

C-67 Event Investigation Reports (Redacted) EIR-2024-028 C-67 (03/27/2024)

(Settlement Agreement Deliverable)

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-08RV14800



**P.O. Box 850
Richland, Washington 99352**

C-67 Event Investigation Reports (Redacted) EIR-2024-028 C-67 (03/27/2024)

(Settlement Agreement Deliverable)

N. J. Pearson

Washington River Protection Solutions

Date Published

April 2024

WRPS

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-08RV14800



P.O. Box 850
Richland, Washington 99352

Copyright License

By acceptance of this article, the publisher and/or recipient acknowledges the U.S. Government's right to retain a non exclusive, royalty-free license in and to any copyright covering this paper.

APPROVED

By Lynn M Ayers at 2:51 pm, Apr 04, 2024

Release Approval

Date

Approved for Public Release;
Further Dissemination Unlimited

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

This report has been reproduced from the best available copy.

Printed in the United States of America

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:** 04/02/2024

3. **Investigation Title:** Odor Event at 2025EA

4. **Investigation Report Number:** EIR-2024-028

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

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

7. **Area / Building / Location:** 200E/2025EA/LUNCHROOM

8. **Date and Approximate Time of Event:** **Date:** 03/27/2024 **Time (military):** 1130 hours

9. **Associated Action Request (AR) Number:** WRPS-AR-2024-1340

10. **Associated Occurrence Report Number (if applicable):** NA

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

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

There was no activity taking place. Occupants of the building were having lunch.

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

5 WRPS Engineers

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

On 03/27/2024 at approximately 1130 hours 5 engineers were having lunch in building 2025 EA when they smelled an odor that they described as: burning grease/rubber, diesel exhaust, microwaved cabbage or instant Ramen overcooked. None of the engineers reported any symptoms and they all declined medical evaluation.

All personnel were instructed to leave the building immediately. Access to 2025EA was restricted, and "Restricted Access" signs, with a contact phone number were posted at each (3) entry door. The odor was reported to the Central Shift Manager (CSM) at 1134 hours.

Building 2025EA is an administration building with offices, a conference room, a kitchen/lunchroom, restrooms, and cubicles that support Effluent Treatment Facility (ETF) personnel. The number of people in the building at the time of this event is unknown. The building has a capacity to support 52 workers. There are no areas of the building that are posted for any safety hazards.

Industrial Hygiene Technicians (IHTs) responded to the odor event and took Direct Reading Instrument (DRI) readings inside of building 2025EA. One IHT was interviewed and said that none of the IHTs wore a respirator when they entered building 2025EA. The area where the odor was detected was in the West hallway (See Figure 1) that leads to the lunchroom. DRI instrument readings were below action levels. Access to building 2025EA was restored at 1359 hours.

Washington River Protection Solutions
EVENT SUMMARY

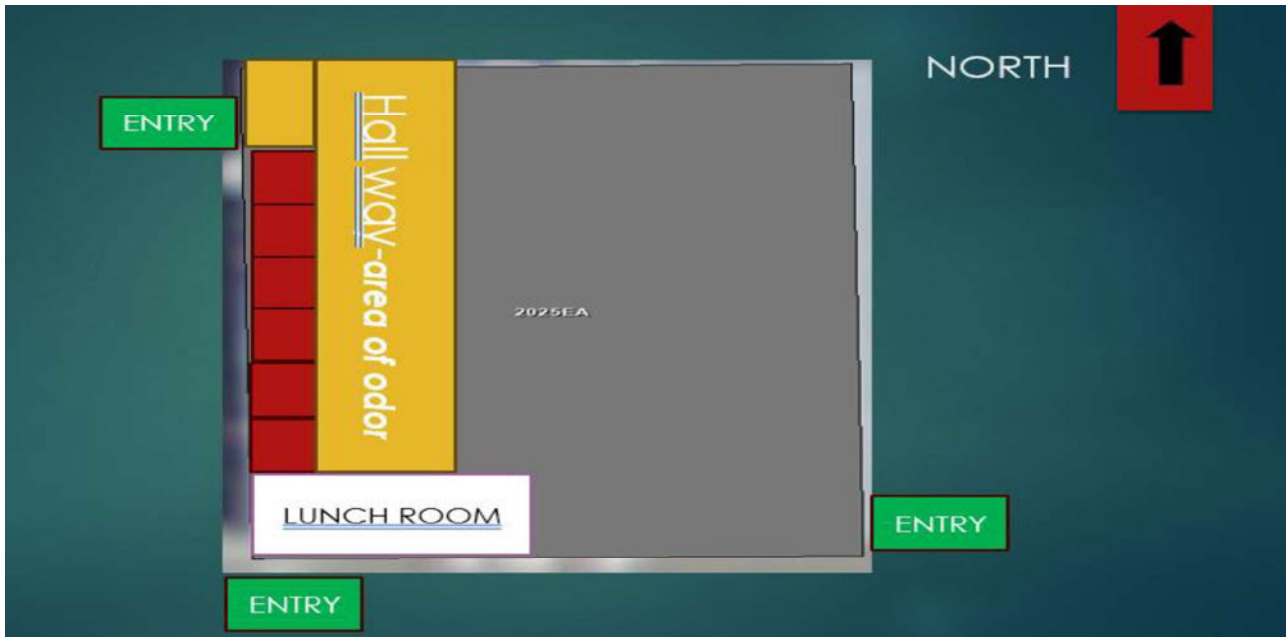


Figure 1 - building 2025EA area of odor.

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

Inside the 2025EA administration building in the North/South quadrant of the one-story building.

Wind speed: 11 Miles Per Hour (MPH)
Wind direction: out of the Southeast 140 degrees
Temperature: 48 degrees Fahrenheit
Barometric Pressure: 29.065 HG
Humidity: 77%
Mixing height: 1000 meters

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

None.

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

- [1134 hours] - Odor was reported to the CSM.
- [1142 hours] - Effluent Treatment Facility (ETF) Industrial Hygienist (IH) notified Production Operations-East (POE) IH-1 of TFC-OPS-OPER-C-67 at 2025EA. Odor descriptor "burning rubber."
- [1145 hours] - Shift Office Event Notification (SOEN): "ETF responding per OPS-OPER-C-67 for stronger than normal odors at 2025EA. CSM."
- [1146 hours] - The CSM entered TFC-OPS-OPER-C-67 and restricted access to building 2025EA including the lunchroom.
- [1146 hours] - The CSM made the required TFC-OPS-OPER-C-67 notifications.
- [1200 hours] - Production Operations ETF IHTs initiated TFC-OPS-OPER-C-67 response actions and monitoring per IHSP-POE-MULTI-TFCOPSOPER67, "Industrial Hygiene Monitoring and Sample Plan," to measure reported odors.

Washington River Protection Solutions
EVENT SUMMARY

- [1326 hours] - Event Investigation EIR-2024-028, "C-67 Odor Response at 2025EA," initiated by the CSM.

- [1359 hours] - SOEN: "Response to odors per OPER-C-67 complete. Normal access to 2025EA restored. CSM."

18. Compensatory Actions Taken:

None.

19. Remedial Actions Taken:

None.

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

To summarize the conclusions of Industrial Hygiene Event Investigation Report (IHIR)-00091 for EIR-2024-028, *Odor Event at 2025EA*, investigation and DRI monitoring could not readily identify a source of the reported odors. The odor descriptor provided by affected workers is consistent with a mechanical issue in the HVAC unit, HP-11. HP-11 supplies fresh air to the hallway and offices where the odor was identified. An exterior inspection of the HP-11 showed that there were no collocated work or equipment in operation near intake units that would attribute to the "burning rubber" odor.

Facility electricians performed an exterior evaluation of HP-11, and then tagged HP-11 out of service until further evaluation can be performed by Refrigeration Equipment Services (RES) to determine the source of the problem. A service request, "C9A01B" was submitted to RES, to evaluate the HP-11 HVAC unit.

DRI monitoring performed during TFC-OPS-OPER-C-67 response actions did not indicate further actions were necessary from a worker safety and health occupational exposure standpoint. As a result, the area/building was released from restricted access. Results from the Interior and Exterior DRI monitoring are in Table 1 below:

Table 1: 2025EA Interior Monitoring Results

Agent	Result	Action Limit
Ammonia	< 1 ppm	12 ppm
Carbon Monoxide	< 1 ppm	12.5 ppm
Oxygen	20.900 %	≤19.5% or ≥ 23.5 %
Volatile Organic Compound	< 0.010 ppm	4 ppm
Airborne Particulate	< 0.001 mg/m ³	1.5 mg/m ³

Table 2: 2025EA Exterior HP11 Monitoring Results

Agent	Result	Action Limit
Ammonia	< 1 ppm	12 ppm
Carbon Monoxide	< 1 ppm	12.5 ppm
Oxygen	20.900 %	≤19.5% or ≥ 23.5 %
Volatile Organic Compound	< 0.010 ppm	4 ppm
Airborne Particulate	< 0.001 mg/m ³	1.5 mg/m ³

Washington River Protection Solutions
EVENT SUMMARY

21. Positive Aspects Identified:

All workers were instructed to leave the building.

Signs restricting access to the building were posted at the three entry locations (doors) into the building along with a contact phone number.

No workers reported symptoms, and all declined medical evaluation.

22. Key Take Aways / Learning Opportunities:

None. Per TFC-OPS-OPER-C-28, "Operating Experience/Lessons Learned," this event did not meet the criteria requiring generation of a Lessons Learned.

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: 2024.04.02 13:59:57 -07'00'

Signature / Date

CAS Manager Approval:

Name (First, Middle Initial, Last)

Digitally signed by _____
Date: 2024.04.02 14:05:43 -07'00'

Signature / Date

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

Event Title: TFC-OPS-OPER-C-67 Response 2025EA (ETF)		IHIR Number: IHIR-00091
		IHEI Number: N/A
Date: 03/27/2024	Time: 1134	Location: 2025EA

Event Summary and Timeline:

Event Summary:

At approximately 1100 to 1130 on 03/27/2024 five workers encountered a stronger than normal "burning rubber" odor inside 2025EA in offices 112 to 117 and adjacent hallway (west side of 2025EA). No symptoms were reported. All workers declined medical.

Field Response Timeline:

- 1134 Odor was reported to Central Shift Manager (CSM).
- 1142 Effluent Treatment Facility (ETF) Industrial Hygienist (IH) notifies Production Operations-East (POE) IH-1 of TFC-OPS-OPER-C-67 at 2025EA, odor descriptor "burning rubber".
- 1145 Shift Office Event Notification (SOEN): "ETF responding per OPS-OPER-C-67 for stronger than normal odors at 2025EA. CSM"
- 1146 POE IH-1 arrives at Central Shift Office (CSO).
- 1146 POE Shift Industrial Hygiene Technician (IHT) Supervisor contacts POE Shift IHT-1 and POE Shift IHT-2:
- Supervisor → IHT-1 & IHT-2: Requesting support for TFC-OPS-OPER-C-67 response.
 - IHT-1 → Supervisor & IHT-2: On my way.
- 1148 POE IH-2 and POE Shift IHT Supervisor arrive at CSO.
- Supervisor → POE IH-1 & POE IH-2: IHT support has been requested.
- 1150 POE Shift IHT-1 arrives at CSO.
- 1151 POE IH-2 requests meteorological information for Station #6 from Hanford Weather Station for 1130:
- Wind Speed: 11 mph
 - Wind Direction: out of Southeast
 - Temperature: 48° F
 - Barometric Pressure: 29.065 in/Hg and decreasing
 - Relative Humidity: 77%
- 1151 POE Level 3 Safety & Health (S&H) Manager, POE IH-3, and POE IH-4 arrive at CSO.

NOTE: Field Response Timeline continued on next page

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

Event Summary and Timeline:

- 1152 POE IHs discuss monitoring requirements for "burning rubber" odor descriptor.
- Referenced TOC-IH-58956, "Monitoring Strategy for Response to Odors"
 - Direct Reading Instrument (DRI) Sensors needed for response actions:
 - Volatile Organic Compounds (VOC)- 10.6 eV photoionization detector (PID)
 - Evaluate need for additional sensors
- 1152 POE Shift IHT-1 contacts POE Shift IHT-2 to request support for TFC-OPS-OPER-C-67 response.
- 1153 POE IH-2 contacted Hanford Weather Station for the mixing height at 1130.
- Mixing Height: 1000 m
 - Data Fusion & Advisory System (DFAS) out of service for maintenance.
 - POE IHs relay mixing height to CSM.
- 1156 POE Shift IHT-2 arrives at CSO.
- 1156 POE IH-1 and POE IH-2 contacts ETF IH for additional information on Initiating Event:
- POE IH-1 & 2 → ETF IH: How many Affected Workers?
 - ETF IH → POE IH-1 & 2: Not sure yet. Odor detected in 5-6 offices, each one normally occupied by one exempt. Odor detected in adjacent hallway
 - POE IH-1 & 2 → ETF IH: Location of offices in 2025EA?
 - ETF IH → POE IH-1 & 2: West Side of 2025EA
 - POE IH-1 & 2 → ETF IH: Any symptom? Affected Workers offered medical?
 - ETF IH → POE IH-1 & 2: No symptoms reported, will ensure medical has been offered
 - ETF IH → POE IH-1 & 2: Odor assumed to be from a belt on the Heating, Ventilation, and Air Conditioning (HVAC) unit that supplies those offices (HP11), will send engineering drawing.
 - POE IH-1 & 2 → ETF IH: Approximate time?
 - ETF IH → POE IH-1 & 2: Between 1100 and 1130
- 1156 ETF IH emails POE IH-1 Engineering Drawing
- Drawing [H-2-88788 Sheet 002 Rev. 00](#), "2025EA HVAC & Remodel HVAC [Piping & Instrumentation Diagram (P&ID)]".
 - Will follow-up with office numbers.

NOTE: Field Response Timeline continued on next page

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

Event Summary and Timeline:

- 1200 POE IH-1 and POE IH-2 contacts ETF IH:
- POE IH-1 & 2 → ETF IH: Please request Affected Workers populate Odor/Vapor Response Cards (OVRC), POE IH-1 will email Site Form to ETF IH.
 - ETF IH → POE IH-1 & 2: Will do. Odor encountered in 7 offices (112 to 117) and hallway. Affected Workers offered precautionary medical surveillance. All declined.
- 1201 POE IH-1 emails ETF IH OVRC Site Form A-6007-246
- 1201 POE IHS discuss additional monitoring requirements for “burning rubber” odor descriptor (approximate time).
- Referenced TOC-IH-58956, "Monitoring Strategy for Response to Odors"
 - Additional DRI Sensors needed for response actions:
 - Carbon Monoxide
 - Particulates Not Otherwise Specified (PNOS)
- 1201 Level 3 S&H Manager notifies Environmental, Safety, Health, & Quality (ESH&Q) Level 1 Manager and Level 2 IH Manager of TFC-OPS-OPER-C-67.
- 1203 ETF IH confirms that access has been restricted to the affected area.
- 1207 POE Shift IHT-1 updates POE Shift IHT Supervisor
- Pre-use function test complete for VOC and Carbon Monoxide.
 - POE Shift IHT-1 and POE Shift IHT-2 are traveling to 2704HV to obtain PNOS DRI and perform pre-use function test.
- 1209 Engineering notifies CSM that the DFAS outage is extended.
- 1218 POE IH-1 and CSM discuss Respiratory Protection Equipment (RPE) requirements for response:
- None required, Voluntary Use
- 1227 ETF IH contacts POE IH-1 and POE IH-2
- ETF IH → POE IH-1 & 2: Estimated Time of Arrival (ETA) for IHTs at ETF
 - POE IH-1 & 2 → ETF IH: Approximately 15-20 minutes.
- 1227 POE Shift IHT Supervisor requests ETA to CSO from POE Shift IHT-1 & POE Shift IHT-2.
- 1228 CSM and POE IH-1 sign TFC-OPS-OPER-C-67 Attachment A Sheet 1 of 2, Response Plan
- 1230 POE IH-1 highlights map of Affected Area for Response Actions:
- Drawing [H-2-88785 Sheet 003 Rev. 00](#), “2025EA HVAC & Remodel Architectural Floor Plan”
- 1231 POE Shift IHTs update POE Shift IHT Supervisor that they are five minutes away from the CSO.
- 1232 The POE IH-1 and CSM examine map of Affected Area.
- 1239 POE Shift IHTs arrive at CSO.

NOTE: Field Response Timeline continued on next page

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

Event Summary and Timeline:

1239 POE IH-1 briefs POE Shift IHT-1 and POE Shift IHT-2 on briefing for response:

- Monitor per IHSP-POE-MULTI-TFCOPSOPERC67:
 - DRI sensor Action Limit
 - VOC 10.6 eV PID: 4 ppm
 - Carbon Monoxide: 12 ppm
 - PNOS: 1.5 mg/m³
 - Map of Affected Area provided.
 - Rooms 112-117 highlighted along with adjacent hallway.
 - Survey outside 2025EA, around HP11, then proceed inside to survey rooms/hallway highlighted.
- Respiratory Protection Equipment not required, Voluntary Use.
- Meet up with ETF IH, they are awaiting your arrival.

1240 POE Shift IHTs depart CSO for ETF to initiate Response Actions.

1241 POE IH-2 updates ETF IH, POE Shift IHTs enroute to ETF.

1256 CSM contacts Performance Assurance (PA) to obtain PA Point-of-Contact.

- PA will assign PA Technical Specialist

1305 Engineering contacts CSM

- DFAS is operational

1306 POE IHs check DFAS, powered Smart Site™, for current weather details:

- Wind Speed: 4.4 mph
- Wind Direction: 110° (out of East Southeast)
- Mixing Height: 1200 feet above grade
- Stability Class: D (neutral conditions)

1307 POE Shift IHT-2 updates POE Shift IHT Supervisor on Response Actions:

- All readings less than detection limits
 - VOC 10.6 eV PID: Less than detectable (< 0.010 ppm)
 - Carbon Monoxide: Less than detectable (< 1 ppm)
 - PNOS: Less than detectable (< 0.001 mg/m³)
- Enroute to perform post-use function test.

1310 POE Shift IHT Supervisor contacts POE Shift IHT-2.

- Supervisor → IHT-2: Encounter odors during response?
- IHT-2 → Supervisor: No. We did not smell anything. Everything just smells like “new carpet” and all readings were less than detectable.

NOTE: Field Response Timeline continued on next page

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

Event Summary and Timeline:

- 1319 Level 3 S&H Manager provides update to ESH&Q Level 1 Manager & Level 2 IH Manager.
- IHTs have completed monitoring, awaiting DRI post-use function test.
 - HVAC unit tagged out to investigate cause of the odor.
 - IHTs did not smell anything besides “new carpet” during their entry.
- 1333 POE Shift IHT-2 informs POE Shift IHT Supervisor that DRI have passed the post-use function test.
- 1334 ETF IH updated POE IH-2:
- There were 5 OVRCs filled out by Affected Workers.
 - Confirmed there were still no symptoms reported on the OVRCs.
- 1342 CSM and POE IH-1 sign TFC-OPS-OPER-C-67 Attachment A Sheet 2 of 2, Response Plan
- 1359 SOEN: “Response to odors per OPER-C-67 complete. Normal access to 2025EA restored. CSM”

Field Response Timeline Acronyms:

CSM	Central Shift Manager	mg/m ³	milligrams per meter cubed
CSO	Central Shift Office	mph	miles per hour
DFAS	Data Fusion & Advisory System	OVRC	Odor/Vapor Response Card
DRI	direct reading instrument	P&ID	pipng & instrumentation diagram
ESH&Q	Environmental, Safety, Health, & Quality	PA	Performance Assurance
ETA	Estimated time of arrival	PID	photoionization detector
ETF	Effluent Treatment Facility	PNOS	Particulates Not Otherwise Specified
eV	electron-volts	POE	Production Operations-East
HP	heat pump	ppm	parts per million
HVAC	heating, ventilation, and air conditioning	RPE	respiratory protection equipment
IH	Industrial Hygienist	S&H	Safety & Health
IHT	Industrial Hygiene Technician	SOEN	Shift Office Event Notification
inHg	inches of mercury	VOC	Volatile Organic Compound
m	meters		

Sampling/Monitoring Results:

Continuous monitoring was performed in the west perimeter offices and the exterior HVAC unit (HP11) that supplies fresh air to these offices. Monitoring results are listed in Table 1 and 2. All readings were below action limits, reference SWIHD Survey [24-02257](#). Reference Figure 1 for monitoring locations and Figure 2 for the air supply path to affected areas from unit HP11.

NOTE: Sampling/Monitoring continued on next page

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

Sampling/Monitoring Results:

Action limit and development was conducted by POE IH-1. Based on the Odor Descriptor "Burning rubber", monitoring for Total VOCs and carbon monoxide vapors and particulates not otherwise specified (PNOS) was performed. Refer to [TOC-IH-58956](#) for more detail on the monitoring strategy for response to odors.

- Total VOCs: The American Industrial Hygiene Association (AIHA) [Odor Threshold for Chemicals with Established Health Standards, 2nd Edition](#), lists several chemicals with the odor character "rubber". All of them volatile organic compounds, most detectable with direct reading instruments equipped with a 10.6 eV photoionization detector (PID). As the suspected source of the odor was a belt in the HVAC unit HP11, and the odor descriptor was "burning rubber", the action limit for "burnt plastic" in TOC-IH-58956 was conservatively utilized (4 ppm).
- Carbon Monoxide: Based on the "burning" part of the odor descriptor, monitoring for carbon monoxide was performed. Incomplete combustion of petroleum-based products can result in carbon monoxide emission.
- Particulates Not Otherwise Specified (PNOS): TOC-IH-58956 recommended monitoring for "burnt plastic" includes PNOS. The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices (2016) list a TLV for "natural rubber latex as inhalable allergenic proteins" that is provided in mass per unit volume for an inhalable particle. While neither of these is an exact match for the odor descriptor, monitoring for particulates as PNOS was selected. The ACGIH TLV for PNOS respirable particles is 3 mg/m³ and PNOS inhalable particles is 10 mg/m³. The action limit was conservatively set at 1.5 mg/m³.

Table 1: 2025EA Interior Monitoring Results

Agent	Result	Action Limit
Ammonia	< 1 ppm	12 ppm
Carbon Monoxide	< 1 ppm	12.5 ppm
Oxygen	20.900 %	≤19.5% or ≥ 23.5 %
Volatile Organic Compound	< 0.010 ppm	4 ppm
Airborne Particulate	< 0.001 mg/m ³	1.5 mg/m ³

Table 2: 2025EA Exterior HP11 Monitoring Results

Agent	Result	Action Limit
Ammonia	< 1 ppm	12 ppm
Carbon Monoxide	< 1 ppm	12.5 ppm
Oxygen	20.900 %	≤19.5% or ≥ 23.5 %
Volatile Organic Compound	< 0.010 ppm	4 ppm
Airborne Particulate	< 0.001 mg/m ³	1.5 mg/m ³

NOTE: Sampling/Monitoring continued on next page

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

Sampling/Monitoring Results:

IHT Comments in SWIHD:

"2 IHTs entered 2025EA ~1252 to investigate a burning rubber smell coming from the vents in the West-Northwest corner of the building. This includes the range of offices 112 - 117 and Hallway 126B. IHTs continuously monitored for CO, O₂, particulates, NH₃, and VOCs. No burning smell observed during investigation.

IHTs also investigated the HVAC unit HP11. HP11 is responsible for ventilating the row of offices in question. At 1157, the HVAC was disabled and tagged out of service. IHTs monitored in each office with all readings less than detectable limits. See attached for further details."

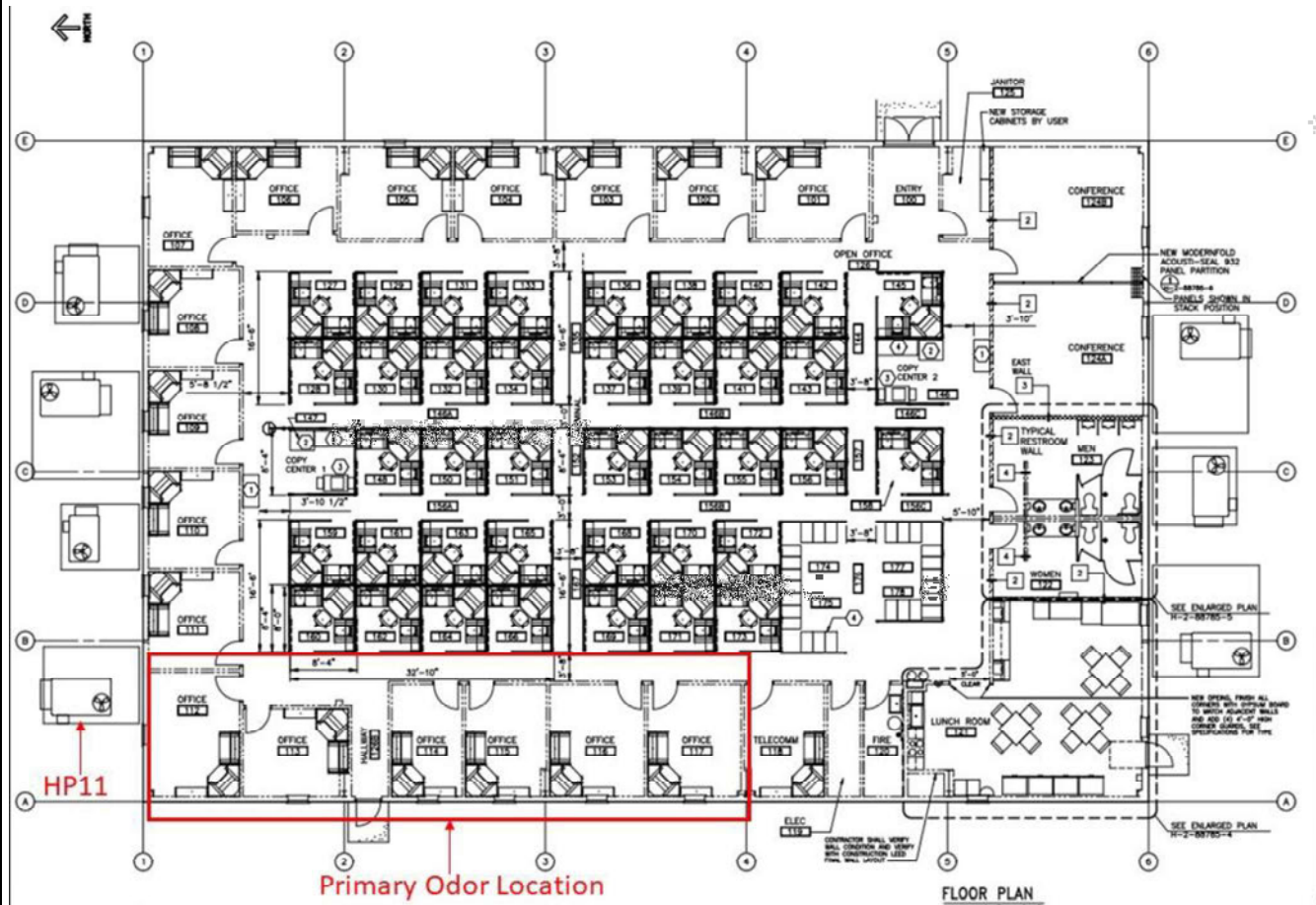


Figure 1. Monitoring Locations¹

NOTE: Sampling/Monitoring continued on next page

¹ Refer to [H-2-88758 Sheet 003](#), 2025EA HVAC & Remodel Architectural Floor Plan.

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

Sampling/Monitoring Results:

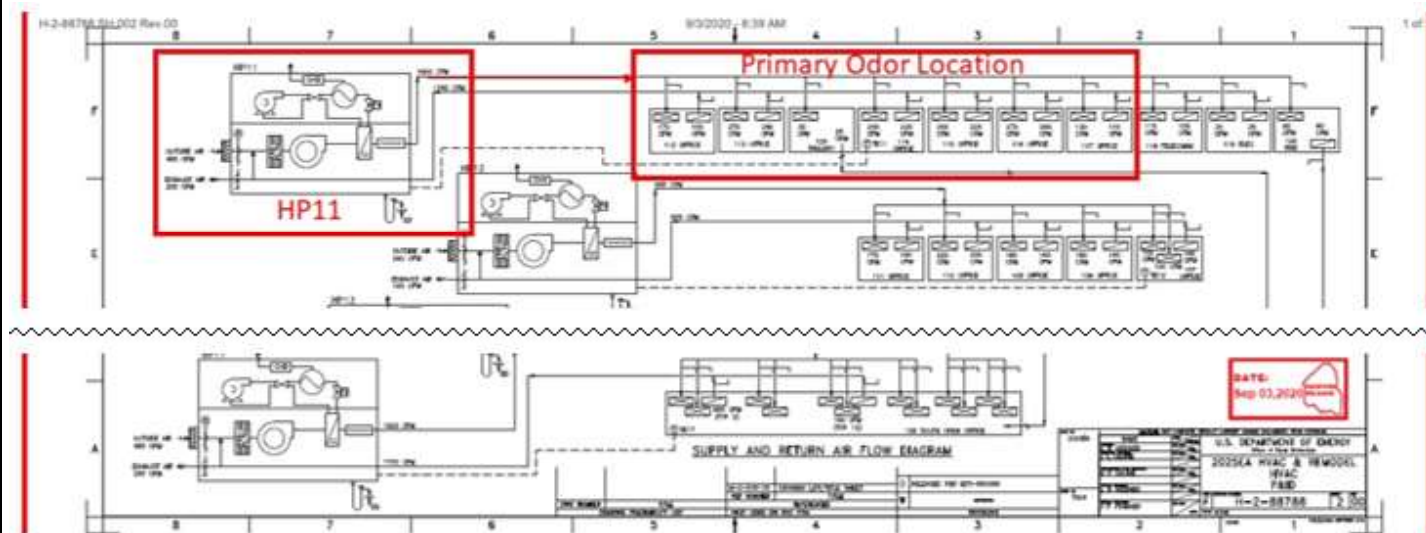


Figure 2. HP11 Air Supply²

Refer to Additional Information for SmartSite™ Summary, OVRC Maps, and Response Plan.

SWIHD References:

Event Response Site Wide Industrial Hygiene Database DRI Survey:

- # [24-02257](#) "TFC-OPS-OPER-C-67 Odor Response 2025EA"

Additional Information:

At approximately 1100 hours, employees working in the west perimeter offices (112-117) at 2025EA reported smelling a burning rubber smell. Air handling unit HP11 supplies fresh air into these offices, [H-2-88788 Sheet 002 Rev. 00](#). An exterior walk down was performed by onsite IH and Engineering of all HVAC units to identify abnormal sounds, odors, collocated work, or equipment in operation. No work or strong odors were noted from the exterior walk down. The odor was reported to CSM. No symptoms were reported, and all workers declined a precautionary medical evaluation. Facility electricians were notified and responded to do an external evaluation of HP11 and tagged the unit out of service. A ticket was submitted to RES for troubleshooting and repair. Industrial hygiene technicians responded to the area and took direct-reading instrument (DRI) readings. HP11 was not in operation at the time of the survey. All DRI readings were below action limits. Response actions per TFC-OPS-OPER-C-67, were complete at 1:59 pm and access to the facility was restored.

NOTE: Additional Information continued on next page

² Refer to [H-2-88788 Sheet 002](#), 2025EA HVAC & Remodel HVAC P&ID.

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

Additional Information:

Odor response cards were completed by five employees. The most predominantly noted odor was burning rubber/grease. Additional odor descriptors included overheated "smoky", "over heated frozen dinner", "diesel exhaust", "microwaved cabbage", "lunchroom smells", and "instant ramen". Reference Figure 3-6 for affected workers OVRC drawings included in four of the five odor response cards.

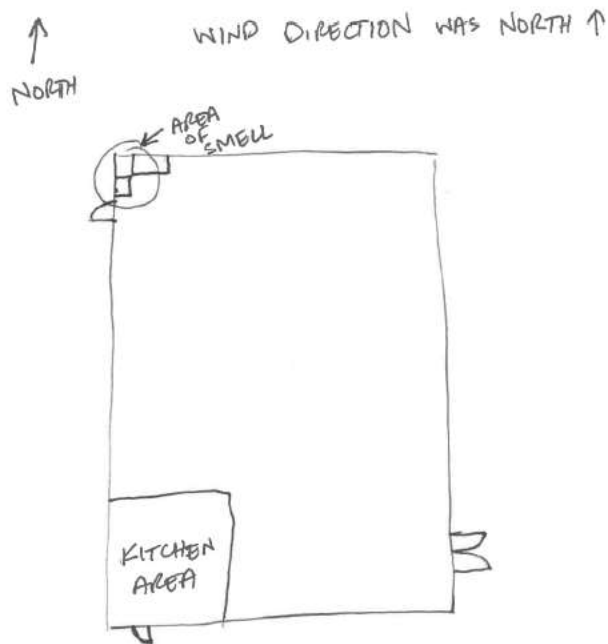


Figure 3. Affected Worker's OVRC Map.

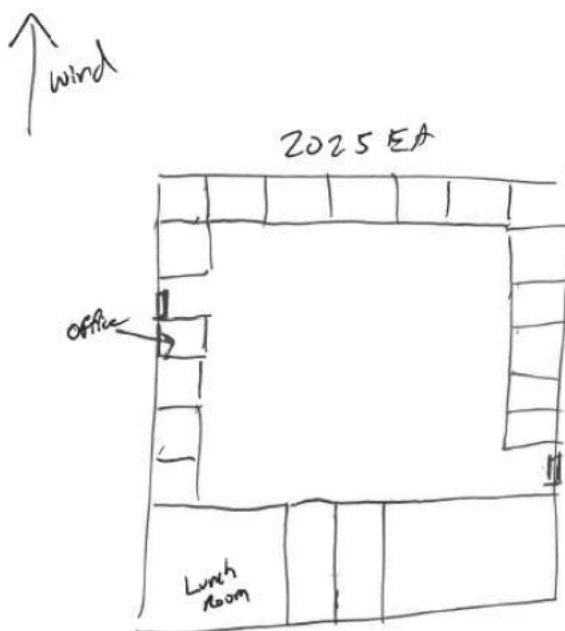


Figure 4. Affected Worker's OVRC Map.

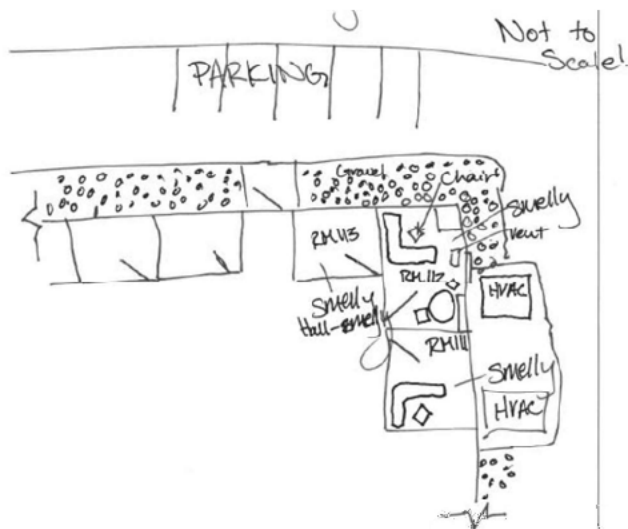


Figure 5. Affected Worker's OVRC Map.



Figure 6. Affected Worker's OVRC Map.

NOTE: Additional Information continued on next page.

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

Additional Information:

[RPP-SPEC-63950](#), Building 2025EA HVAC Replacement & Interior Remodeling Construction Specification:

- “Section includes self-contained heat pump units mounted on concrete slabs. Outdoor slab-mounted, electrically controlled cooling and heating unit utilizing a hermetic compressor for cooling and heating duty and electric resistance coils for auxiliary heating duty. Unit shall discharge supply air horizontally. Mounting height for curbs and rails shall be not less than 24 inches and shall consider winter snow load so System can operate all year long. Support stands shall be provided for all equipment. Mechanical refrigeration shall be by air cooled condensing units built-into the air handling unit section.”
- Heat pump unit- “Indoor blower (evaporator fan) shall be of the high static head, belt-driven, double inlet, and forward-curved centrifugal type. Belt drive shall include an adjustable-pitch motor pulley.”
- “Each heat pump shall meet the heating and cooling capacities, airflows, and listed accessories shown in the Packaged Heat Pump Unit Schedule provided in [ECN 715807](#).”

[H-2-88788 Sheet 002](#), 2025EA HVAC & Remodel HVAC P&ID

Location	Outside Air (Supply)	Exhaust (Return)
HP11	465 CFM	205 CFM
112 Office	170 CFM	155 CFM
113 Office	270 CFM	240 CFM
126 Hallway	30 CFM	25 CFM
114 Office	255 CFM	230 CFM
115 Office	255 CFM	225 CFM
116 Office	270 CFM	245 CFM
117 Office	130 CFM	115 CFM
118 Telecomm	115 CFM	105 CFM

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:

03/27/2024 @ 1130 (approximate time of initiating event):

- Wind Speed: 4.1 mph (15-minute average)
- Wind Direction: 116.3° (out of East Southeast)
- Mixing Height: 1,000 feet above grade
- Stability Class: D (neutral conditions)

Refer to Figures 7-11.



Figure 7. 200-East Area (with 241-AW, 241-AP, 241-AN, 241-AY/AZ, 241-AX, 241-A Farm projected plume models) at 1130 03/27/2024 from Data Fusion and Advisory System (DFAS) application, powered by SmartSite™.

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:

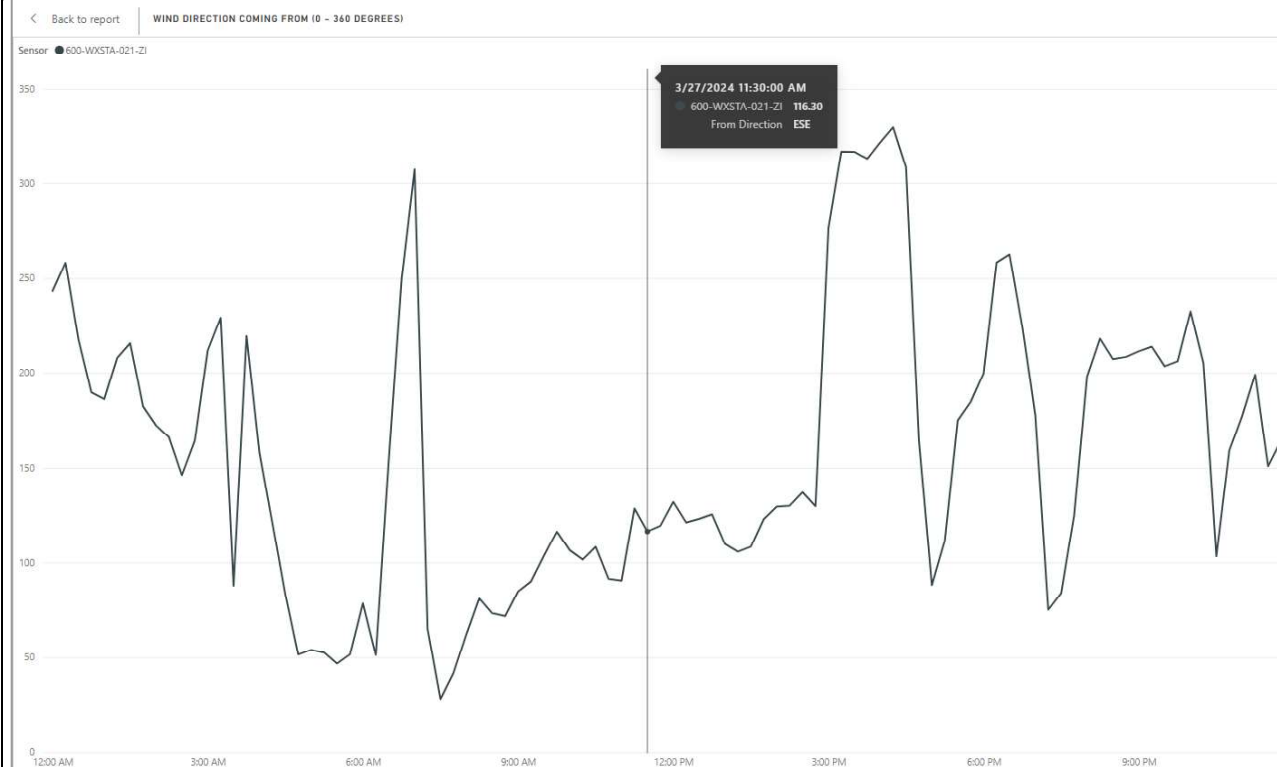


Figure 8. DFAS application, powered by SmartSite™ Weather Data (wind direction) from 1130 03/27/2024.



Figure 9. DFAS application, powered by SmartSite™ Weather Data (wind speed) from 1130 03/27/2024.

NOTE: Additional Information continued on next page.

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

Additional Information:

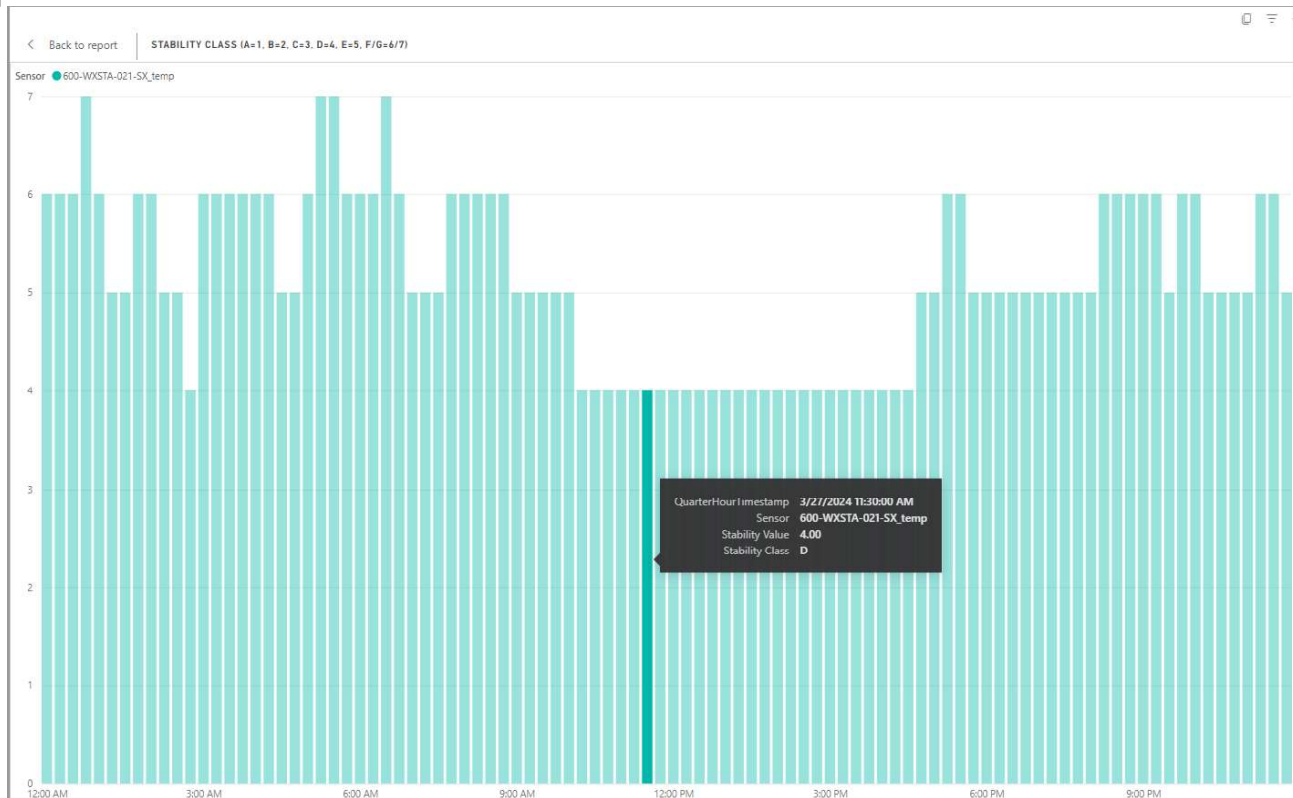


Figure 10. DFAS application, powered by SmartSite™ Weather Data (stability class) from 1130 03/27/2024.

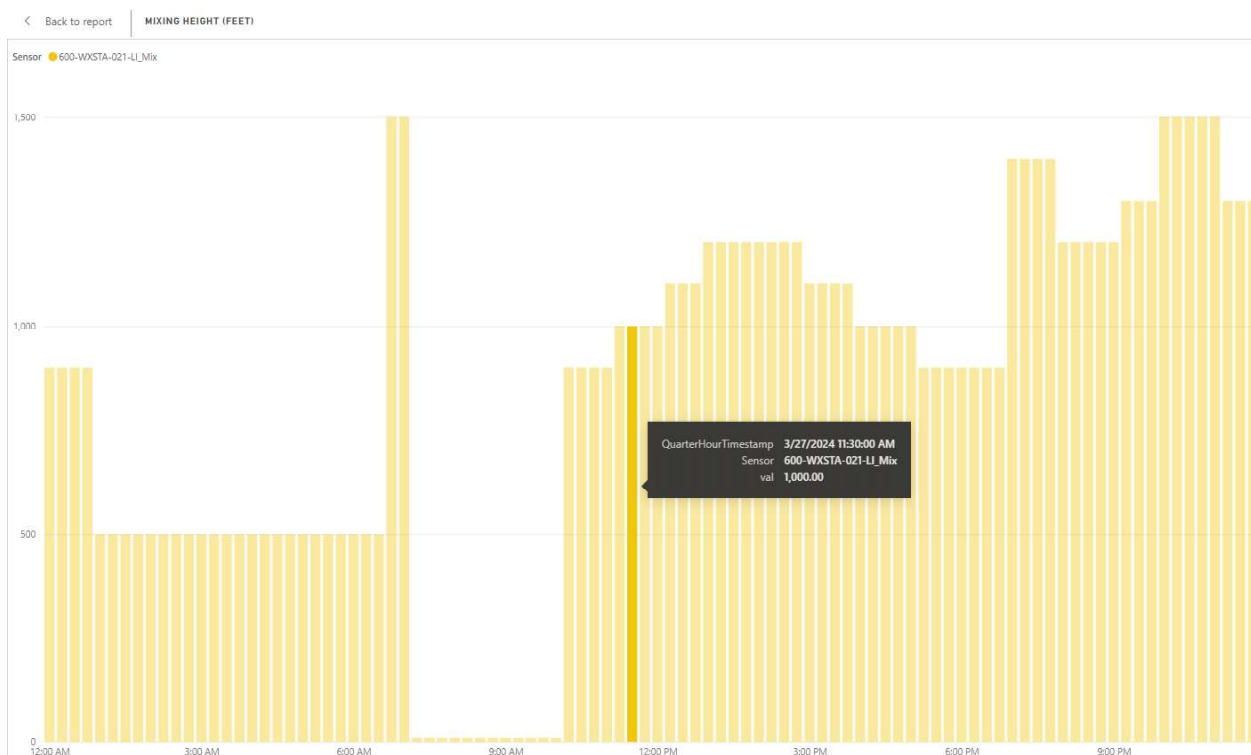


Figure 11. DFAS application, powered by SmartSite™ Weather Data (mixing height) from 1130 03/27/2024.

NOTE: Additional Information continued on next page.

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

Additional Information:

Response to Stronger than Normal Odors	Manual Document Page Issue Date	Operations TFC-OPS-OPER-C-67, REV B-4 5 of 9 January 5, 2023
---	--	---

Attachment A – Response Plan

RESPONSE PLAN		Sheet 1 of 2
DESCRIPTION OF EVENT (date & time, description of event, location, symptoms, etc.): At approximately 1100 to 1130 on 03/27/2024 approximately 7 workers encountered a stronger than normal "burning rubber" odor inside 2025EA in offices 112 to 117 and adjacent hallway (west side of 2025EA). No symptoms were reported. All workers declined medical.		
RESPONSE STEPS: <i>Attach additional pages as needed</i> Restrict access around offices in 2025EA. Perform monitoring in and around the Affected Area in accordance with IHSP-POE-MULTI-TFCOPSOPERC67: - Total VOCs – Action limit 4 ppm - Carbon monoxide – Action limit 12 ppm - Particulates (PNOS) – Action limit 1.5 mg/m³		
IH Sampling Plan # <u>IHSP-POE-MULTI-TFCOPSOPERC67</u> Respiratory Protection Form # <u>N/A</u> RWP # <u>N/A</u> Other <u>N/A</u>		
REQUIRED APPROVAL SIGNATURES		
Industrial Hygiene:	Signature _____ Print (First & Last) _____	Date <u>03/27/24</u>
Shift Manager:	Signature _____ Print (First & Last) _____	Date _____
ADDITIONAL SIGNATURES (as determined by Shift Manager or Safety & Health Rep; N/A if not applicable)		
RadCon:	<u>N/A</u> / <u>N/A</u> / <u>N/A</u> Signature _____ Print (First & Last) _____ Date _____	
Environmental:	<u>N/A</u> / <u>N/A</u> / <u>N/A</u> Signature _____ Print (First & Last) _____ Date _____	
Engineer:	<u>N/A</u> / <u>N/A</u> / <u>N/A</u> Signature _____ Print (First & Last) _____ Date _____	
Industrial Safety:	<u>N/A</u> / <u>N/A</u> / <u>N/A</u> Signature _____ Print (First & Last) _____ Date _____	

Figure 12. Response Plan Attachment A Sheet 1 of 2

NOTE: Additional Information continued on next page.

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

Additional Information:

Response to Stronger than Normal Odors	Manual Document Page Issue Date	Operations TFC-OPS-OPER-C-67, REV B-4 6 of 9 January 5, 2023
---	--	---

Attachment A – Response Plan (cont.)

RESPONSE PLAN	Sheet 2 of 2						
Odor Response Plan Notes (monitoring data, results of actions taken, etc. Use more sheets as necessary) Monitoring Results (Peak Readings): - Volatile Organic Compounds (VOC) 10.6 eV- Less than detectable (< 0.010 ppm) - Carbon Monoxide- Less than detectable (< 1 ppm) - Particulates (PNOS)- Less than detectable (< 0.001 mg/m³) Direct Reading Instrumentation passed Post-Use Function Test at 1333 03/27/2024. Refer to SWIHD DRI #24-02257, TFC-OPS-OPER-C-67 Odor Response 2025EA. Response Notes: 1 IH and 2 IHTs performed response actions. - Areas in and around the Affected Area were monitored - HP11 Unit - No odors - Tagged out of service to be inspected by electricians - Nothing abnormal observed 2025EA Offices 112 to 117 & adjacent hallway - No burning rubber odors detected, but IHTs noted a "new carpet smell" - Nothing abnormal observed							
RESPONSE PLAN COMPLETED: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px; vertical-align: top;">Industrial Hygiene:</td> <td style="width: 40%; padding: 5px;"> Signature Print (First & Last) Date </td> <td style="width: 40%; padding: 5px; vertical-align: bottom; text-align: center;"> 03/27/24 </td> </tr> <tr> <td style="padding: 5px; vertical-align: top;">Shift Manager:</td> <td style="padding: 5px;"> Signature Print (First & Last) Date </td> <td style="padding: 5px; vertical-align: bottom; text-align: center;"> 3-27-24 </td> </tr> </table>		Industrial Hygiene:	Signature Print (First & Last) Date	03/27/24	Shift Manager:	Signature Print (First & Last) Date	3-27-24
Industrial Hygiene:	Signature Print (First & Last) Date	03/27/24					
Shift Manager:	Signature Print (First & Last) Date	3-27-24					

Figure 13. Response Plan Attachment A Sheet 2 of 2

Recommendations/Conclusions:

Recommendations:

N/A

NOTE: Recommendations/Conclusions continued on next page.

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

Recommendations/Conclusions:

Conclusions:

The location of the odors was isolated to the west exterior offices, and the odor descriptions provided by employees were consistent with a mechanical issue. HVAC unit HP11 supplies air to these offices, as such it was determined that the supply air unit should be evaluated as no collocated work or equipment was in operation near intake units that would attribute to the "burning rubber" odor. An exterior evaluation was performed by facility electricians on HP11, who then tagged HP11 out of service until further evaluation can be performed by RES to determine the source of the problem.

Direct Reading Instrumentation 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. Although a mechanical issue with HP11 is consistent with odor descriptors, monitoring performed to support response actions did not readily identify a source, as readings indicated that further response action was not necessary. It should be noted that HP11 was secured and tagged out of service prior to DRI monitoring during response actions.

Others:

No symptoms were reported, and all workers present inside 2025EA during the reported odor declined precautionary medical surveillance.

Associated Documents:

iCAS Number:

EIR Number: 2024-028

Industrial Hygienist:

Print First and Last Name

Digitally signed by _____
Date: 2024.04.01 06:40:13 -07'00'

Signature / Date

Industrial Hygiene Level 3 Manager

Print First and Last Name

Digitally signed by _____
Date: 2024.04.01 07:31:16 -07'00'

Signature / Date

Industrial Hygiene Level 2 Manager:

Print First and Last Name

Digitally signed by _____
Date: 2024.04.01 08:46:00 -07'00'

Signature / Date

ODOR/VAPOR RESPONSE CARD

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

• Date and time of event: 11:05

• Check Applicable:

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

• Your name and the work you were performing:
[REDACTED] office work at desk

• Other Work Underway? Describe:

typical office work

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

2025 EA

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

[REDACTED]

• Was Industrial Hygiene present, who?

[REDACTED]

• Describe the odor:

☐ Sweet ☐ Sour ☒ Smoky ☐ Septic/Sewer ☐ Musty ☐ Rotten
☐ Metallic ☐ Onion ☐ Earthy ☐ Ammonia ☐ Citrus ☐ Solvent

☒ Other (describe):

like burning rubber or grease

• Is source known/likely? Describe:

• 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.

↑
NORTH

WIND DIRECTION WAS NORTH ↑



ODOR/VAPOR RESPONSE CARD

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

• Date and time of event: 3-27-24 11:30AM

• Check Applicable:

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

• Your name and the work you were performing:

[REDACTED] CONVERSATION WITH [REDACTED] ABOUT DRAWINGS.

• Other Work Underway? Describe:

N/A

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

NW CORNER OFFICE AND ROOM 112

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

[REDACTED]

• Was Industrial Hygiene present, who?

YES, [REDACTED]

• Describe the odor:

☐ Sweet ☐ Sour ☐ Smoky ☐ Septic/Sewer ☐ Musty ☐ Rotten
☐ Metallic ☐ Onion ☐ Earthy ☐ Ammonia ☐ Citrus ☐ Solvent

☒ Other (describe): BURNING/BURNT RUBBER OR OVER HEATED FROZEN DINNER

• Is source known/likely? Describe:

YES, POSSIBLE BELT IN HVAC UNIT ON NORTHWEST END OF 202SEA

• 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

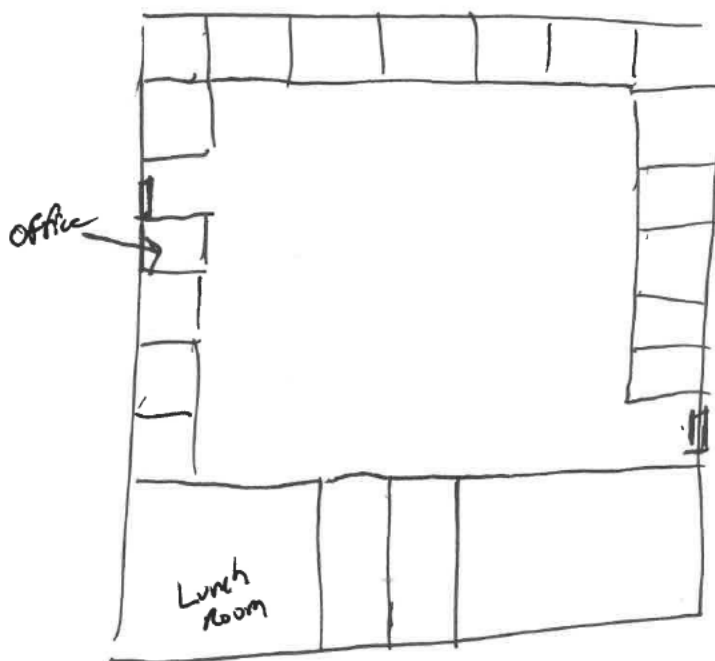
Instructions:

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.



2025 EA



ODOR/VAPOR RESPONSE CARD

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

- Date and time of event: 3/27/24 11:30 AM
- Check Applicable:
☒ Odor ☐ Ammonia Alarm (6 ppm) ☐ Ammonia Alarm (12 ppm) ☐ Alarm (other - describe): _____
- Your name and the work you were performing:
[REDACTED] ASME Training in office.
- Other Work Underway? Describe: Normal office work
- Location of event (mark area on map and wind direction):
Inside office near NW corner of 2025 EA
- 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): <u>Diesel exhaust, burning rubber, lunch room smells</u>					
- Is source known/likely? Describe:
Potentially the HVAC unit for 2025 EA
- 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

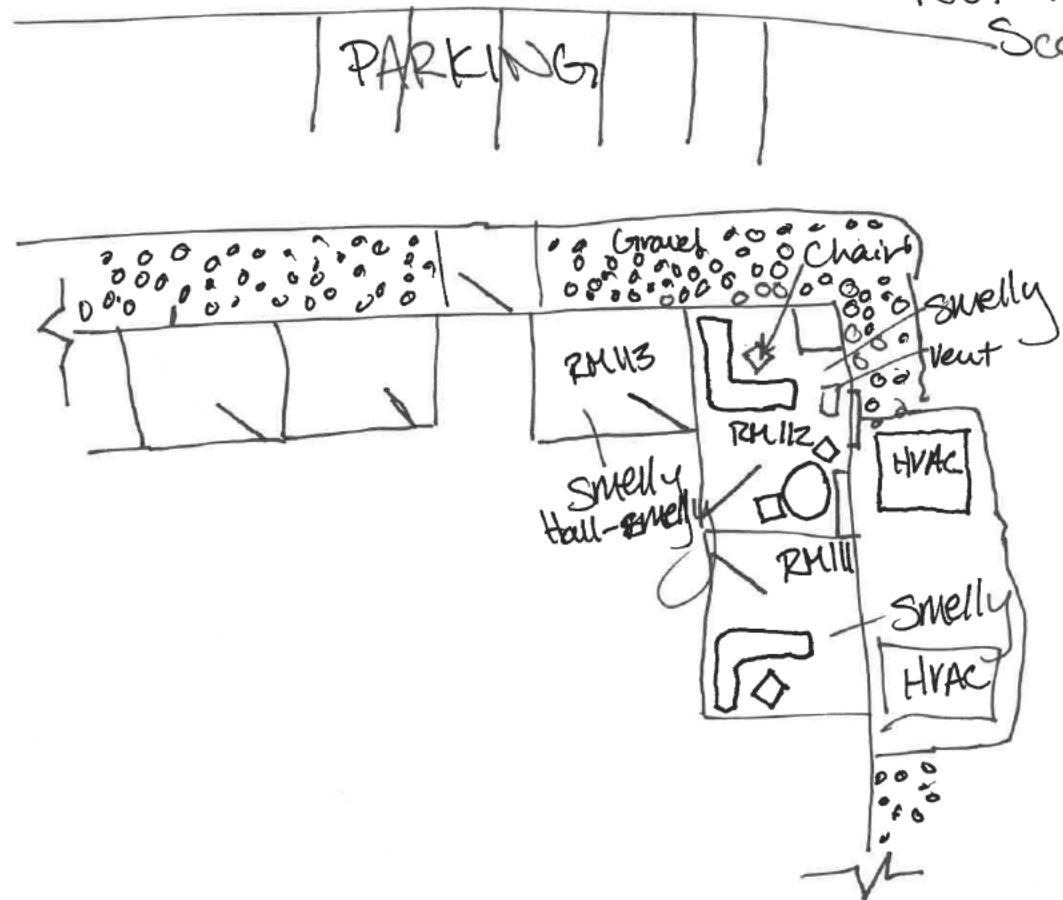
By [REDACTED]

Not to Scale!

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: 3/27/24 ~11:15 AM
- Check Applicable:
☒ Odor ☐ Ammonia Alarm (6 ppm) ☐ Ammonia Alarm (12 ppm) ☐ Alarm (other - describe): _____
- Your name and the work you were performing:
[REDACTED] I was preparing for an Engineering Mtg.
- Other Work Underway? Describe:
N/A
- Location of event (mark area on map and wind direction):
202SEA RM 112 and others
- 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): Microwaved cabbage, instant ramen, or burning rubber
- Is source known/likely? Describe:
Either lunch smells or the HVAC unit outside the window (was running @ time)
- Your symptoms? ☒ None
☐ Headache ☐ Dizziness ☐ Nausea ☐ Cough ☐ Fatigue
☐ Weakness ☐ Sore Throat ☐ Difficulty Breathing ☐ Eye Irritation ☐ Rash
☐ Itch ☐ Tingling ☐ Numbness ☐ Taste
☒ Other (describe): _____

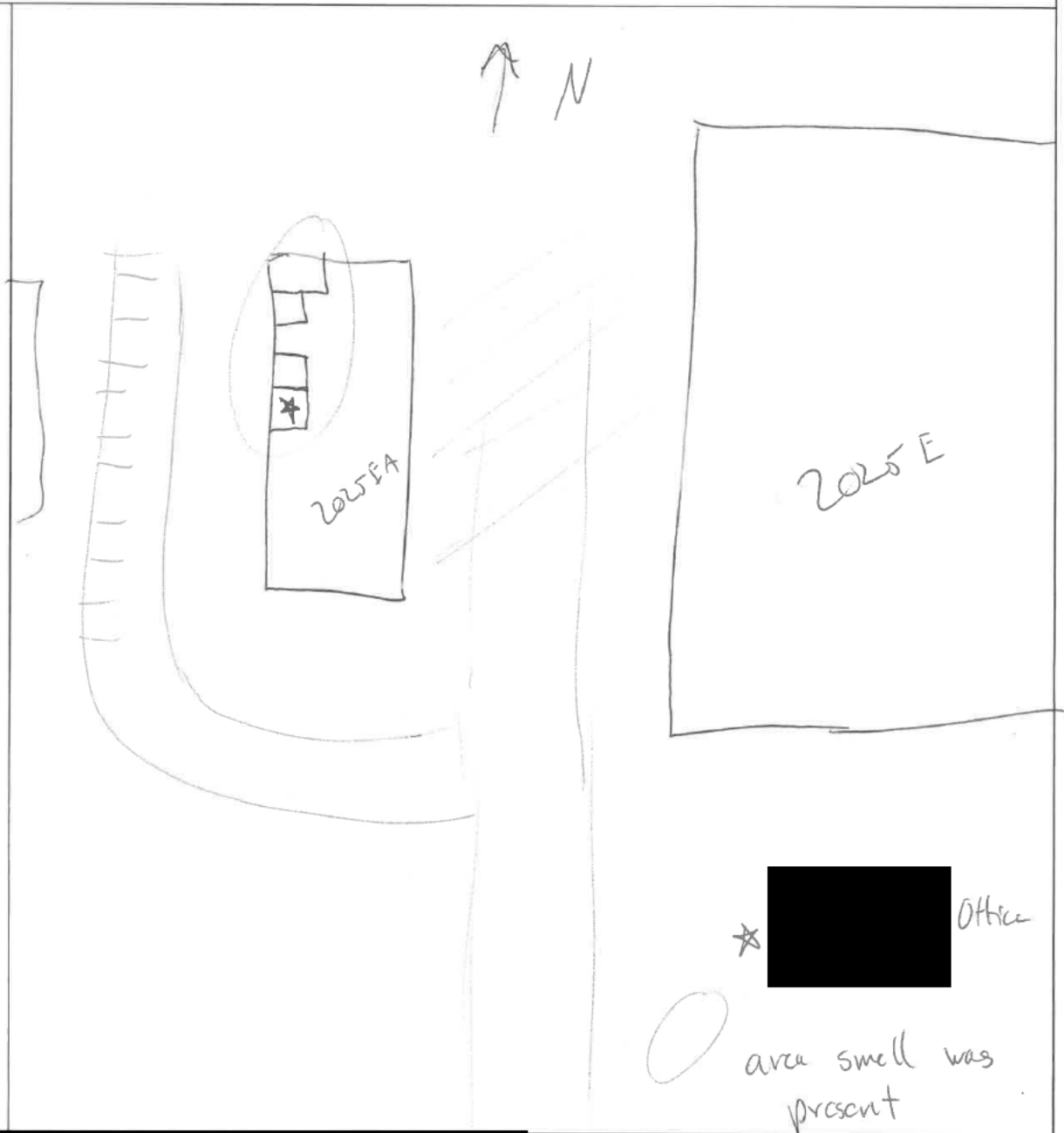
2. Provide this completed card (Page 1 & 2) to Supervisor, Industrial Hygiene, your Union Safety Representative or the CSM.
If received by Supervisor/IH/U-SR, Supervisor/IH/U-SR will ensure card is provided to the CSM.

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: 3/27/2024 ~11:30 AM
- Check Applicable:
 - ☒ Odor
 - ☐ Ammonia Alarm (6 ppm)
 - ☐ Ammonia Alarm (12 ppm)
 - ☐ Alarm (other - describe): _____
- Your name and the work you were performing:
[REDACTED] - Office Work @ computer
- Other Work Underway? Describe:
N/A
- Location of event (mark area on map and wind direction):
West side of 2025 EA - Offices
- Name(s) of others in or near the affected area:
[REDACTED]
- Was Industrial Hygiene present, who?
Yes
- Describe the odor:
 - ☐ Sweet
 - ☐ Sour
 - ☐ Smoky
 - ☐ Septic/Sewer
 - ☐ Musty
 - ☐ Rotten
 - ☐ Metallic
 - ☐ Onion
 - ☐ Earthy
 - ☐ Ammonia
 - ☐ Citrus
 - ☐ Solvent
 - ☒ Other (describe):
Burning Rubber
- Is source known/likely? Describe:
Hvac unit
- 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.