Response to Personal Ammonia Monitor Alarm

Tank Farm Abnormal Operating Procedure **200E/200W**

Changes "Other Than Inconsequential" Require These Additional Reviews:

Industrial Hygiene (Program)	Radiological Controls: Central Radcon Organization

USQ # TF-25-0405-D, Rev. 0

CHANGE HISTORY (≤ LAST 5 REV-MODS)

Rev-Mod	Release Date	Justification	Summary of Changes
H-10	04/03/2025	Technical Change	Updated DFAS to SmartSite and updated access information. Updated contractor. Incorporated changes from the periodic review.
H-9	01/20/2025	Inconsequential Change	Inconsequential change replacing unapproved verbs at Steps 3.1.3, 3.1.10.1 and 3.2.10.2 with approved verbs. Updated terminology to the site occupational medical contractor (SOMC) at Steps 3.1.2 and 3.2.2.
H-8	09/27/2023	Technical change for field process	Updated document used by IHTs in alarm response to IHSP-PROG-MULTI-TF-AOP-15.
H-7	07/26/2023	Technical change for field process	Modified the procedure to look like other CSM AOPs and added a table in the back.
H-6	04/12/2023	Contractor change.	Changed HPMC to a more generic SOMC.

1.0 AFFECTED PERSONNEL, FACILITIES, EQUIPMENT, OR AREAS

This procedure is performed/directed by the Hanford Tank Waste Operation & Closure (H2C) Central Shift Manager (CSM) on duty and applies to H2C personnel and subcontractors doing work in 200 East Area, 200 West Area, and 600 Area controlled by H2C and equipment in these areas. This procedure does not apply to H2C personnel and subcontractors doing work at the Effluent Treatment Facility (ETF).

2.0 ENTRY CONDITIONS

2.1 Entry Criteria

The CSM will determine whether any of the following exceptions or entry criteria are met:

NOTE - A personal ammonia monitor alarm may be a Ventis Pro 5, ToxiRAE, or DRI (e.g., MultiRAE).

- This Abnormal Operating Procedure (AOP) is for personal ammonia monitor alarms reported at the time the event occurred, so that timely data collection is achievable.

2.1.1 This AOP does not need to be entered for the following situations:

- Planned conditions that would result in a personal ammonia monitor alarm
- Odors detected without a personal monitor ammonia alarm. Refer to TFC-OPS-OPER-C-67 for required actions
- When personal ammonia monitor fault conditions (see Table 1)are evident, occur in a location not likely to be impacted by tank farm vapors (i.e., general purpose facilities), or alternate monitoring (for example, MultiRAE) in the same space indicates conditions are below alarm set point values. Having more than one personal monitor alarm in the same space voids this exception.

2.1.2 Notification from personnel of either of the following conditions:

- Personal ammonia monitor Response Level (6 ppm) alarm or reading
- Personal ammonia monitor Action Level (12 ppm) alarm or reading.

2.1.3 **IF** at any time event meets any of the following:

- Emergency Action Level (EAL)
- Emergency Response Procedure (ERP) Initiating Condition
- TFC-OPS-OPER-C-24, Attachment A criteria,

IMPLEMENT DOE-0223, RLEP 1.1, BED Checklisted Duties **AND**

EXIT this AOP.

2.1.4 **IF** at any time the vapor source is determined to be related to a spill or release, **EXIT** this AOP **AND**

ENTER TF-AOP-011.

2.1.5 **IF** at any time a personal ammonia monitor alarm is determined to be due to monitor fault, **PROCEED TO** Section 4.0, Exit Criteria.

3.0 ACTIONS

3.1 Personal Ammonia Monitor Response Level (6 ppm) Alarm

3.1.1 **IF** emergency assistance is required, **CALL** 911 ((509) 373-0911 for cell phones).

3.1.2 **ENSURE** employees exhibiting or reporting symptoms report to the site occupational medical contractor (SOMC) for medical surveillance. (See TFC-ESHQ-S_CMLI-C-02).

3.1.3 **ENSURE** medical surveillance is offered to employees who were part of work crew with alarming personal ammonia monitor.

3.1.4 **DIRECT** the affected work crew to place work in a safe configuration **AND**

EXIT the tank farm or affected area.

3.1.5 **RESTRICT** access to affected area, except for activities required for safe operations or the TF-AOP-015 response.

3.1.6 **SEND** announcement via Shift Office Event Notice (SOEN), Radio, and public address (PA) speakers for the affected facilities, that includes the following:

- Entry into TF-AOP-015
- Event and location
- Required actions for affected personnel/protective actions as applicable
- Access approval and authority as applicable.

3.1.7 **REQUEST** odor/vapor response cards be completed by the work crew and submitted to the CSM.

3.1 Personal Ammonia Monitor Response Level (6 ppm) Alarm (Cont.)

NOTE - Mixing heights < 100 feet may increase the presence of detectable odors. When mixing height is negatively trending (moving or staying < 100 ft), odors are likely to remain or worsen. When mixing height is positively trending (moving or staying ≥ 100 feet), odors are likely to dissipate.

- SmartSite (formerly known as Data Fusion & Advisory System (DFAS)) may be accessed at Steward (https://PAE.ITDC.HFO.Hanford.gov/steward/app/SmartSite).

3.1.8 **REVIEW** mixing height on SmartSite.

3.1.8.1 **CONSIDER** mixing height when configuring field response.

3.1.8.2 **IF** an SST Retrieval is in progress in affected farm **AND** mixing height is negatively trending, **REQUEST** that the Retrieval Operations Engineer (OE) modify the retrieval techniques to minimize ammonia (NH3) generation.

3.1.9 **CONTACT** Industrial Hygiene for direction on field response.

3.1.10 **DIRECT** Industrial Hygiene Technician (IHT) to perform the following:

- Implement IHSP-PROG-MULTI-TF-AOP-15, Response to Personal Ammonia Monitor Alarm
- Ensure respiratory protection prescribed on Respiratory Protection Form for TF-AOP-015 response is utilized.

3.1.11 **REQUEST** Industrial Hygiene to initiate an Industrial Hygiene (IH) report per TFC-PLN-120.

3.1.12 **EVALUATE** event against TFC-OPS-OPER-C-24 to ensure occurrence categorization and notification are completed as required.

3.1.13 **CONTACT** Contractor Assurance System (CAS) manager to assign an event investigator per TFC-OPS-OPER-C-14.

3.1.14 **MAKE** notifications per TFC-OPS-OPER-C-57.

3.1.15 **COMPLETE** electronic version (e.g., Word file) of Attachment 1 **AND**

SEND to distribution list "DL – H2C Odor/Vapor Event Notification" as soon as enough information is available.

3.1.15.1 **PRINT** a copy of the electronic file of Attachment 1 for Record Retention.

3.1 Personal Ammonia Monitor Response Level (6 ppm) Alarm (Cont.)

NOTE - Step 3.1.16 is not required to be completed prior to exiting TF-AOP-015.

3.1.16 **COMPLETE** electronic version (e.g., Word file) of Attachment 2 **AND**

SEND to DL – H2C Odor/Vapor Event Notification once event is stabilized and all details are known.

3.1.16.1 **PRINT** a copy of the electronic file of Attachment 2 for Record Retention.

3.2 Personal Ammonia Monitor Action Level (12 ppm) Alarm or DRI Reading of 12 ppm

Implement SWIM Response Actions at Event Scene

3.2.1 **IF** emergency assistance is required,
CALL 911 ((509) 373-0911 for cell phones).

3.2.2 **ENSURE** employees exhibiting or reporting symptoms report to the site occupational medical contractor (SOMC) for medical surveillance. (See TFC-ESHQ-S_CMLI-C-02)**.**

3.2.3 **OFFER** medical surveillance to employees who were part of work crew with alarming personal ammonia monitor or DRI alarm.

3.2.4 **ASSIGN** field lead to implement STOP, WARN, ISOLATE, MINIMIZE (SWIM) response actions.

3.2.5 **RESTRICT** access to affected tank farm or area, except for activities required for safe operations or the TF-AOP-015 response.

NOTE- Evacuation does not include the Tank Farm change trailers or facilities such as the 242-A Evaporator building, unless vapor issues are impacting the interior of the facility.

3.2.6 **ANNOUNCE** entering TF-AOP-015 over Tank Farms radio channel(s) **AND**

SEND SOEN message that includes the following:

- Entry into TF-AOP-015
- Event and location
- Required actions for affected personnel/protective actions as applicable
- Access approval and authority as applicable.

3.2.7 **REQUEST** odor/vapor response card be completed by the work crew and submitted to the Central Shift Manager.

3.2 Personal Ammonia Monitor Action Level (12 ppm) Alarm or DRI Reading of 12 ppm (Cont.)

NOTE - Mixing heights < 100 feet may increase the presence of detectable odors. When mixing height is negatively trending (moving or staying < 100 ft), odors are likely to remain or worsen. When mixing height is positively trending (moving or staying ≥ 100 feet), odors are likely to dissipate.

- SmartSite (formerly known as DFAS) may be accessed at Steward (https://PAE.ITDC.HFO.Hanford.gov/steward/app/SmartSite).

3.2.8 **REVIEW** mixing height on SmartSite.

3.2.8.1 **CONSIDER** mixing height when configuring field response.

3.2.8.2 **IF** an SST Retrieval is in progress in affected farm **AND** mixing height is negatively trending, **REQUEST** that the Retrieval OE modify the retrieval techniques to minimize ammonia (NH3) generation.

3.2.9 **CONTACT** Industrial Hygiene for direction on field response.

3.2.10 **DIRECT** IHT to perform the following:

3.2.10.1 **IMPLEMENT** IHSP-PROG-MULTI-TF-AOP-15, Response to Personal Ammonia Monitor Alarm.

3.2.10.2 **ENSURE** respiratory protection prescribed on TF-AOP-015 response Respiratory Protection Form is utilized.

3.2.11 **REQUEST** Industrial Hygiene to initiate an IH report per TFC-PLN-120.

3.2.12 **EVALUATE** event against TFC-OPS-OPER-C-24 to ensure occurrence categorization and notification are completed as required.

3.2.13 **CONTACT** CAS manager to assign an event investigator per TFC-OPS-OPER-C-14.

3.2.14 **MAKE** notifications per TFC-OPS-OPER-C-57.

3.2 Personal Ammonia Monitor Action Level (12 ppm) Alarm or DRI Reading of 12 ppm (Cont.)

3.2.15 **COMPLETE** electronic version (e.g., Word file) of Attachment 1 **AND**

SEND to distribution list "DL – H2C Odor/Vapor Event Notification" as soon as enough information is available.

3.2.15.1 **PRINT** a copy of the electronic file of Attachment 1 for Record Retention.

NOTE - Step 3.2.16 is not required to be completed prior to exiting TF-AOP-015.

3.2.16 **COMPLETE** electronic version (e.g., Word file) of Attachment 2 **AND**

SEND to distribution list "DL – H2C Odor/Vapor Event Notification" once event is stabilized and all details are known.

3.2.16.1 **PRINT** a copy of the electronic file of Attachment 2 for Record Retention.

4.0 EXIT CRITERIA

4.1 Exit Actions/Criteria

4.1.1 **IF** personal ammonia monitor alarm is determined to be due to monitor fault condition, **PERFORM** the following:

4.1.1.1 **ANNOUNCE** exiting TF-AOP-015 over tank farm Radio, and PA speakers for the affected facilities stating "Exiting TF-AOP-015 due to personal ammonia monitor fault. No further response actions required."

4.1.1.2 **SEND** SOEN message for exiting TF-AOP-015.

4.1.1.3 **ENSURE** any response actions initiated are appropriately redirected.

4.1.1.4 **IF** Attachment 1 was transmitted, **ENSURE** follow-up documentation/notifications include explanation of fault condition **AND**

PERFORM Section 5.0.

4.1.1.5 **EXIT** this AOP.

4.1.2 **CONFIRM** all actions described in Section 3.1 or Section 3.2 have been completed.

4.1.3 **CONFIRM** from Industrial Hygiene professional that IHSP-PROG-MULTI-TF-AOP-15 response actions are complete and no hazards were detected, or identified hazards are controlled **OR**

CONFIRM an EAL, ERP, or TFC-OPS-OPER-C-24, Attachment A (Core Program Operational Emergency) criteria is met and DOE-0223, RLEP 1.1 has been entered.

4.1.4 **IF** response action analysis results are at **OR** below background levels, **PERFORM** the following:

4.1.4.1 **SEND** SOEN stating "Response actions for the TF-AOP-015 event have been completed and the results are at or below background levels. Exiting TF-AOP-015".

4.1.4.2 **ANNOUNCE** exiting TF-AOP-015 over tank farm radio(s) and PA speakers.

4.0 Exit Criteria (Cont.)

4.1.5 **IF** response action analysis results are above background **AND** below 6 ppm ammonia, **PERFORM** the following:

4.1.5.1 **SEND** SOEN stating "Response actions for the TF-AOP-015 event have been completed and the results are below personal ammonia monitor response level. Exiting TF-AOP-015".

4.1.5.2 **ANNOUNCE** exiting TF-AOP-015 over tank farm radio(s) and PA speakers for the affected facilities.

5.0 RECORDS

5.1.1 **PERFORM** the following for records identified within this procedure.

5.1.1.1 **RECORD** the number of times the record was generated in applicable column

OR

PLACE a check mark (✓) in the N/A column.

5.1.1.2 **SUBMIT** the package for verification of completed records.

Records Submittal Checklist	Number of times completed	N/A (✓)
Attachments		
Attachment 1 – Initial Communication Template (Printed copy of electronic version)		
Attachment 2 - Follow-Up Event Summary (Printed copy of electronic version)		
FWS/OE/Shift Manager **SEND** the completed records to the Central Shift Office for records retention. _____ / _____ / _____ Signature Print (First & Last) Date FWS/OE/Shift Manager		

The record custodian identified in the company-level Records Retention and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

Attachment 1 – Initial Communication Template

The following is example of detail to provide in the electronic form of Communication Template.

#X Hanford workers were taken to Site Occupational Medical Contractor (SOMC)/Kadlec or have declined precautionary medical evaluation after reporting unexpected changes to vapor conditions at location. #X workers reported symptoms.

The employees were description of what work they were performing at the time of reported personal ammonia monitor alarm and were or were not in an area that requires use of respiratory protection.

Workers were instructed to leave the area, and access to the area has been restricted.

NOTE - This communication template is to be completed as soon as enough information is available.

Signature Central Shift Manager	Print (First & Last)	Date

Attachment 2 - Follow-Up Event Summary

The following is example of detail to provide in the electronic form of Follow-Up Event Summary.

TF-AOP-015 Initial Report		
Date: Month/day/year	Time: XXXX hours	Location: XX
Number of Workers Involved: XX	Sampling Results #: Add DRI Survey #	

Event Summary

At approximately XXXX hours X# workers description of event. Initially no workers reported symptoms and declined medical evaluations or were transported to SOMC or Kadlec via ambulance.

At approximately XXXX hours provide updated information to included additional workers reporting symptoms, description of symptoms and status on medical evaluation.

At the time the change in vapor condition was reported, the individuals were or were not working in an area requiring use of respiratory protection. All workers were instructed to leave the area. Access to the area was restricted.

IHTs responded to the area and took DRI readings and a bag sample. DRI instrument readings were above or below action levels. Analytical results for bag samples are being analyzed and will be posted upon receipt or Bag samples have been analyzed the results allowed the restricted area to be down posted.

Provide any subsequent information

An event investigation has or has not been initiated.

Return to Work Status	
Number of workers returned to work without restriction	X#
Number of workers returned to work with restriction	X#
Number of workers referred for further evaluation	X#

NOTE - Form is to be completed once event is stabilized and all details are known.
- To learn more about chemical exposure evaluations see http://hanfordvapors.com/wp-content/uploads/2016/09/2a-SOMC-procedure.pdf

_____ / _____ / _____

Signature Print (First & Last) Date
Central Shift Manager

Table 1 - Ammonia Monitor and Fault Conditions

This table provides some of the common fault conditions that for specific monitoring equipment. This list is not a "complete" list of fault conditions.

Common Fault Codes for Specific Monitoring Equipment		
Fault Condition	**ToxiRAE**	**Ventis Pro 5**
Dropping the device	●	
Locking the device sensor	●	
Breathing very close to the device sensor	●	
Direct sensor contact to moisture	●	
Exceeding operating temperature range: sustained exposure to temperature > 104 ^{o}F for 8+ hours		●
Falling from significant heights (multiple stories)		●