

Hanford Tank Waste Operations & Closure
EVENT REPORT FORM

1. Project: Facility Maintenance 2. Report Date: 10/9/2025
3. Investigation Title: C-67 Response at MO-531
4. Investigation Report Number: EIR-2026-001
5. Responsible Manager: [REDACTED]
6. Event Investigator: [REDACTED]
7. Area / Building / Location: MO-531
8. Date and Approximate Time of Event: Date: 10/7/2025 Time (military): 1258 hours
9. Associated Action Request (AR) Number: ITDC-AR-2026-0072
10. Associated Occurrence Report Number (if applicable): NA
11. Event Learning Meeting Held: Yes [] or No [X] Date: _____ Time (military): _____

12. Brief Summary of Event: What Happened?

At approximately 1258 on October 7th, 2025, two workers experienced stronger than normal "refrigerant" odor inside of MO531 while moving a refrigerator. Odor was noticed in conjunction with discovery of a "blue liquid" from the refrigerator. The workers did not report any symptoms and declined precautionary medical evaluation.

A C-67 Odor Response was entered for the unusual odor. Industrial Hygiene Technician (IHT) responded to the C-67 event using an 11.7 eV DRI to indicate standard Hanford tank farm action limits for NH3 and VOCs. R134A refrigerant is typically 100% 1,1,1,2-tetrafluoroethane (CAS #811-97-2) by weight. No OSHA PELs nor ACGIH TLV or STELs exist for this compound. No odors were detected by facilities IH or OFS level 3 IH manager outside MO531. After monitoring their way in, responding personnel monitored the interior of MO531, including the puddle of liquid on the floor behind the hand truck. All readings remained below the detection limit. PO IHTs reported detecting "refrigerant" odors inside the building, near the puddle of liquid.

The "blue liquid" was observed leaking from the back of the refrigerator and was identified to likely be R134A refrigerant as identified by the refrigerator tag on the back of the unit. R134A is non-toxic, but the leaking refrigerator fluid may have additional lubricants or dyes in the specific application.

Cause - The cause of the odor was the leaked refrigerant.

Action Taken - The leaked refrigerant was cleaned up as a level 4 activity.

13. What Should Have Happened?

Refrigerant should not have leaked from the refrigeration unit.

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

MO531 was posted as a restricted access area for 1 hour and 15 minutes.

15. Problem Statements (Who, What, Where, When, Consequence/Impact):

N/A

16. Facts/Timeline:	17. Issues/Gaps	18. Causes (Why?) (Include Cause Code)	19. Safe Stable/Immediate Actions	20. Extent of Condition	21. Short Term Action(s)	22. Corrective Action(s)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

23. Signatures

Prepared By: *(Event Investigator)*



Name (First, Middle Initial, Last)

Signature / Date

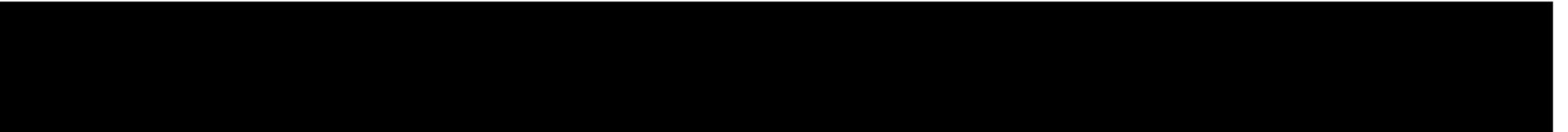
Responsible Manager Approval:



Name (First, Middle Initial, Last)

Signature / Date

CAS Manager Approval:



Name (First, Middle Initial, Last)

Signature / Date

INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR)

Event Title: TFC-OPS-OPER-C-67 Response at MO531	IHIR Number: IHIR-00126
	IHEI Number: N/A

Date: 10/7/2025	Time: 1258	Location: MO531
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Event Summary and Timeline:

At approximately 1258 on October 7th, 2025, two workers experienced stronger than normal "refrigerant" odor inside of MO531 while moving a refrigerator. Odor was noticed in conjunction with discovery of a "blue liquid" from the refrigerator. The workers did not report any symptoms and declined precautionary medical evaluation.

Field Response Timeline:

1258 Two teamsters attempt to remove a refrigerator unit from MO531 and notice that blue liquid with an accompanying odor is leaking from the refrigerator and onto their hand truck. Teamsters call and notify facilities IS.

1300 Facilities IS calls and notifies facilities IH.

1305 Facilities IS calls CSO and reports odor event. Facilities IH attempts to search Hanford SDS database for corresponding refrigerant SDS.

1306 CSO initiates C-67 response.

1313 Facilities IH contacts facility owner and asks about the refrigerator's service history. Facility owner states that the refrigerators are not serviced, any refrigerant is from initial installation, and the type will be listed on a tag on the back of the refrigerator.

1315 Facilities IH calls and notifies OFS level 3 IH manager.

1316 PO IH and PO level 3 IH manager arrive at CSO.

1317 FWS contacts CSO and asks whether medical evaluation was offered to affected workers. CSO confirms that facilities IS offered medical evaluation, and it was declined. CSO provides FWS with OVRC. CSO directs that NCOs be dispatched to MO531 to post it as a restricted access area. DFLAW IH arrives at CSO.

1318 CSM briefs DFLAW and PO IHs.

1320 Facilities IH and OFS IH level 3 manager depart for CSO.

1322 DFLAW IH checks DFAS, powered Smart Site™, for weather details at 1306:

- Mixing Height: 700 ft above grade.
- Stability Class: D.
- Wind Speed and Direction: 64 degrees, 3.8 mph.

PO IH contacts OFS level 3 manager and requests that facilities IH respond to shift office.

1324 DFLAW IH checks VMDS for NH₃ concentrations at 1306:

- POR518: 1.361 ppm
- POR519: 0 ppm
- AN: 0 ppm
- AP: N/A
- AW: 0 ppm
- POR126: N/A
- POR127 N/A
- 702AZ: N/A
- SY: 13.383 ppm

PO IH confirms all monitoring values are significantly below high alarm limits.

1326 PO IHT shift supervisor asks PO IH for direction on preparing DRI. PO IH directs that IHTs prepare DRIs for NH₃, 10.6 eV and 11.7 eV PIDs and states that the need for additional DRIs will be evaluated upon receipt and review of OVRC. PO level 3 IH manager contacts OFS level 3 IH manager for update on location.

1327 OFS level 3 IH manager confirms that they and facilities IH are currently traveling to CSO. CSM updates facility representative on C-67 actions.

1328 NCO contacts CSM and asks whether the MO531 door should be propped open. CSM relays question to PO IH, who states the door should be left open to ventilate the space, provided access is clearly restricted. CSM relays instructions to NCO. CSO sends SOEN notifying personnel that CSO is responding per TFC-OPS-OPER-C-67 for response to stronger than normal odors in MO-531, and access is restricted.

INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Event Summary and Timeline:

- 1331 OFS level 3 IH manager and facilities IH arrive at CSO.
Facilities IH relays discussion with facility owner to CSO.
- 1339 CSM confirms that access restriction signage has been posted at M0531.
- 1340 CSM provides an update to performance assurance POC on C-67 response actions and requests EIR number.
Performance assurance POC provides EIR number.
- 1342 Facilities IH attempts to contact teamsters for additional information about spill.
OFS level 3 IH manager contacts facilities IS for update about OVRC.
Facilities IS confirms that they provided OVRC to the teamsters at 1311.
- 1345 Facilities IH contacts facilities IS for additional information about spill.
Facilities IS relays that teamsters had stated that there was enough liquid to be all over the hand truck and the fridge, but they were not told where the liquid was coming from.
Facilities IH updates CSM with information from facilities IS.
- 1348 PO IH reviews VMDS alternate NH3 monitoring results delivered by PO IHT:
- AN (0945): 15 ppm.
 - AP (1017): 21 ppm.
 - AW (1041): 25 ppm
 - POR126 (0914): 0 ppm
- PO IH confirms all monitoring values are significantly below high alarm limits.
- 1352 Teamster calls facilities IH and is put on speaker phone for a conference between CSM, facilities/PO/DFLAW IHs and OFS level 3 IH manager.
Teamster states they are unsure where on the refrigerator the liquid is leaking from. They were lifting the refrigerator and leaning it on its side, and they only observed the liquid on the hand truck after setting the refrigerator down.
CSM asks for a quantity estimate.
Teamster states about a cup of liquid.
Facilities IH asks which side of the fridge is against the hand truck.
Teamster states the right side.
CSM asks whether OVRC cards are complete.
Teamster confirms they are complete, and facilities IS is currently scanning them to send to CSO.
CSM asks for a description of the odor.
Teamster states the liquid had a "refrigerant" odor.
- 1355 PO/DFLAW/facilities IHs and CSM discuss the odor description.
- 1359 DFLAW IH and CSM sign TFC-OPS-OPER-C-67 Attachment A - Response Plan page 1.
- 1404 PO IHTs arrive at CSO.
- 1406 PO IH briefs IHTs on the IHSP and response plan.
IHTs are instructed to monitor their way in and obtain source readings, if feasible.
IHTs are instructed to not touch the liquid.
Both IHTs decline voluntary respiratory protection.
- 1407 PO IHTs, facilities IH, and OFS level 3 IH manager depart from CSO.
- 1410 Response team arrives at M0531.
- 1411 CSO receives two OVRC.
No symptoms are reported.
Two teamsters at M0531 report smelling a solvent/refrigerant odor.
- 1412 OFS level 3 IH manager contacts DFLAW IH to confirm arrival.
OFS level 3 IH manager states that no odors are initially detected by response team.
OFS level 3 IH manager states that all readings are below detection limit.
- 1413 Facilities IH notifies PO IH of arrival at M0531.
Facilities IH notifies PO IH that the refrigerator is sitting outside of M0531 on the landing.
- 1414 Facilities IH notifies PO IH that all readings, including source, are below detection limit.
PO IH asks facilities IH to monitor the trail of refrigerant inside the building.
PO IHTs state there is a faint "refrigerant" odor near the puddle.
OFS level 3 IH manager contacts IH level 2, ESHQ level 1 deputy, and ESHQ level 1 managers to confirm that the spill appears to be refrigerant, no abnormal monitoring results have been detected, and response actions will be closed pending post-use function check.
- 1416 Facilities IH notifies PO IH that all readings at the puddle were below the detection limit.
Facilities IH notifies PO IH that the tag has been located, and the refrigerator contains R134A refrigerant.
- 1417 Response team departs M0531.
- 1426 PO Shift IHT supervisor contacts PO IH and confirms that all sensors on their instruments passed the post-use function test at 1425.

INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Event Summary and Timeline:

1428 DFLAW IH and CSM sign TFC-OPS-OPER-C-67 Attachment A - Response Plan page 2, completing C-67 response.

ACGIH American Conference of Governmental Industrial Hygienists
AL Action Limit
CSM Central Shift Manager
CSO Central Shift Office
DFAS Data Fusion Advisory System
DFLAW Direct Feed Low Activity Waste
DRI Direct Read Instrument
ESHQ Environmental, Safety, Health & Quality
eV electron-volts
FWS Field Work Supervisor
GHA General Hazard Analysis
H2C Hanford Tank Waste Operations & Closure
IH Industrial Hygienist
IHIR Industrial Hygiene Event Investigation Report
IHT Industrial Hygiene Technician
inHg Inches of Mercury
IS Industrial Safety
mph miles per hour
NCO Nuclear Chemical Operator
NH₃ Ammonia
OFS Operations Field Support
OSHA Occupational Safety and Health Administration
OVRC Odor/Vapor Response Card
PEL Permissible Exposure Limit
PID Photoionization Detector
PO Production Operations
POC Point of Contact
ppm parts per million
STEL Short Term Exposure Limit
SWIHD Site Wide Industrial Hygiene Database
TLV Threshold Limit Value
VOC Volatile Organic Compound

Sampling/Monitoring Results:

R134A refrigerant is typically 100% 1,1,1,2-tetrafluoroethane (CAS #811-97-2) by weight. No OSHA PELs nor ACGIH TLV or STELs exist for this compound. Therefore, the standard Hanford tank farm AL for NH₃ and VOCs were used for event response. An 11.7 eV DRI was used for indication purposes.

Upon arrival, the response team identified that blue liquid was leaking from the back of the refrigerator, creating a puddle on the hand truck, as pictured below:

INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Sampling/Monitoring Results:



No odors were detected by facilities IH or OFS level 3 IH manager outside MO531. After monitoring their way in, responding personnel monitored the interior of MO531, including the puddle of liquid on the floor behind the hand truck. All readings remained below the detection limit. PO IHTs reported detecting "refrigerant" odors inside the building, near the puddle of liquid. Upon departing MO531, the IHTs were instructed to perform a post use function test on their instruments. All instruments passed at 1425. Results are summarized below:

LOCATION	VOCs (10.6 eV)	VOCs (11.7 eV)	NH ₃
Top of MO531 Stairs Platform	<0.010 ppm	<0.10 ppm	<1.0 ppm
Rear Refrigerator Components	<0.010 ppm	<0.10 ppm	<1.0 ppm
Inside MO531 next to Source	<0.010 ppm	<0.10 ppm	<1.0 ppm

SWIHD References:

Event Response SWIHD DRI Survey:
#25-06987 "TFC-OPS-OPER-C67 Response at MO531"

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 the Response Actions.

Response actions are detailed below, on TFC-OPS-OPER-C-C-67 Attachment A pages 1 and 2:

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-7 5 of 9 August 12, 2025
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Attachment A – Response Plan

RESPONSE PLAN		Sheet 1 of 2
<p>DESCRIPTION OF EVENT (date & time, description of event, location, symptoms, etc.): At approximately 1306 on October 7th, 2025, two workers experienced stronger than normal “refrigerant” odor inside of MO531 while moving a refrigerator. Odor was noticed in conjunction with discovery of a “blue liquid” from the refrigerator. The workers did not report any symptoms and declined precautionary medical evaluation.</p>		
<p>RESPONSE STEPS: <i>Attach additional pages as needed</i></p> <ul style="list-style-type: none"> • Restrict access to MO531. • Perform monitoring as per IHSP-POE-MULTI-TFCOPSOPERC67: <ul style="list-style-type: none"> ○ Ammonia (NH₃) – Action Level 12 ppm ○ Volatile Organic Compounds (VOCs, 10.6 eV PID) – Action Limit 2 ppm ○ Volatile Organic Compounds (VOCs, 11.7 eV PID) – Action Limit N/A (for indication purposes only) • Monitor interior of MO531, including puddle near refrigerator area. 		
<p>IH Sampling Plan # <u>IHSP-POE-MULTI-TFCOPSOPERC67</u></p> <p>Respiratory Protection Form # <u>N/A</u></p> <p>RWP # <u>N/A</u></p> <p>Other <u>N/A</u></p>		
REQUIRED APPROVAL SIGNATURES		
Industrial Hygiene:		/ <u>10/07/2025</u> Date
Shift Manager:		/ <u>10/07/2025</u> Date
ADDITIONAL SIGNATURES (as determined by Shift Manager or Safety & Health Rep; N/A if not applicable)		
RadCon:	<u>N/A</u> Signature	/ <u>N/A</u> Print (First & Last)
Environmental:	<u>N/A</u> Signature	/ <u>N/A</u> Print (First & Last)
Engineer:	<u>N/A</u> Signature	/ <u>N/A</u> Print (First & Last)
Industrial Safety:	<u>N/A</u> Signature	/ <u>N/A</u> Print (First & Last)

INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Additional Information:

Response to Stronger than Normal Odors	Manual Document	Operations
	Page	TFC-OPS-OPER-C-67, REV B-7
	Issue Date	6 of 9
		August 12, 2025

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)	
DRI Monitoring Results: <ul style="list-style-type: none"> • General area - MO531 interior. <ul style="list-style-type: none"> ○ Ammonia (NH₃) – Less than Detectable (< 1.0 ppm) ○ Volatile Organic Compounds (VOCs, 10.6 eV PID) – Less than detectable (< 0.010 ppm) ○ Volatile Organic Compounds (VOCs, 11.7 eV PID) – Less than detectable (< 0.10 ppm) • Near “blue liquid puddle” (refrigerator area) <ul style="list-style-type: none"> ○ Ammonia (NH₃) – Less than Detectable (< 1.0 ppm) ○ Volatile Organic Compounds (VOCs, 10.6 eV PID) – Less than detectable (< 0.010 ppm) ○ Volatile Organic Compounds (VOCs, 11.7 eV PID) – Less than detectable (< 0.10 ppm) • DRI Post-Use-Function Test passed at 1425 10/07/2025 	
Field Response Notes: <ul style="list-style-type: none"> • Odors matching the provided descriptors were not present during field response actions. 	
RESPONSE PLAN COMPLETED:	
Industrial Hygiene:	<div style="background-color: black; width: 100%; height: 20px; margin-bottom: 5px;"></div> <div style="display: flex; justify-content: flex-end; align-items: center;"> / 10/07/2025 _____ Date </div>
Shift Manager:	<div style="background-color: black; width: 100%; height: 20px; margin-bottom: 5px;"></div> <div style="display: flex; justify-content: flex-end; align-items: center;"> / 10/07/2025 _____ Date </div>

INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Additional Information:

The refrigerant was identified as R134A by the tag on the back of the refrigerator, pictured below:



Following response actions, the CSM determined the leaked refrigerant did not meet the criteria to enter TF-AOP-11. DFLAW IH and CSM discussed the contents of the spill, and the residual liquid was determined to be non-hazardous and able to be cleaned up with GHA controls (i.e., disposable gloves, safety glasses with side shields, and absorbent pads). CSM, facilities IH, and the central planning work control manager discussed follow-up actions and determined clean-up met the criteria for performing housekeeping under the H2C Authorized Level 4 Activity List.

Recommendations/Conclusions:

IH concludes the source of the odor is likely the leaked refrigerant. IHT monitoring did not indicate any vapors were present at or above regulatory limits at the time of response. The leaked refrigerant will be cleaned up as a level 4 activity.

Others:

- None of Affected Workers reported symptoms, and all declined precautionary medical surveillance.

Associated Documents:

iCAS Number: N/A

EIR Number: 2026-001

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

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

- Date and time of event: 10/7/25 12:58 pm
- Check Applicable:
 - Odor
 - Ammonia Alarm (6 ppm)
 - Ammonia Alarm (12 ppm)
 - Alarm (other - describe):

Your name and the work you were performing:

Moving Refrigerator out of MR-531

Other Work Underway? Describe:

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

MR-531

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

NO

Was Industrial Hygiene present, who?

NO

Describe the odor:

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

Is source known/likely? Describe:

The Refrigerator we were moving

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.

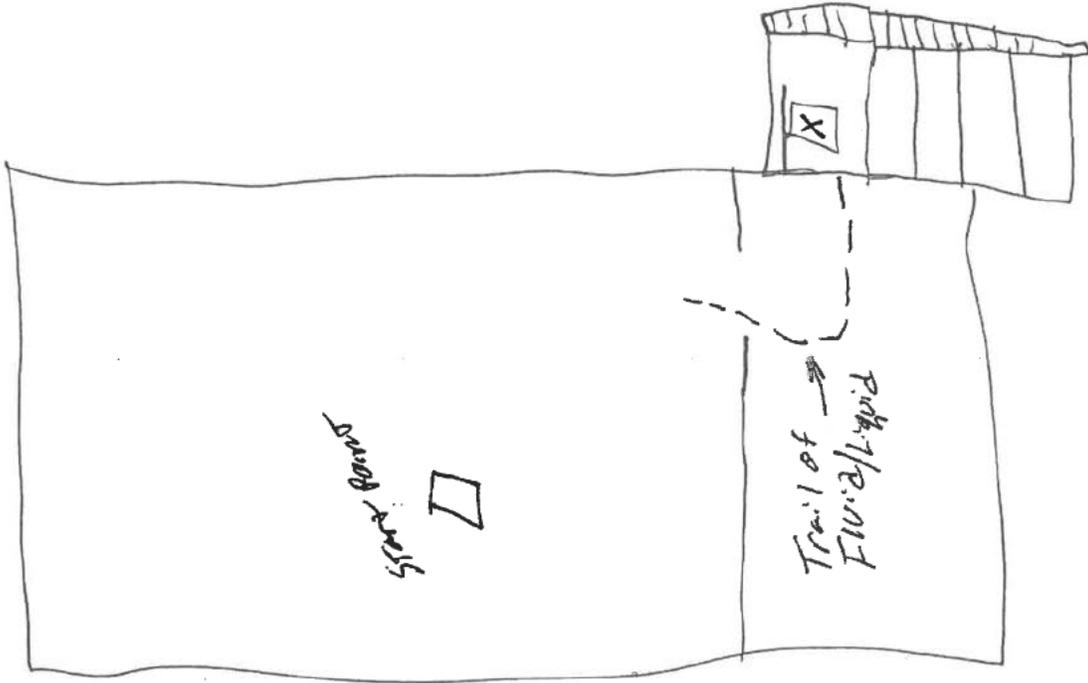
ODOR/VAPOR RESPONSE CARD

Aerial of
MO-531

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

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

- Date and time of event: 10/7/25 12:58 pm
- Check Applicable:
 - Odor
 - Ammonia Alarm (6 ppm)
 - Ammonia Alarm (12 ppm)
 - Alarm (other - describe):

- Your name and the work you were performing: Removing some refrigerators from MDS31
- Other Work Underway? Describe:

- Location of event (mark area on map and wind direction): MDS31

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

- Was Industrial Hygiene present, who? Ne

- Describe the odor:
 - Sweet
 - Metallic
 - Other (describe):
 - Sour
 - Onion
 - Smoky
 - Earthy
 - Septic/Sewer
 - Ammonia
 - Musty
 - Citrus
 - Rotten
 - Solvent

- Is source known/likely? Describe: Refrigerator

- Your symptoms? None
 - Headache
 - Weakness
 - Itch
 - Other (describe):
 - Dizziness
 - Sore Throat
 - Tingling
 - Nausea
 - Difficulty Breathing
 - Numbness
 - Cough
 - Eye Irritation
 - Taste
 - Fatigue
 - Rash

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 - 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.

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