

**Washington River Protection Solutions  
EVENT SUMMARY**

Check PART 1 box to hide that section of the form. Check PART 2 box it will show that section.

☐ **PART 1 (hide)\***      ☒ **PART 2 (show)\***

**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:

**Project:** Personal ToxiRAE Ammonia Alarm Response **Date:** 2/16/2021

**Area/Building/Location:** MO512 (Middle C Farm Ingress Trailer) **Approximate Time of Event:** 0924

**AR Number:** WRPS-AR-2021-2096 **Responsible Manager:** [REDACTED]

**EIR Number:** EIR-2021-006 **Event Investigator:** [REDACTED]

**EVENT SUMMARY PART I**

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

Two HPTs were at the Middle C Farm Ingress Trailer in route to perform C Farm Routines.

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

Two Radiological Controls Health Physics Technicians (HPTs)

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

One of the HPTs had a personal ammonia detector alarm at 6ppm ammonia while inside the Ingress Trailer. The other HPT's detector did not alarm.

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

Inside MO512 (241-C Farm "Middle Ingress Trailer"), a climate controlled facility.

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

MO512 was restricted while Industrial Hygiene Technicians (IHTs) performed monitoring sweeps of the area and building.

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

The HPTs performed SWIM and notified supervision and management. The CSM entered into TF-AOP-015, "Response to Personal Ammonia Monitor Alarm", and followed the steps to restrict and then clear MO512 and the surrounding area.

**Notifications Already Made** (Time and personnel notified):

0950 Industrial Hygiene Technician (IHT) Supervisor notifies Central Shift Manager (CSM)  
0953 CSM initiates TF-AOP-015 Entry and event response actions/notifications  
1001 SOEN: "Entering AOP-015 for personnel ammonia monitor alarm inside Middle C farm change trailer. Access is restrictive to middle C change trailer. CSM"  
1004 IHT contacts the Level 2 (two) Industrial Hygiene Manager.  
1030 CSM notifies on-call DOE Facility Representative

☒ This event does not merit an Event Investigation meeting

☐ This event merits an Event Investigation meeting

**Basis for Determination:**

Due to the limited personnel involved (two workers) the event investigation can be documented by review of the odor response cards, personnel interviews and IH instrument evaluation.

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**EVENT SUMMARY (Continued)**

Project: Personal ToxiRAE Ammonia Alarm Response Date: 2/16/2021

Area/Building/Location: MO512 (Middle C Farm Ingress Trailer) Approximate Time of Event: 0924

AR Number: WRPS-AR-2021-2096 Responsible Manager: [REDACTED]

EIR Number: EIR-2021-006 Event Investigator: [REDACTED]

Responsible Manager:

[REDACTED]  
Print First and Last Name

[REDACTED]  
Digitally signed by [REDACTED]  
Date: 2021.02.17 15:55:27 -08'00'  
Signature / Date

CAS Manager:

[REDACTED]  
Print First and Last Name

[REDACTED]  
Digitally signed by [REDACTED]  
Date: 2021.02.17 15:55:27 -08'00'  
Signature / Date

**EVENT SUMMARY PART II**

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

- Field Response area readings:

Ammonia: <Detectable  
ToxiRAE 003382 (event initiating ToxiRAE):  
Ammonia: Peak of eleven (11) Parts Per Million  
ToxiRAE 003095 (present at initiating event):  
Ammonia: Peak of one (1) Parts Per Million

- After initiating event ToxiRAE 003382 indicated sustained readings of three (3) Parts Per Million and would not clear. When provided to event response team at the Central Shift Office ToxiRAE 003382 occasionally exceeded six (6) Parts Per Million indicated Ammonia concentration. When exposed to atmosphere outside of the central shift office ToxiRAE 003382 indicated readings would slowly decline to zero (0) but then return to three (3) Parts Per Million when brought back inside of the Central Shift Office.

- IH ToxiRAE SME determined equipment malfunction (see Basis for Determination section below)

**Additional Compensatory/Remedial Measures (any additional measures taken if different from immediate actions):**

Both affected workers were offered voluntary medical examination, but both declined.

Instrument number 003382 has been tagged out of service and will be processed for repair or disposition

**Lessons Learned or Information That the Work Force Needs Immediately:**

None at this time.

- ☐ 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

**Basis for Determination:**

The event was the result of equipment malfunction, and therefore does not warrant further investigation.

From IH Management and the IH ToxiRAE monitor SME:

It is apparent the instrument number 003382, ToxiRAE NH3 single gas monitor, has an apparent equipment failure. The instrument steadily increases readings when held upside down. Additionally the instrument readings were bouncing sporadically between 0-4 ppm when held in a normal operating mode. This is consistent with what reported in the field. Additionally with the verification of the actual concentration from other nearby ToxiRAE, readings vastly different from alarming unit,

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**EVENT SUMMARY** (Continued)

Project: Personal ToxiRAE Ammonia Alarm Response Date: 2/16/2021

Area/Building/Location: MO512 (Middle C Farm Ingress Trailer) Approximate Time of Event: 0924

AR Number: WRPS-AR-2021-2096 Responsible Manager: [REDACTED]

EIR Number: EIR-2021-006 Event Investigator: [REDACTED]

**Basis for Determination:**

all would suggest that the instrument malfunction caused the alarm as opposed to actual concentration in the workspace.

The completed Industrial Hygiene Investigation Report #IHIR-00004 has been attached to Action Request WRPS-AR-2021-2096. The report details IH findings and disposition of this ToxiRAE monitoring device.

**Responsible Manager:**

[REDACTED]

*Print First and Last Name*

[REDACTED]

*Signature / Date*

Digitally signed by [REDACTED]  
Date: 2021.02.23 14:40:51 -08'00'

**CAS Manager:**

[REDACTED]

*Print First and Last Name*

[REDACTED]

*Signature / Date*

Digitally signed by [REDACTED]  
Date: 2021.02.23 14:50:02 -08'00'

Washington River Protection Solutions  
**INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT**

<b>Event Title:</b>  TF-AOP-015 Entry at 241-C Farm "Middle Ingress Trailer" (MO512) on 02/16/2021			<b>PER Number:</b>  N/A
			<b>IHIR Number:</b>  IHIR-00004
<b>Date:</b>  02/16/2021	<b>Time:</b>  0924	<b>Location:</b>  241-C Farm Middle Change Trailer (MO512)	

**Event Summary and Timeline:**

Event Summary:

A personal Ammonia Monitor alarmed and indicated greater than 6(six) parts per million ammonia but less than 12 (twelve) parts per million ammonia inside of MO512 (241-C Farm "Middle Ingress Trailer"). Two workers were present at the time of personal ammonia monitor alarm. Workers immediately exited MO512. Upon exiting MO512 the worker who was wearing the personal ammonia monitor that did not alarm reported a "sweet, cleaning solution, wet paint mixed with some chemical" odor. Workers were performing routine work in/at 241-C Farm. Both workers were wearing Personal Ammonia Monitors.

Field Response Timeline:

0924 Approximate Time of Event - Personal Ammonia Monitor alarm

0937 Production Operations Shift Industrial Hygiene Technician Supervisor notifies Production Operations Industrial Hygienists of Personal Ammonia Monitor alarm

0948 Production Operations Shift Industrial Hygiene Technician Supervisor and Production Operations Industrial Hygienists arrive at Central Shift Office

0950 Production Operations Shift Relief Manager arrives at Central Shift Office

0953 Central Shift Manager initiates TF-AOP-015 Entry and event response actions

1001 SOEN: "Entering AOP-015 for personnel ammonia monitor alarm inside Middle C farm change trailer. Access is restrictive to middle C change trailer. CSM"

1002 Production Operations Industrial Hygienist attempts to contact the Level 2 (two) Industrial Hygiene Manager

1004 Production Operations Industrial Hygienist contacts the Level 2 (two) Industrial Hygiene Manager. Production Operations Industrial Hygienist provides event briefing to the Level 2 (two) Industrial Hygiene Manager

1012 Affected Personnel arrive at Central Shift Office

1016 Affected Personnel populate Odor/Vapor Response Cards (Odor/Vapor Response Card - 241-C Farm A-6006-938)

1019 Affected Personnel notify Central Shift Manager that odor location was outside of 241-C Middle ingress and egress trailers

1022 Production Operations Industrial Hygienist briefs Production Operations Shift Industrial Hygiene Technicians for field response actions at and around MO197:

- \* Monitor affected area as per IHP-09001 "Response to ammonia monitor alarm"
- \* Respiratory Protective Equipment may be worn as per Respiratory Protection Form "RPF GHA (current version)" Task 1

1024 Production Operations Industrial Hygienist provides update briefing to Industrial Hygiene Level 2 (two) Manager

1026 Production Operations Industrial Hygienist contacts Hanford Weather Station to acquire record of atmospheric conditions outside of affected facilities during event:

- \* At Weather Station six (6) 0930 02/16/2021
- \* Temperature: twenty two (22) degrees Fahrenheit
- \* Wind speed and direction: Out of North West at four (4) Miles Per Hour
- \* Relative Humidity: ninety (90) Percent
- \* Barometric Pressure: twenty nine point one nine (29.19) inches of Mercury and increasing
- \* Accumulation of snow present

1036 Event Investigation Department contacts Central Shift Office to designate Event Investigation Report Number (EIR# 2021-006) and Event Investigation Point of Contact

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

**Event Summary and Timeline:**

Field Response Timeline (continued):

1040 Event Responding Production Operations Shift Industrial Hygiene Technicians contact Production Operations Industrial Hygienist:  
\* Snow around MO197 was not disturbed with footprints or otherwise  
\* Footprints leading to MO512 noted  
Production Operations Industrial Hygienist directs Event Responding Production Operations Shift Industrial Hygiene Technicians to expand field response actions to inside MO512

1048 Event Responding Production Operations Shift Industrial Hygiene Technicians contact Production Operations Industrial Hygienist:  
\* Direct Reading Instrumentation indicates ammonia concentrations present at affected area are less than detectable

1050 Production Operations Industrial Hygienist provides update to Level 2 (two) Industrial Hygiene Manager regarding field response actions

1056 Event Responding Production Operations Shift Industrial Hygiene Technicians return to Central Shift Office to brief Central Shift Manager on event response action results and to receive further instruction. Production Operations Industrial Hygienist directs Event Responding Production Operations Shift Industrial Hygiene Technicians to perform post-use-function-test on event response Direct Reading Instrumentation and notify Production Operations Industrial Hygienist upon completion

1104 Event Responding Production Operations Shift Industrial Hygiene Technicians contact Production Operations Industrial Hygienist to report event response Direct Reading Instrumentation has passed post-use-function-tests

1106 Central Shift Manager exits TF-AOP-015 procedure

1106 SOEN: "Exiting AOP-015 for personal ammonia monitor alarm inside Middle C farm Change trailer. Access no longer restricted to middle C change trailer. CSM"

**Sampling/Monitoring Results:**

Field Response area readings:

Ammonia: <Detectable

ToxiRAE 003382 (event initiating ToxiRAE):

Ammonia: Peak of eleven (11) Parts Per Million

ToxiRAE 003095 (present at initiating event):

Ammonia: Peak of one (1) Parts Per Million

**SWIHD References:**

Event Response SWIHD DRI Survey # 21-01859 "TF-AOP-015 Response MO512 C Farm Middle Ingress"

**Additional Information:**

Atmospheric conditions outside of affected facilities during event:

Weather Station six (6) 0930 02/16/2021:

- \* Temperature: twenty two (22) degrees Fahrenheit
- \* Wind speed and direction: Out of North West at four (4) Miles Per Hour
- \* Relative Humidity: Ninety (90) Percent
- \* Barometric Pressure: Twenty nine point one nine (29.19) inches of Mercury and increasing
- \* Accumulation of snow present

NOTE: At the time of Personal Ammonia Monitor alarm atmospheric conditions were consistent with "standard conditions" and the alarm event took place inside of a climate controlled facility.

Additional Information regarding instrument function:

After initiating event ToxiRAE 003382 indicated sustained readings of three (3) Parts Per Million and would not clear. When provided to event response team at the Central Shift Office ToxiRAE 003382 occasionally exceeded six (6) Parts Per Million indicated Ammonia concentration. When exposed to atmosphere outside of the central shift office ToxiRAE 003382 indicated readings would slowly decline to zero (0) but then return to three (3) Parts Per Million when brought back inside of the Central Shift Office. Alarm activation and indicated readings of eleven (11) parts per million can be induced by inverting the instrument, and cleared by returning the instrument to

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

**Additional Information:**

"upright" orientation. The data log from the alarm event shows a prolonged period of sustained sensor drift preceding the alarm event.

On Thursday 02/18/2020 the Industrial Hygiene Program Manager issued the following statement:  
"In my discussion with [Production Operations Shift Industrial Hygiene Technician Supervisor] it is apparent the instrument number 003382, ToxiRAE NH3 single gas monitor, has an apparent equipment failure. The instrument steadily increases readings when held upside down. Additionally the instrument readings were bouncing sporadically between 0-4 ppm when held in a normal operating mode. From my discussion with [Production Operations Shift Industrial Hygiene Technician Supervisor] and from viewing the draft IHIR this is consistent with what was reported in the field. Additionally with the verification of the actual concentration from other nearby ToxiRAE, readings vastly different from alarming unit, all would suggest that the instrument malfunction caused the alarm as opposed to actual concentration in the workspace.

The instrument has been Green Tagged out of service and will be processed for repair or disposition."

**Recommendations/Conclusions:**

**Recommendations:**

- \*Personnel Ammonia Monitor ToxiRAE 00382 will be taken out of service and will be sent to Industrial Hygiene Equipment Service for repair or disposition.
- \*Industrial Hygiene Programs Direct Reading Instrumentation Subject Matter Expert will document instrument failure for the purpose of tracking and trending Personnel Ammonia Monitor issues (continuous improvement/lessons learned, Integrated Safety Management Strategy step five (5) "Feedback").

**Conclusions:**

Personnel Ammonia Monitor alarm event was the result of instrumentation error and not an indication of changing conditions or an employee chemical exposure event.

**Other:**

Both affected workers were offered voluntary medical examination, but both declined.  
EIR(Event Investigation Report)# 2021-006

**Industrial Hygienist:**

\_\_\_\_\_

*Print First and Last Name*

\_\_\_\_\_

*Signature / Date*

*Digitally signed by \_\_\_\_\_  
Date: 2021.02.22 16:26:16 -08'00'*

**Industrial Hygiene Level 2 Manager:**

\_\_\_\_\_

*Print First and Last Name*

\_\_\_\_\_

*Signature / Date*

*Digitally signed by \_\_\_\_\_  
Date: 2021.02.22 16:24:34 -08'00'*

# ODOR/VAPOR RESPONSE CARD - 241-C FARM

## 1. Contact CSM, Complete below bulleted information and map.

- Date and time of event: 2-16-21 0924 am
- Check Applicable: ☐ Odor ☒ Alarm 6 ppm ☐ Alarm 12 ppm ☐ Alarm Other: \_\_\_\_\_
- Your name and the work your were performing: [REDACTED] - HPT Routines
- Location of event (mark area on map and wind direction): C-Farm middle charge Trailer
- Name(s) of others in or near the affected area: [REDACTED]
- Was an IHT present? NO
- Describe the Odor: ☐ Sweet ☐ Sour ☐ Musty ☐ Earthy ☐ Metallic ☐ Smoky ☐ Rotten ☐ Onion  
☐ Septic ☐ Ammonia ☐ Cleaning Solution ☐ Other: unknown
- Possible Source: unknown
- Your Symptoms (if any): ☐ Headache ☐ Dizziness/Light-Headed ☐ Nausea ☐ Cough  
☐ Fatigue/Drowsiness/Weakness ☐ Sore/Burning Throat ☐ Difficulty Breathing  
☐ Watery/Irritated Eyes/Trouble with Vision ☐ Tingling/Numbness/Paralysis ☐ Rash/Itching  
☐ Other: N/A

## 2. Send this card to the Central Shift Office.

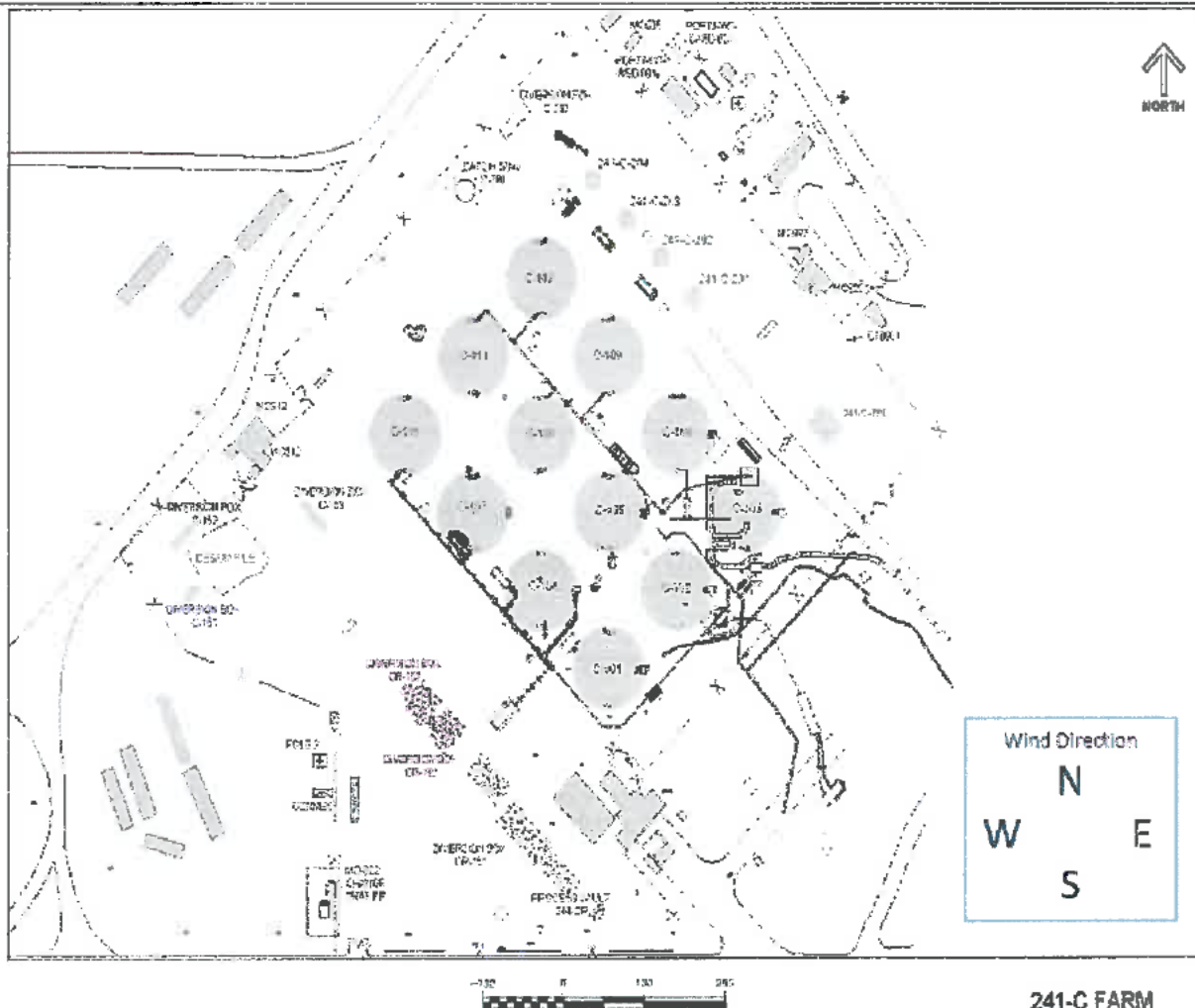
## ODOR/VAPOR RESPONSE CARD - 241-C FARM

### ODOR OR VAPOR ALARM EVENT

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM),  

[REDACTED]

 complete below bulleted information and map.
  - Your name and the work you were performing
  - Your symptoms *(if any)*
  - Date and time of event
  - Location of event *(mark area on map and the wind direction)*
  - Describe the odor, if applicable
  - Name of others in or near the affected area
  - Was an IHT present?
  - Possible source
3. Complete map.
4. Complete the back of card.
5. Send this card immediately to the Central Shift Office.



241-C FARM



# ODOR/VAPOR RESPONSE CARD - 241-C FARM

3095

## 1. Contact CSM, Complete below bulleted information and map.

- Date and time of event: 2/16/21 0924
- Check Applicable: ☒ Odor ☐ Alarm 6 ppm ☐ Alarm 12 ppm ☐ Alarm Other: No alarm 1 ppm
- Your name and the work your were performing: [REDACTED] C Farm weekly Routine
- Location of event (mark area on map and wind direction):
- Name(s) of others in or near the affected area [REDACTED]
- Was an IHT present? NO
- Describe the Odor: ☒ Sweet ☐ Sour ☐ Musty ☐ Earthy ☐ Metallic ☐ Smoky ☐ Rotten ☐ Onion  
☐ Septic ☐ Ammonia ☒ Cleaning Solution ☐ Other: \_\_\_\_\_
- Possible Source: smelled like wet paint mixed with some chemical
- Your Symptoms (if any): ☐ Headache ☐ Dizziness/Light-Headed ☐ Nausea ☐ Cough  
☐ Fatigue/Drowsiness/Weakness ☐ Sore/Burning Throat ☐ Difficulty Breathing  
☐ Watery/Irritated Eyes/Trouble with Vision ☐ Tingling/Numbness/Paralysis ☐ Rash/Itching  
☐ Other: N/A

## 2. Send this card to the Central Shift Office.

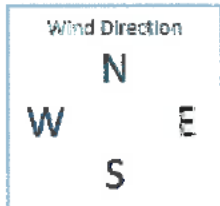
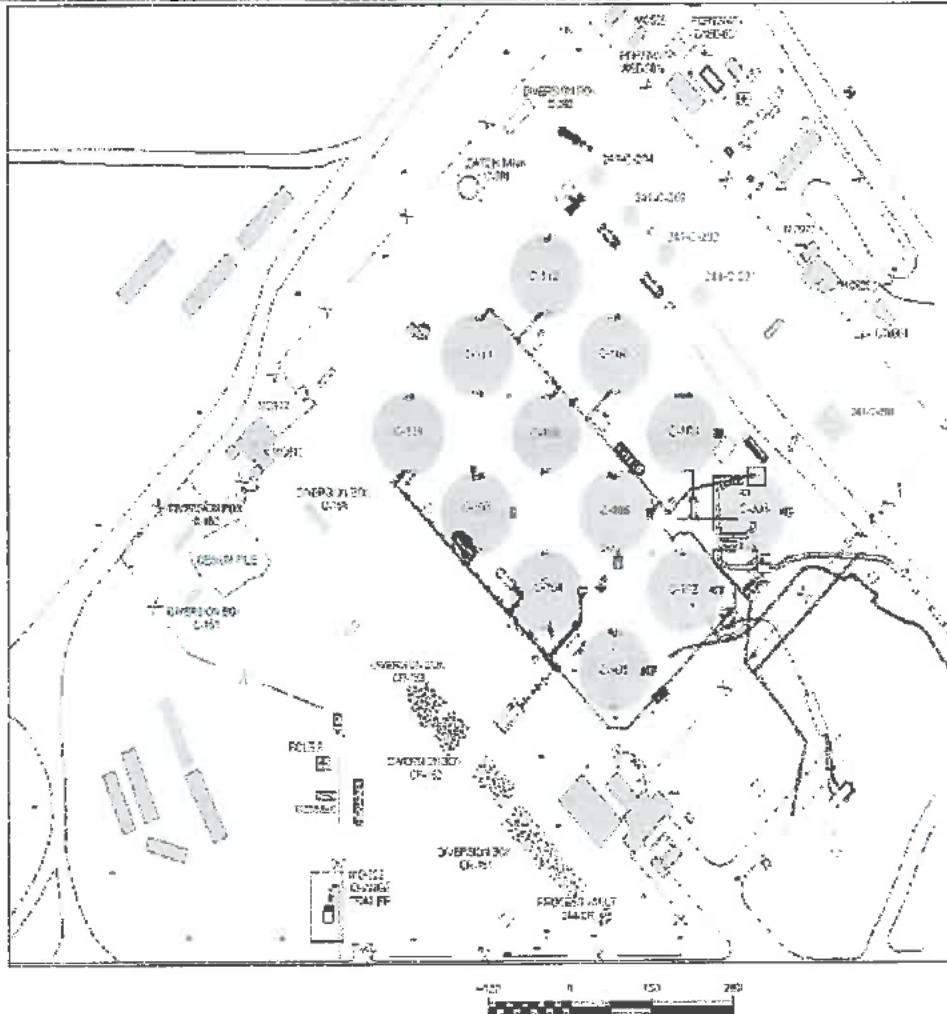
## ODOR/VAPOR RESPONSE CARD - 241-C FARM

### ODOR OR VAPOR ALARM EVENT

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager (CSM),  

[REDACTED]

, complete below bulleted information and map.
  - Your name and the work you were performing
  - Your symptoms (if any)
  - Date and time of event
  - Location of event (mark area on map and the wind direction)
  - Describe the odor, if applicable
  - Name of others in or near the affected area
  - Was an IHT present?
  - Possible source
3. Complete map.
4. Complete the back of card.
5. **Send this card immediately to the Central Shift Office.**



241-C FARM