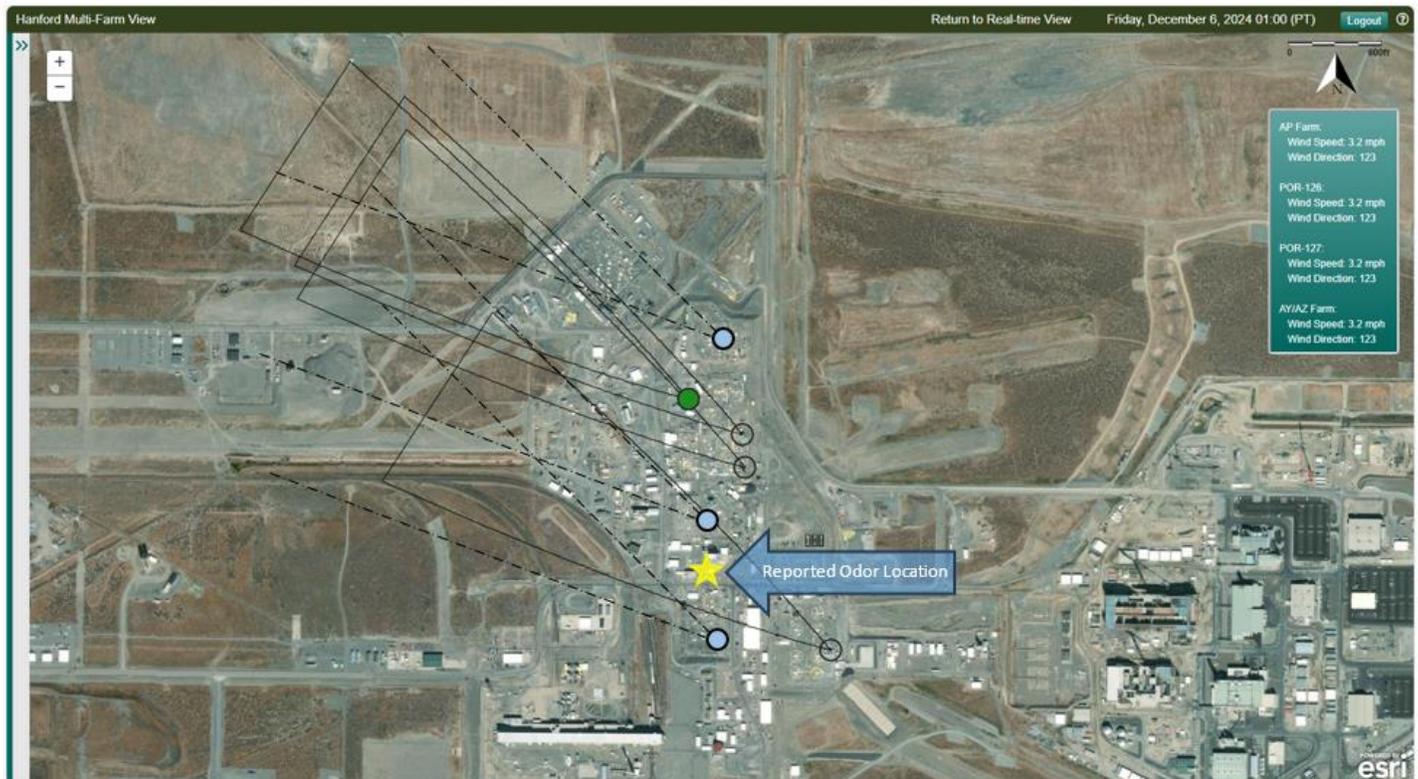


Figure 1. 200-East Area (with 241-AW, 241-AP, 241-AN, 241-AY/AZ, 241-AX, 241-A Farm projected plume models) at 0100 12/06/2024 from Data Fusion and Advisory System (DFAS) application, powered by SmartSite™ (Approximate Time of Initiating Event).

NOTE: 241-AN, 241-A, 241-AW Farm Exhausters are not connected to the DFAS; however, an approximate exhauster plume was added for each based on other modeled plumes.

NOTE: Additional Information continued on next page.

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

Additional Information:

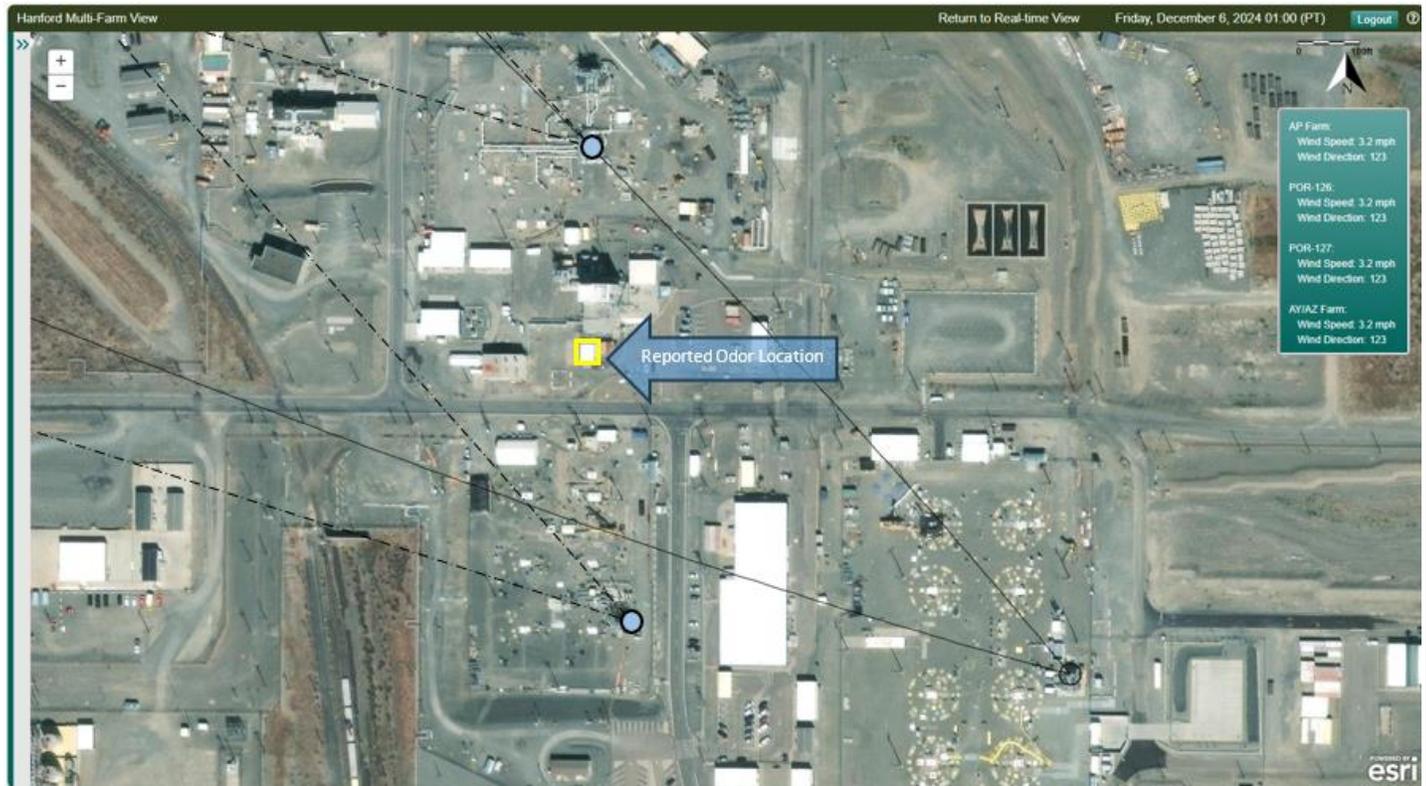


Figure 2. 200-East Area (with 241-AW, 241-AP, 241-A Farm projected plume models) at 0100 12/06/2024 from Data Fusion and Advisory System (DFAS) application, powered by SmartSite™ (Approximate Time of Initiating Event).

NOTE: 241-A and 241-AW Farm Exhausters are not connected to the DFAS; however, an approximate exhauster plume was added for each based on other modeled plumes.

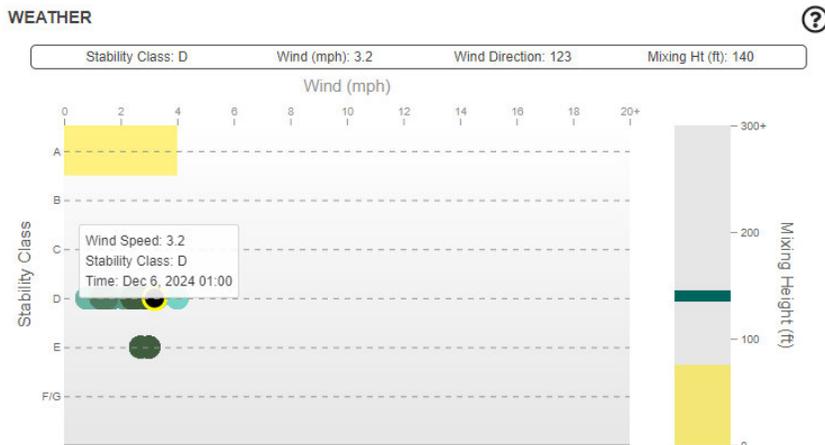


Figure 3. 241-AP Farm Weather Data from Data Fusion and Advisory System (DFAS) application, powered by SmartSite™ at 0100 12/06/2024 (Approximate Time of Initiating Event).

NOTE: 241-A, 241-AX, and 241-AY/AZ Farms Weather Data for Stability Class, Wind Speed, Wind Direction, and Mixing Height are the same.

NOTE: Additional Information continued on next page.

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

Additional Information:

Meteorological information from the Hanford Weather Station for Station #6 on 12/06/2024 @ 0100:

- Temperature: 32°F
- Relative Humidity: 76%
- Wind Speed: 4 mph
- Wind Direction: Out of Southeast
- Barometric Pressure: 29.81 inches of mercury and steady

Review of the DFAS application, powered by SmartSite™, Weather Details dashboard for current conditions during response action development, per TFC-OPS-OPER-C-67 4.2 Step 8:

12/06/2024 @ 0130 (current weather data for Response action development):

- Wind Speed: 2.9 mph (15-minute average)
- Wind Direction: 94° (out of East)
- Mixing Height: 140 feet above grade
- Stability Class: D (neutral conditions)

Refer to Figure 4.

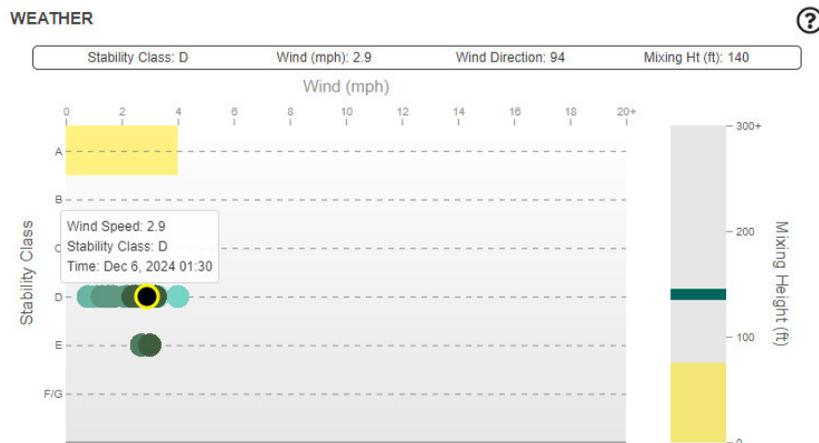


Figure 4. 241-AP Farm Weather Data from Data Fusion and Advisory System (DFAS) application, powered by SmartSite™ at 0130 12/06/2024 (Development of Response Actions).

NOTE: 241-A, 241-AX, and 241-AY/AZ Farms Weather Data for Stability Class, Wind Speed, Wind Direction, and Mixing Height are the same.

Meteorological information from the Hanford Weather Station for Station #6 on 12/06/2024 @ 0130:

- Temperature: 32°F
- Relative Humidity: 81%
- Wind Speed: 3.3 mph
- Wind Direction: Out of East
- Barometric Pressure: 29.8 inches of mercury and steady

NOTE: Additional Information continued on next page.

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

Additional Information:

Review of the Data Fusion & Advisory System (DFAS) application, powered by SmartSite™, Weather Details dashboard for the time of the Response Actions:

- 12/06/2024 @ 0245 (weather data for Response actions):
- Wind Speed: 2.9 mph (15-minute average)
  - Wind Direction: 53° (out of Northeast)
  - Mixing Height: 140 feet above grade
  - Stability Class: E (slightly stable conditions)

Refer to Figure 5.

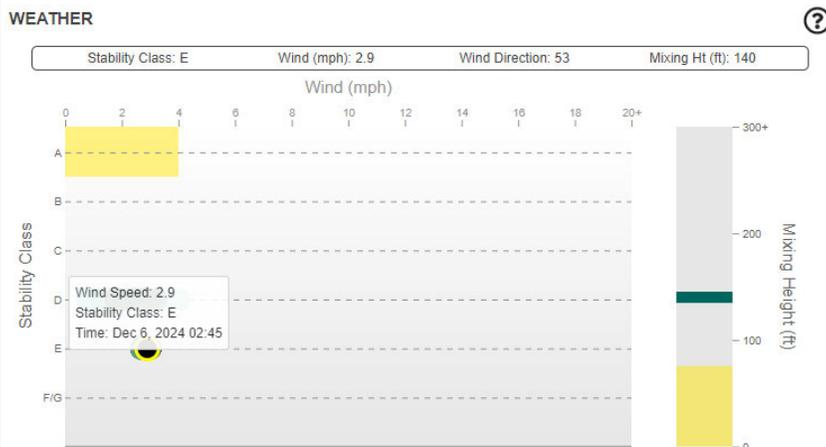


Figure 5. 241-AP Farm Weather Data from Data Fusion and Advisory System (DFAS) application, powered by SmartSite™ at 0245 12/06/2024 (Response Actions).

NOTE: 241-A, 241-AX, and 241-AY/AZ Farms Weather Data for Stability Class, Wind Speed, Wind Direction, and Mixing Height are the same.

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.

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

Additional Information:

200-East VMDS Exhauster Ammonia Readings on 12/06/2024 @ 0100 (Figure 6):

Tank Farm	Exhauster	Value
241-A	POR518	1.404 ppm
241-A	POR519	2.714 ppm
241-AN	Primary	N/A
241-AP	Primary	0 ppm
241-AW	Primary	11.442 ppm
241-AX	POR126	0 ppm
241-AX	POR127	N/A
241-AY/AZ	702AZ	15.947 ppm

12/6/2024 1:00:00 AM		1m			12/6/2024 1:01:00 AM	
Name	Description	Value	Units	Trend	Minimum	Maximum
A241-VTP-AE-710U NH3	Ammonia Concentration	1.404	ppm		1.402	1.405
A241-VTP-AE-810U NH3	Ammonia Concentration	2.714	ppm		2.714	2.714
AN241-VTP-AE-653U NH3	Ammonia Concentration	Unit Down	ppm		No Data	No Data
AP241-VTP-AE-507I NH3	NH3 Concentration (5ppm	Scan Off	ppm		No Data	No Data
AP241-VTP-AE-507U NH3	NH3 Concentration (5ppm	Scan Off	ppm		No Data	No Data
AP241-VTP-AE-710 NH3	Ammonia Concentration	0	ppm		0	0
AW241-VTP-AE-653I NH3		No Data			No Data	No Data
AW241-VTP-AE-653U NH3	Ammonia Concentration	11.442	ppm		11.363	11.442
AX241-VTP-AE-710 NH3	Ammonia Concentration	0	ppm		0	0
AX241-VTP-AE-810 NH3	Ammonia Concentration	Unit Down	ppm		No Data	No Data
AZ702-VTP-AE-653U NH3	Ammonia Concentration	15.947	ppm		15.786	15.947

Figure 6. OSIsoft Pi Vision VMDS Ammonia Concentrations for 0100 12/06/2024.

200-East VMDS Exhauster Ammonia Readings from 11/29/2024 @ 0330 to 12/06/2024 @ 0330 (Figure 7):

Tank Farm	Exhauster	Minimum*A	Maximum*A
241-A	POR518/POR519	0 ppm	10.051 ppm
241-AN	Primary	N/A	N/A
241-AP	Primary	0 ppm	31.961 ppm
241-AW	Primary	3.430 ppm	27.996 ppm
241-AX	POR126/POR127	0 ppm	30.301 ppm
241-AY/AZ	702AZ	13.826 ppm	22.446 ppm

\*A VMDS Alternate Real Time Monitoring performed 11/29/2024 to 12/06/2024 for 241-AN and on 12/05/2024 for 241-AY/AZ.

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 when VMDS is unavailable. Additionally, monitoring is performed in accordance with [ARP-T-041-00002](#) to react to specific alarms. The VMDS alternate monitoring readings are obtained in accordance with [TF-OPS-IHT-037](#).

NOTE: Additional Information continued on next page.

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

Additional Information:

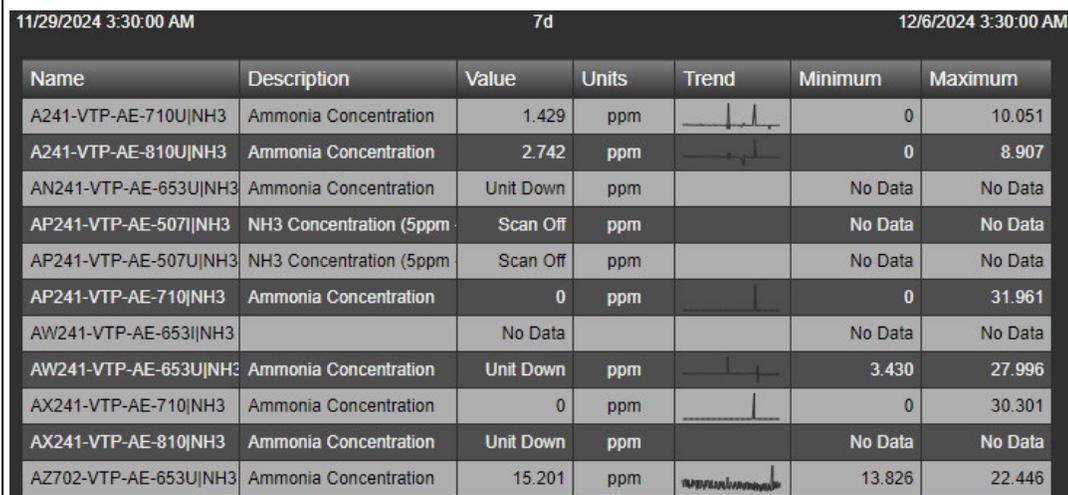


Figure 7. OSIsoft Pi Vision VMDS Ammonia Concentrations from 11/29/2024 at 0330 to 12/06/2024 at 0330.

VMDS Alternate Ammonia Monitoring from 11/29/2024 to 12/06/2024:

Tank Farm	Exhauster	Minimum*A	Maximum*A
241-AN	Primary	10 ppm	16 ppm
241-AY/AZ	702AZ	-	18 ppm

\*A VMDS Alternate Real Time Monitoring performed 11/29/2024 to 12/06/2024 for 241-AN and on 12/05/2024 for 241-AY/AZ.

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. This is consistent with the known/likely source provided by the Affected Workers and PBO/SOE.

Monitoring Selections Based on Information Provided by Affected Workers:

The Affected Workers reported an odor descriptor "fuel (diesel/gas)". They listed the known/likely source as the "Boiler Annex" as it had "been running the boilers to mufflers. Their steam condensate drains to the Water Service Building". Based on the odor descriptors provided, monitoring for VOC vapors was performed utilizing both the 10.6 eV PID and 11.7 eV PID.

Honeywell Technical Note [TN-106](#) provides PID correction factors for diesel and gasoline on both the 10.6 eV and 11.7 eV PID. Additionally, the American Industrial Hygiene Association (AIHA) Odor Threshold for Chemicals with Established Health Standards, 4<sup>th</sup> Edition, lists several chemicals with the odor character "Gasoline" and "Solvent". Most of them are VOCs detectable with DRI equipped with a 10.6 eV and/or 11.7 eV PID.

Due to the proximity of the Tank Farm boundaries, and un-confirmed source of the odor at the time the Response Plan was developed, the Tank Vapor VOC AL was utilized for the 10.6 eV PID. Without a confirmed source, a chemical specific action limit was not developed for the 11.7 eV PID. Accordingly, this instrument was utilized for source indication purposes, expanding the range of detectable VOCs to help identify a potential source.

NOTE: Additional Information continued on next page.

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

Additional Information:

**Odor Source Identified:**

The primary objective of TFC-OPS-OPER-C-67 odor response investigations is to determine if any additional actions are necessary to prevent inadvertent worker exposure to chemical constituents above applicable occupational exposure limits. The secondary objective is to identify a potential odor source. Unlike a majority of TFC-OPS-OPER-C-67 odor response investigations where a source is not positively identified, during this evolution the odor source was confirmed to be a diesel spill into the 242A-BA sump during recent maintenance activities. The Affected Workers indicated this was the likely source and the response DRI readings were consistent with those anticipated for diesel fuel. The source was confirmed through follow-up investigations by the PBO/SOE, as reported to the CSM.

The PBO/SOE verified that during maintenance performed over the days leading up to the odor event, diesel was discharged to the 242A-BA sump in a volume < 1 gallon. The maintenance activities included disconnecting and servicing the fuel piping, including piping directly above the 242A-BA sump. While containment was utilized for this work evolution, a small amount of diesel was spilled into the sump. The sump at 242A-BA drains effluent to the sump in 242A-81 when the boilers are in operation. At the time of the odor event, the boilers were in operation.

Once the odor source was verified, the VOC 10.6 eV PID and 11.7 eV PID ALs were adjusted to the chemical specific ALs for diesel fuel. The chemical specific ALs were developed following the process outlined in [TOC-IH-58956](#), "Monitoring Strategy for Response for Odors".

Honeywell (2018) notes on instrument design:

*High-boiling ("heavy") or very reactive compounds can be lost by reaction or adsorption onto materials in the gas sample train, such as filters, pumps and other sensors. Multi-gas meters, including EntryRAE, MultiRAE and AreaRAE have the pump and other sensors upstream of the PID and are prone to these losses. Compounds possibly affected by such losses are shown in green in the table, and may give slow response, or in extreme cases, no response at all. In many cases the multi-gas meters can still give a rough indication of the relative concentration, without giving an accurate, quantitative reading. The ppbRAE and MiniRAE series instruments have inert sample trains and therefore do not exhibit significant loss; nevertheless, response may be slow for the very heavy compounds and additional sampling time up to a minute or more should be allowed to get a stable reading.*

Equation 1. Adjusted PID Reading Display for Specific Compound:

$$\text{Adjusted Reading} = X \text{ ppm (display)} \times CF$$

Equation 2. Adjusted AL for Specific Compound (high-boiling or very reactive compounds):

$$\text{Adjusted Action Limit (display)} = \frac{X \text{ ppm (AL)}}{CF} \times \text{Safety Factor}$$

Constituent	TWA Exposure Limit	Correction Factor		Adjusted AL	
		10.6 eV	11.7 eV	10.6 eV	11.7 eV
Diesel Fuel #2	100 mg/m <sup>3</sup> (11.32 ppm)	0.7	0.4	4.042 ppm <sup>1</sup>	7.075 ppm <sup>1</sup>

(ACGIH 2016; [RAE Systems by Honeywell, 2018](#))

NOTE: Additional Information continued on next page.

<sup>1</sup> A 50% safety factor was utilized for the 10.6 eV and 11.7 eV Adjusted AL due to potential loss of analyte prior to encountering the PID (Honeywell, 2018). 10.6 eV Adjusted AL without the safety factor = 8.085 ppm. 11.7 eV Adjusted AL without the safety factor = 14.15 ppm.

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

Additional Information:

**Additional Information Acronyms:**

ACGIH	American Conference of Governmental Industrial Hygienists		
AIHA	American Industrial Hygiene Association		
AL	Action Limit	PID	photoionization detector
CF	correction factor	PO	Production Operations
COPC	chemicals of potential concern	ppm	parts per million
DFAS	Data Fusion & Advisory System	OVRC	Odor/Vapor Response Card
DRI	direct reading instrument	QRA	Quantitative Risk Assessment
eV	electron-volts	SOE	Stationary Operating Engineer
IH	Industrial Hygienist	TWA	Time Weighted Average
mg/m <sup>3</sup>	milligrams per meter cubed	VMDS	Vapor Monitoring Detection System
mph	miles per hour	VOC	Volatile Organic Compounds
PBO	Primary Boiler Operator		

**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 (2024). Odor Thresholds for Chemicals, 4<sup>th</sup> Edition. Falls Church, VA: AIHA.
- [ARP-T-041-00002](#). Tank Farm Alarm Response Procedure.
- AVEVA™ PI Vision™. [VMDS Overview](#).
- 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](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>.
- SmartSite™. [Data Fusion & Advisory System](#). Hanford Multi-Farm View.
- [TF-OPS-IHT-037](#). IHT Ammonia Monitoring on Exhausters.
- [TOC-IH-58956](#). Monitoring Strategy for Response to Odors: Common Odor Sources in the 200 East, 200 West, & 600 Areas.
- [TOC-IH-59014](#). Tank Waste Chemical Vapors: Evaluation and Management Strategy.
- [TOC-IH-RPT-50042](#). Ammonia Monitoring – Rate of Change of Tank Vapor Source Concentration and Monitoring Frequency.
- [WRPS-1904672.1](#). Interoffice Memorandum: Tank Farm Exhaust Stack Concentration Alarm/Action Levels for Ammonia.

Recommendations/Conclusions:

Recommendations:

N/A

Conclusions:

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, the atmospheric stability at the time of the event was neutral to slightly stable conditions and the mixing height was 140 feet above grade. These atmospheric conditions typically do not result in ground level exposures from the exhausters. Additionally, VMDS exhauster ammonia readings for the approximate time of the Event were below levels that could result in ground level exposures above ALs. Therefore, the cause of the odor is unlikely to be from Tank Farm Exhauster emissions. This is consistent with the known/likely source provided by the Affected Workers and PBO/SOE.

The Affected Workers indicated the boiler annex steam condensate was the likely source as it drains to the Water Service Building. The source was confirmed through follow-up investigations by the PBO/SOE, as reported to the CSM.

The PBO/SOE verified that during maintenance performed over the days leading up to the odor event, diesel was discharged to the 242A-BA sump in a volume < 1 gallon. The maintenance activities included disconnecting and servicing the fuel piping, including piping directly above the 242A-BA sump. While containment was utilized for this work evolution, a small amount of diesel was spilled into the sump. The sump at 242A-BA drains effluent to the sump in 242A-81 when the boilers are in operation. At the time of the odor event, the boilers were in operation.

The response DRI readings were consistent with those anticipated for diesel fuel. Once the odor source was verified, the VOC 10.6 eV PID and 11.7 eV PID ALs were adjusted to the chemical specific ALs for diesel fuel. Based on the chemical (source) specific ALs, DRI monitoring performed during response actions did not indicate further action was necessary to protect worker safety and health. As a result, the area was released from restricted access and work was allowed to continue.

Others:

No symptoms reported and all Affected Workers declined precautionary medical surveillance.

Associated Documents:

iCAS Number: N/A

EIR Number: EIR-2025-019

Industrial Hygienist:

\_\_\_\_\_  
*Print First and Last Name*

Industrial Hygiene Level 3 Manager

\_\_\_\_\_  
*Print First and Last Name*

Industrial Hygiene Level 2 Manager:

\_\_\_\_\_  
*Print First and Last Name*

\_\_\_\_\_  
*Signature / Date*

## ODOR/VAPOR RESPONSE CARD - 242 A

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

- Date and time of event: 12-16-24 <sup>RV 12-16-24</sup> 0110 0100
- Check Applicable:  
 Odor     Ammonia Alarm (6 ppm)     Ammonia Alarm (12 ppm)     Alarm (other - describe): \_\_\_\_\_
- Your name and the work you were performing:  
[REDACTED] TD-600-130
- Other Work Underway? Describe:  
NO
- Location of event (mark area on map and wind direction):  
242A Water Service building
- 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): Fuel
- Is source known/likely? Describe:  
From boiler Annex
- Your symptoms?  None  
 Headache     Dizziness     Nausea     Cough     Fatigue  
 Weakness     Sore Throat     Difficulty Breathing     Eye Irritation     Rash  
 Itch     Tingling     Numbness     Taste  
 Other (describe): \_\_\_\_\_

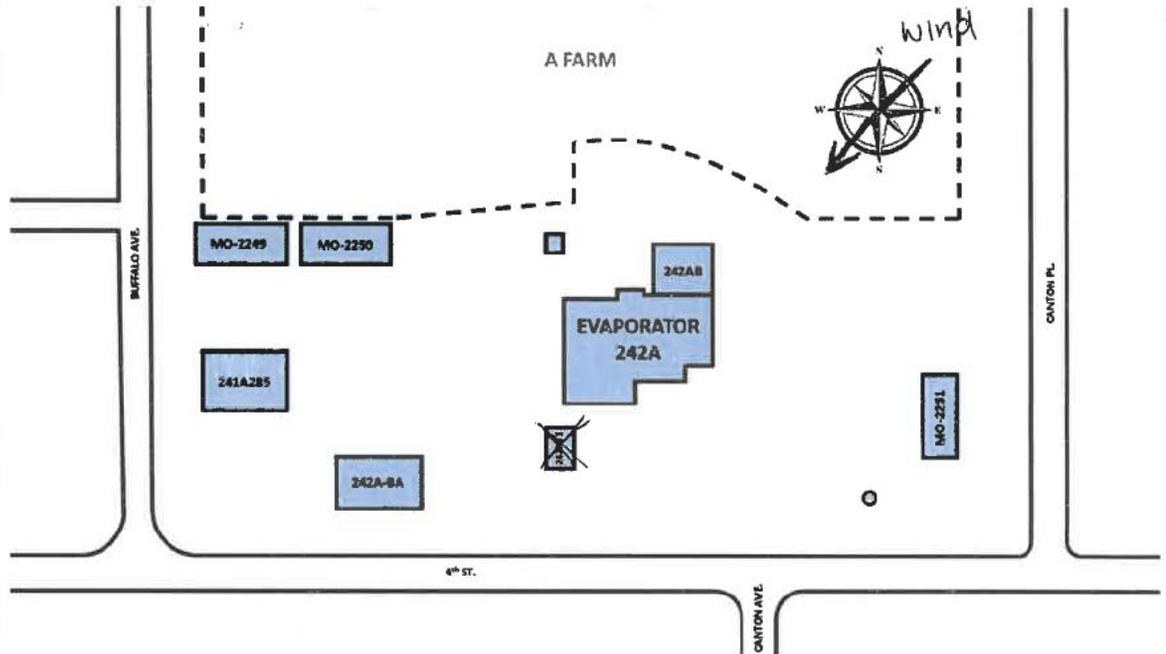
**2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM. If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.**

## ODOR/VAPOR RESPONSE CARD - 242 A

### Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at (509) 373-2689.
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 - 242 A

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

- Date and time of event: 12-6-24 ~~0123~~ 0100
- Check Applicable:  
 Odor     Ammonia Alarm (6 ppm)     Ammonia Alarm (12 ppm)     Alarm (other - describe): \_\_\_\_\_
- Your name and the work you were performing:  
[Redacted]    Investigated report of possible smell
- Other Work Underway? Describe:  
NO
- Location of event (mark area on map and wind direction):  
inside 242A water service building (242A81)
- 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): Fuel "Smell"
- Is source known/likely? Describe:  
Suspected from Boiler Annex condensation line.
- Your symptoms?  None  
 Headache     Dizziness     Nausea     Cough     Fatigue  
 Weakness     Sore Throat     Difficulty Breathing     Eye Irritation     Rash  
 Itch     Tingling     Numbness     Taste  
 Other (describe): \_\_\_\_\_

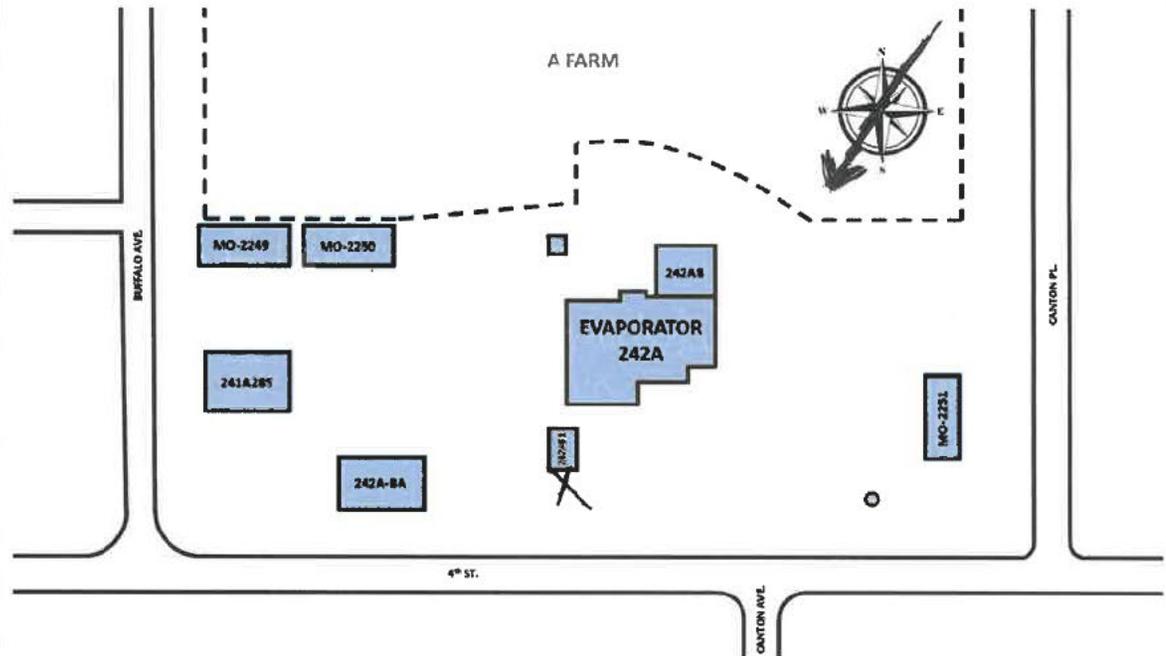
**2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM. If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.**

## ODOR/VAPOR RESPONSE CARD - 242 A

### Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at (509) 373-2689.
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 - 242 A

### 1. Complete below information and map (Page 1). [REDACTED] 12-6-24

• Date and time of event: 12/6/2024 / 0123 0100

• Check Applicable:

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

• Your name and the work you were performing:

[REDACTED] Investigating report of possible odor.

• Other Work Underway? Describe:

No

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

242-A-81 Water Service Building

• 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): Fuel (diesel/gas)

• Is source known/likely? Describe: Boiler Annex has been running boilers to mufflers. Their steam condensate drains to the Water Service Building

• Your symptoms?  None

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

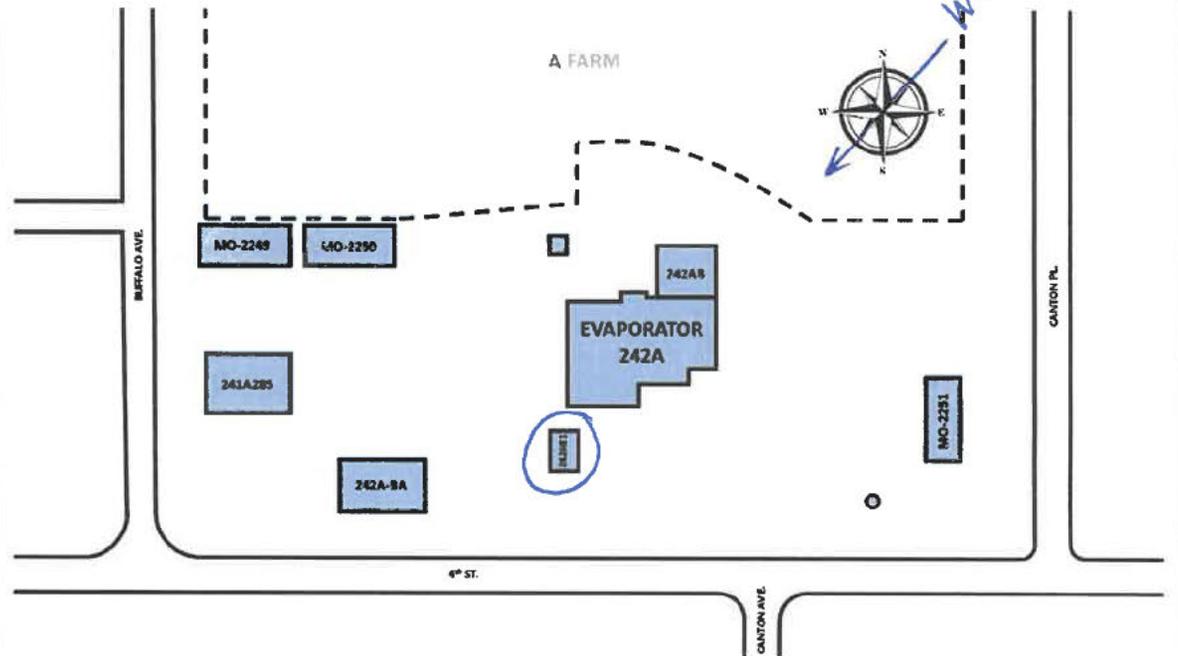
**2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM. If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.**

## ODOR/VAPOR RESPONSE CARD - 242 A

### Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at (509) 373-2689.
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 - 242 A

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

- Date and time of event: 12-6-24 0800
- Check Applicable:  
 Odor     Ammonia Alarm (6 ppm)     Ammonia Alarm (12 ppm)     Alarm (other - describe): \_\_\_\_\_
- Your name and the work you were performing:  
[REDACTED] Strainer slowdown, TO-600-130
- Other Work Underway? Describe:  
NO
- Location of event (mark area on map and wind direction):  
242 A water service building (242A 81)
- 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): Fuel
- Is source known/likely? Describe:  
Boiler annex condensation
- 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 - 242 A

### Instructions:

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM), at (509) 373-2689.
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.

