

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:** Facilities Maintenance 2. **Report Date:** Feb 12, 2024

3. **Investigation Title:** C-67 Odor Response

4. **Investigation Report Number:** EIR-2024-009

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

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

7. **Area / Building / Location:** 200E/2750E/C-105

8. **Date and Approximate Time of Event:** **Date:** 2/1/2024 **Time (military):** 1306 hours

9. **Associated Action Request (AR) Number:** WRPS-AR-2024-0912

10. **Associated Occurrence Report Number (if applicable):** N/A

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

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

Level 3 Work Order (WO) #1021218, "Repetitive - Replace Carpet/Vinyl Flooring in General purpose Facilities," was being used to install carpet in 2750E. Painters were applying primer in preparation to overlay carpet over the existing flooring in an office area on the second floor of C wing nearest to the east stairway.

Occupants on the first and second floor of C wing were performing general office work. Transient employees were in the lunchroom after attending a meeting to purchase lunch.

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

6 - WRPS Facility Maintenance Painters (performing task)

A second-floor occupant and two visitors in the lunchroom of 2750E C-wing reported stronger than normal odors and completed Odor/Vapor Response Cards:

- 1 - WRPS Health Physicist
- 2 - WRPS Industrial Hygiene Technicians (IHTs)

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

On 02/1/2024, facility maintenance painters used rollers to apply a water-based, acrylic primer onto the existing flooring to prepare the surface for subsequent carpet installation. 13 gallons of Rust-Oleum IBG WB Acrylic Primer were applied between 0930 hours and Noon.

At approximately 1306 hours on 2/1/2024, 2 IHT(s) reported at the Central Shift office that they experienced stronger than normal "solvent" odors in lunchroom (C-105) of 2750E.

Industrial Hygiene Technicians (IHTs) were requested to perform Volatile Organic Chemicals (VOCs) monitoring of the 2750 C-wing using a MultiRAE (10.6 eV lamp) and a ppbRAE (11.7 eV lamp).

At 1337 hours, the Central Shift manager (CSM) instructed the Field Work Supervisor (FWS) to restrict access to the 2750E C-wing (including the C-105 lunchroom) and have a Point of Contact (POC) present at the building.

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At 1412 hours, 2 employees who reported headache symptoms on their Odor/Vapor Response Cards were directed to report to the onsite medical provider for precautionary medical surveillance and were released to return to work without restriction after evaluation from the onsite medical provider.

At 1432 hours, an Industrial Hygienist (IH) and IHTs entered the building at the main entrance. Solvent-like odors were detected by the IH and both IHTs at the base of the B-wing stairwell. IHTs performed continuous monitoring as they and the IH made their way up the stairs and into the second floor of C-wing where the acrylic primer was applied. They swept the upstairs C-wing hallway, toward D-wing, and the odor became undetectable a few doors down from the work area. The IH and IHTs continued down the stairwell between C-wing and D-wing, and swept the first floor of C-wing, leading up to the lunchroom where odors were first reported. Strong solvent-like odors were reported as they approached the C-wing lunchroom. The IHTs swept the lunchroom, including the three supply air ducts on the ceiling. Monitoring continued up the stairwell at the end of C-wing, adjacent to where the acrylic primer was applied. The highest readings for both instruments were taken at the top of this stairwell, with the door open. IHTs were then instructed to sweep D-wing on the first and second floors. C-wing sweeps were complete at 1517 hours.

Workers adjacent to the work area on the second floor described their experience of odors as less significant than the workers on the first floor under the area where primer was applied. A very strong odor was reported in Lunchroom (C-105) where two transient employees reported experiencing headaches after limited exposure (approximately 1 minute).

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

First and second floors of C-Wing in 2750E (Refer to Figure 1)

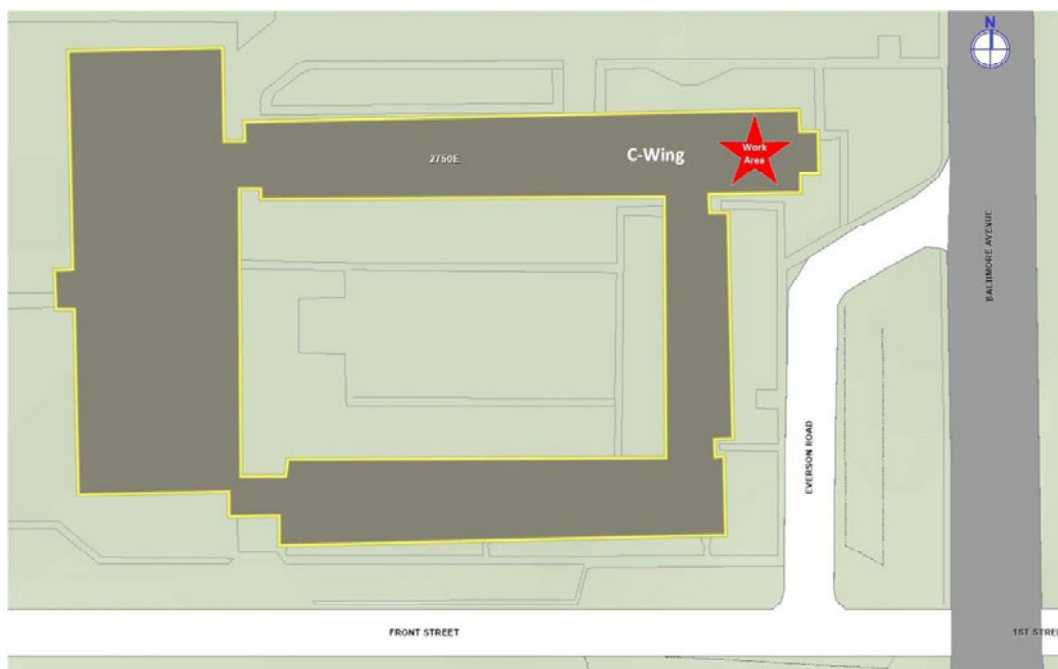


Figure 1 - 2750E Layout

C-105(lunchroom) shares the same HVAC unit as the work area and the HVAC was operational at the time of the event. Painters used 2 carbon filter blowers to remove odors stationed at opposite ends of the work area (East - west). A stairway door at the east end of the C-wing was shut and marked with barrier tape. Painters were not

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required to wear respirators, building HVAC and Carbon filter blowers provided the required work area ventilation. Workers were performing work activities that do not require use of respiratory protection or a personal ammonia monitor (VentisPro). Hazards were controlled through the use of safety glasses with side shields and the use of either latex or nitrile gloves.

The Hanford Site Meteorological Report at 200 East (building 2750) at 1300 hours was:

- Winds: WNW at 3 mph
- Temp: 49 F
- Barometric Pressure: 28.80 inHg
- Relative Humidity: 81 %
- Mixing Height: 800 meters
- Stability Class: E.

A notice to building occupants was emailed to inform them of the work being done. The work area was marked with boundary tape.

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

No impacts to facility safety status, operational capabilities, or facility reliability occurred. Multiple individuals found the odor objectionable and left the area when permitted by supervision.

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

- The CSM initiated TFC-OPS-OPER-C-67 and restricted access to 2750 C-Wing including the C-105 lunchroom.
- The CSM made required TFC-OPS-OPER-C-67 notifications.
- Production Operations East IHTs initiated TFC-OPS-OPER-C-67 response actions and monitoring per IHSP-POE-MULTI-TFCOPSOPERC67, "Industrial Hygiene Sample Plan," to measure reported odors.
- Event Investigation EIR-2024-009, "C-67 Odor Response at 2750E," was initiated.

18. Compensatory Actions Taken:

None

19. Remedial Actions Taken:

None

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

To summarize the conclusions of IHIR-00088, "TFC-OPS-OPER-C-67 Response 2750E C-Wing," the source of the reported odors was determined to be likely a result of Facility Maintenance painters applying IBG WB Acrylic Primer to cover flooring in an office space on the second floor of C-wing. The acrylic primer applied to the carpet contains 0.1-1.0% petroleum distillates by weight, and as such, nuisance odors were anticipated during the application of this product. Petroleum distillates are known to have an odor threshold as low as 0.7 ppm. It is likely that the quantity of product utilized contributed to the strength of the odor. Despite the odor being "strong" it is not anticipated that there was any over exposure to chemical constituents in the products, regardless of the quantity utilized.

The following considerations support the IHIR-00088 conclusion:

- (1) The carpet was installed under level 3 Work Order #1021218, "REPETITIVE - Replace Carpet/Vinyl Flooring in General Purpose Areas"; however, primer was applied to cover the existing carpet under painting activities as level 4 work. Level 4 work using approved materials is performed in accordance with Industrial Hygiene Work Permit #IHWP-PROG-MULTI-L4001(R.3). The permit limits the amount of paint used to less than 2.5 gallons without additional IH consultation and 13 gallons of the primer was applied in less than 3 hours.

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- (2) Although two portable smoke-eaters equipped with carbon filters were set up in the immediate work area to control vapors, the 2750 HVAC system was operational and transferred the odor to the first floor of C-wing. See Figure 2.



Figure 2 - Work Area

- (3) Industrial Hygiene Technicians (IHTs) were requested to perform Volatile Organic Chemicals (VOCs) monitoring of the 2750 C-wing using a MultiRAE (10.6 eV lamp) and a PPBRAE (11.7 eV lamp).

IH monitoring results obtained 1.5 hours after the reported odors indicated the VOCs concentrations in the first-floor lunchroom C-105 were below the established 50 ppm action limit. Area monitoring did indicate the C-105 lunchroom concentrations ranging between 220 and 250 ppb were slightly higher than areas surrounding the work area (Hallway outside C-205 180 ppb). (Refer to Figure 3).

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LOCATION	VOCs (11.7 eV)	VOCs (10.6 eV)
Bottom of B-Wing Stairwell	0.00 ppm	120 ppb
Top of B-Wing Stairwell	0.00 ppm	220 ppb
Hallway outside C-205 (Work Area)	0.00 ppm	180 ppb
Hallway outside C-208	0.00 ppm	80 ppb
Hallway outside C-217	0.00 ppm	40 ppb
Hallway outside C-224	0.00 ppm	0 ppb
Hallway outside C-121	0.00 ppm	40 ppb
Hallway outside C-114	0.00 ppm	100 ppb
Hallway outside C-111	0.00 ppm	120 ppb
Hallway outside C-108	0.00 ppm	170 ppb
C-105 (Lunchroom)	0.00 ppm	230 ppb
C-105 (1 st ceiling duct)	0.00 ppm	220 ppb
C-105 (2 nd ceiling duct)	0.00 ppm	240 ppb
C-105 (3 rd ceiling duct)	0.00 ppm	240 ppb
C-105 (in front of Avanti market)	0.00 ppm	250 ppb
Hallway outside B-111	0.00 ppm	150 ppb
Inside B-wing men's restroom (ceiling duct)	0.00 ppm	220 ppb
Bottom of C-Wing stairwell	0.11 ppm	-----
Top of C-Wing stairwell	0.11 ppm	260 ppb
C-wing entrance from stairwell	0.54 ppm	450 ppb
C-wing entrance from stairwell	0.60 ppm	480 ppb
C-wing entrance from stairwell	0.62 ppm	490 ppb
C-wing entrance from stairwell	0.78 ppm	-----
Entering D wing from 1 st floor	0.00 ppm	60 ppb
Hallway outside D-117	0.00 ppm	40 ppb
Hallway outside D-154F-1	0.00 ppm	20 ppb
Hallway outside D-137	0.00 ppm	10 ppb
D-wing elevator	0.00 ppm	40 ppb
Hallway outside D-233	0.00 ppm	20 ppb
Hallway outside C-251	0.00 ppm	20 ppb
Hallways outside C-241/C-239	0.00 ppm	0 ppb

Figure 3 - Sampling/Monitoring Results from: IHIR-00088

- (4) Per IHIR-00088, although occupants of the first and second floor of C-Wing at 2750E observed odors, and some reported acute symptoms, no Short-Term Exposure Limits (STELs) or Time Weighted Average (TWA) Occupational Exposure Limits (OELs) were reached or exceeded for the components contained in the products used by the painters to prime the 2750-E carpet using Rust-oleum IBG WB Acrylic Primer.

Petroleum distillates in the primer formulation were likely the offending odor. The odor can be objectionable at levels far below threshold for health and safety.

21. Positive Aspects Identified:

- An email communication was sent out to occupants of 2750E by a Facilities Administrative Specialist on 07/01/2024 stating:
Note: Painters will be applying primer in preparation of carpet replacement in 2750E 2nd floor C-wing, near the east stairwell. Odors may be present when performing this activity.
And explaining:
Subject: Stairwell Work
Starting tomorrow morning February 1, 2024 the painters, around 9:00 am will be closing down the C-wing east stairwell. This is so work can begin upgrading the carpet at the east end of the C-wing hallway. This area will open back up by 4:30 pm on Sunday Feb. 4th.
Occupants may cross caution tape in the event of an emergency.

22. Key Take Aways / Learning Opportunities:

- When a larger quantity of a chemical product is anticipated to be used, it is a best practice for the workers to first consult with their Field Work Supervisor (FWS) and the work group's responsible IH to analyse the risk of using a larger quantity.

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- Release Authority should ensure they have a complete understanding of the work scope they are releasing to ensure all hazards and considerations have been evaluated for the work activities being released.
- When work activities involving chemicals that off-gas VOCs are required to be performed within 10 feet of a HVAC air-inlet, work should either ensure the HVAC system does not circulate air from the work area into other areas, or the work evolution should be performed on the off-shift or weekends.

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)

Signature / Date 02/12/2024

CAS Manager Approval:

Name (First, Middle Initial, Last)

Signature / Date Digitally signed by _____
Date: 2024.02.12 12:50:03 -08'00'

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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR)

Event Title: TFC-OPS-OPER-C-67 Response 2750E C-Wing	IHIR Number: IHIR-00088
	IHEI Number: N/A

Date: 2/1/2024	Time: 1306	Location: 2750E
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Event Summary and Timeline:

At approximately 1306 on 2/1/2024, painters were re-finishing the office space on the second floor of C-wing in 2750E and sprinkled an acrylic primer on the carpet. This product was evaluated by IH prior to use, and building occupants were made aware that stronger than normal odors were to be expected, as the chemical is known to have a solvent-like odor. Multiple workers at 2750E reported the stronger than normal odors on both floors of C-wing. Two individuals reported symptoms, were sent to medical, and released without issue.

Field Response Timeline:

- 1306 POE IH 1&2 arrive at CSO.
- 1307 CSM debriefs POE IH 1&2 that odors were reported during application of carpet adhesive in 2750E. POE IH 1&2 are told that symptoms have not yet been reported. POE IH 2 requests SDS; CSM states that they will call and request it.
- 1309 POE IHs check DFAS, powered Smart Site™, for current weather details:
 - Mixing Height: 800 meters
 - Stability Class: E
 - Barometric Pressure and trend: 28.80 inHg (steady)
 - Temperature: 49 F
 - Relative Humidity: 81%
 - Wind Speed and Direction WNW at 3 mph
- 1310 CSM contacts the facility manager and asks about the FWS for this job. Facility manager responds that the FWS is not currently at the jobsite and asks if the CSM has any questions. CSM requests the SDS for the carpet. The facility manager sends the SDS.
- 1311 CSM attempts to contact POC.
- 1312 CSM contacts facility manager and states that they were unable to reach the POC. Facility manager states that they will have the POC reach out to CSM.
- 1314 POE IH 1 contacts POE Shift IHT supervisor and asks them to get information on affected workers.
- 1316 POC contacts CSM and provides SDS #077483 for Mohawk Enpress carpet adhesive. CSM asks whether the POC was working on this job. POC confirms they were not working this job and provides the contact information for the FWS.
- 1319 CSM contacts FWS and asks for information on 2750E. FWS states that the mastic for the carpet contains Asbestos, and that instead of removing the carpet, they are painting primer on top of it. FWS states that IH has reviewed this activity. The primer applied to the carpet is identified as the source of the reported odors. FWS states that they have two smoke eaters with carbon filters to control odors at the source. CSM requests the SDS for the carpet primer, which FWS states they will locate and provide. POE shift IHT asks whether there is an IHT working on this job. FWS states that was not required.
- 1322 POE shift IHT supervisor contacts Projects IHT supervisor to request the name(s) of affected worker(s). Projects IHT supervisor provides the name of an affected worker. POE Shift IHT supervisor asks where the affected workers were located. Projects IHT supervisor states the affected workers were located at C102.
- 1323 CSM contacts affected worker and asks about the odors at 2750E. The affected worker states that they noticed "pretty rough" odors in the C105 lunchroom, but that they do not have any symptoms. CSM asks whether they have noticed the odors throughout the week, but the affected worker replies that they have not been at 2750E. CSM requests for the affected worker to fill out an OVRC and asks whether any other workers were present. The affected worker states that they will fill out the OVRC and sent it to CSO. CSM requests that anyone else present who encountered the odors fill out the OVRC as well.
- 1327 FWS contacts CSM and provides SDS #081730 for IBG WB Acrylic Primer.
- 1329 POE IH 1&2 review the SDS.
- 1331 POE IH 1 contacts a POE IHT supervisor and asked that they prep MultiRAE (10.6 eV lamp) and PPBRAE (11.7 eV lamp) DRIs. POE IHT supervisor contacts POE shift IHT and asks them whether they are available to respond. IHT states they are just exiting the farm and will respond.
- 1332 POE Shift IHT supervisor contacts POE IHT and asks them to prepare DRIs. POE IHT responds

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Event Summary and Timeline:

that they are heading to prepare the two DRIs.

1337 CSM contacts FWS and instructs them to restrict access to 2750E C-wing (including C-105 lunchroom) and have a POC present at the building.

1339 POE IH 1&2 develop an AL of 50 ppm for the MULTIRAE. An AL is not set for the PPBRAE.

1343 POC at CSO continues updating CSM on the status of the operating engineer restricting access at 2750E.

1347 EP contacts CSM to inquire about C-67 event. CSM confirms that they are currently responding and grants EP permission to check out 2750E, so long as they do not enter the restricted access area.

1348 POE IH 2 contacts Level 3 POW IH Manager; IH Manager states that they are sending Programs IH to CSO for response actions.

1356 FWS provides an update to CSM on odors at 2750E.

1403 Programs IH arrives at CSO to support response.

1406 POE IHTs arrive at CSO.

1412 Supervisor calls CSM for guidance on meeting employees at IHA.

1414 Production assurance from EIR calls CSM; CSM states that they will call them back. POW IH arrives at CSO.

1418 POE IH 2 and CSM sign TFC-OPS-OPER-C-67 Attachment A page 1 of 2.

1419 POE IH 2 briefs shift IHTs on IHSP.

1424 FWS calls CSM; CSM states that IHTs were leaving CSO to respond to 2750E. POW IH and Shifter IHTs leave CSO.

1430 CSM calls facility representative to provide an update on C-67 response.

1431 POW IH and IHTs arrive at 2750E and initiate VOC monitoring.

1439 POW IH contacts Programs IH and reports that a reading of 0.120 ppm (VOC) was reached near the C105 lunchroom with the MultiRAE. The operating engineer maintaining the limited access boundary at 2750E contacts CSM asking if they should stay, CSM confirms.

1440 POW IH states that a peak reading of 0.220 ppm (VOC) was reached in B wing.

1442 POW IH states that a peak reading of 0.220 ppm (VOC) was measured at the B wing stairwell with the MultiRAE. CSM updates EIR on IHT response.

1517 Sweep is complete. POW IH and IHTs depart from 2750E. IHTs head to perform post use function test on their DRIs.

1525 POW IH returns to CSO.

1527 Third OVRC arrives - no symptoms are reported.

1530 DRI post: MultiRAE passes; PPBRAE fails high, but POE IH 1&2 determine that this is acceptable.

1533 POE IH 2 and CSM sign TFC-OPS-OPER-C-67 Attachment A page 2 of 2.

Field Response Timeline Acronyms:

AL Action Level

CSM Central Shift Manager

CSO Central Shift Office

DFAS Data Fusion Advisory System

DRI Direct Read Instrument

FWS Field Work Supervisor

EP Emergency Preparedness

eV electron-volts

IH Industrial Hygienist

IHA Inomedic Health Applications inc.

IHIR Industrial Hygiene Event Investigation Report

IHT Industrial Hygiene Technician

inHg Inches of Mercury

mph miles per hour

OEL Occupational Exposure Limit

OVRC Odor/Vapor Response Card

PEL Permissible Exposure Limit

PO Production Operations

POC Point of Contact

POE Production Operations-East

POW Production Operations-West

ppm parts per million

SDS Safety Data Sheet

SWIHD Site Wide Industrial Hygiene Database

TLV Threshold Limit Value

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INDUSTRIAL HYGIENE EVENT INVESTIGATION REPORT (IHIR) (Continued)

Event Summary and Timeline:

VOC Volatile Organic Compound

Sampling/Monitoring Results:

Direct Reading Instrument Monitoring Results:

Two IHTs reported to shift office for C-67 response to stronger than normal odors reported in C-wing of 2750E. IHTs received instructions from IH to monitor for VOCs using both a MultiRAE (10.6 eV lamp) and a PPBRAE (11.7 eV lamp) per IHSP-POE-MULTI-TFCOPSOPERC67. An action limit of 50 ppm was set by IH for the MultiRAE with no action limit applicable for the PPBRAE (see attached sample plan below with IH notes). Per the SDS (#081730A), OELs have not been established for the VOCs in this product. Therefore, POE IH 1 & 2 determined an appropriate action limit using OELs for similar products. Although this product contains paraffinic petroleum distillates, the PEL for paraffinic and non-paraffinic hydrocarbons (naphtha) were compared and the lower of the two (non-paraffinic) was used when setting an action limit to be conservative. The OSHA PEL for Naphtha is 100 ppm over an 8-hr time-weighted average. A TLV has not been established for this chemical. The action limit was set at 50% of the PEL, or 50 ppm. In accordance with the RAE Systems Technical Note 106 V14, a correction factor of 0.97 was applied to the action for the MultiRAE, giving an adjusted action limit of 51.55 ppm. However, POE IH 1 rounded this action limit down to 50 ppm for monitoring purposes.

IHTs were initially instructed to sweep C-wing of 2750E and take good notes. POW IH and the IHTs entered the building at the main entrance at 1432. Solvent-like odors were detected by POW IH and both IHTs at the base of the B-wing stairwell. IHTs performed continuous monitoring as they and POW IH made their way up the stairs and into the second floor of C-wing where the acrylic primer was applied. They swept the upstairs C-wing hallway, towards D-wing, and the odor became undetectable a few doors down from the work area. POW IH and IHTs continued down the stairwell between C-wing and D-wing, and swept the first floor of C-wing, leading up to the lunchroom where odors were first reported. POW IH and IHTs reported strong solvent-like odors as they approached the C-wing kitchen. The IHTs swept the lunchroom, including the three supply air ducts on the ceiling. 1 ppm of Ammonia was detected towards the back of the lunchroom, but building occupants stated that the janitorial services use Lemon HG to wipe the tables. POW IH and IHTs then continued up the stairwell at the end of C-wing, adjacent to where the acrylic primer was applied. The highest readings for both instruments were taken at the top of this stairwell, with the door open. IHTs were then instructed to sweep D-wing on the first and second floors. After performing a sweep on both floors of D wing, the IHTs were instructed to perform a post use function test on their instruments. The MultiRAE (10.6 eV lamp) passed, and PPBRAE (11.7 eV lamp) the failed post use function test with high bias. However, readings taken were still far below action limits regardless of high bias.

LOCATION	VOCs (11.7 eV)	VOCs (10.6 eV)
Bottom of B-Wing Stairwell	0.00 ppm	120 ppb
Top of B-Wing Stairwell	0.00 ppm	220 ppb
Hallway outside C-205 (Work Area)	0.00 ppm	180 ppb
Hallway outside C-208	0.00 ppm	80 ppb
Hallway outside C-217	0.00 ppm	40 ppb
Hallway outside C-224	0.00 ppm	0 ppb
Hallway outside C-121	0.00 ppm	40 ppb
Hallway outside C-114	0.00 ppm	100 ppb
Hallway outside C-111	0.00 ppm	120 ppb
Hallway outside C-108	0.00 ppm	170 ppb
C-105 (Lunchroom)	0.00 ppm	230 ppb
C-105 (1 st ceiling duct)	0.00 ppm	220 ppb
C-105 (2 nd ceiling duct)	0.00 ppm	240 ppb
C-105 (3 rd ceiling duct)	0.00 ppm	240 ppb
C-105 (in front of Avanti market)	0.00 ppm	250 ppb
Hallway outside B-111	0.00 ppm	150 ppb
Inside B-wing men's restroom (ceiling duct)	0.00 ppm	220 ppb
Bottom of C-Wing stairwell	0.11 ppm	-----
Top of C-Wing stairwell	0.11 ppm	260 ppb
C-wing entrance from stairwell	0.54 ppm	450 ppb
C-wing entrance from stairwell	0.60 ppm	480 ppb

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Sampling/Monitoring Results:

C-wing entrance from stairwell	0.62 ppm	490 ppb
C-wing entrance from stairwell	0.78 ppm	-----
Entering D wing from 1 st floor	0.00 ppm	60 ppb
Hallway outside D-117	0.00 ppm	40 ppb
Hallway outside D-154F-1	0.00 ppm	20 ppb
Hallway outside D-137	0.00 ppm	10 ppb
D-wing elevator	0.00 ppm	40 ppb
Hallway outside D-233	0.00 ppm	20 ppb
Hallway outside C-251	0.00 ppm	20 ppb
Hallways outside C-241/C-239	0.00 ppm	0 ppb

Refer to IHIR-00088 Attachment A for Response Pictures.

SWIHD References:

Event Response Site Wide Industrial Hygiene Database Direct Reading Instrumentation (DRI) Survey:
• #24-00783 "TFC-OPS-OPER-C67 Response at 2750"

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.

On Wednesday, 1/31/2024, facilities personnel had notified 2750E building occupants that painters would be closing the C-wing east stairwell around 900, on Thursday 2/1/2024, so work could begin on upgrading the carpet on the second floor in the east end of C-wing hallway. Petroleum distillates are known to have an odor threshold as low as 0.7 ppm. The acrylic primer applied to the carpet contains 0.1-1.0% petroleum distillates by weight, and as such, nuisance odors were anticipated during the application of this product. At approximately 734, on Thursday 2/1/2024, facilities personnel notified building occupants the painters would be applying a primer in preparation for carpet replacement in 2750E, and that odors may be present when this activity was being performed. Two smoke-eaters equipped with carbon filters were set up in the immediate work area to control fumes.

The application of IBG WB Acrylic Primer (SDS #081730A) was reviewed and approved as level 4 work by the facilities and maintenance IH(IHEA-PROG-MULTI-L4001). However, to be considered "level 4 work", the primer was limited to 2.5 gallons per functional area. If a larger quantity is to be used, it must be evaluated by IH to determine whether additional controls should be implemented. After the event, a conversation disclosed up to 13 gallons was used in this work evolution. The facilities and maintenance IH and painters FWS determined that future evolutions of this work may be more appropriate under the level 3 repetitive work package for carpet replacement (WO #1021218), and this primer should be evaluated and added onto the chemical list for that package. Although an increased quantity of primer was applied in the area, it is not anticipated that workers were overexposed to any of the products' constituents. Most of the constituents in this product are particulates that remain bound in the chemicals' matrix, as it is applied as a wet paste. However, the product does contain a few volatile organic compounds, such as petroleum distillates, that may create nuisance odors. Although workers were no longer actively applying the product while IHTs performed monitoring, it was still curing and giving off a solvent-like odor. However, even with the strong odor, DRI monitoring data did not meet or exceed 2% of the action limit.

The SDS that was reviewed in IHEA-PROG-MULTI-L4001 was for the 1-gallon container of IBG WB Acrylic Primer and is under SDS #081731. The acrylic primer that was used during this work evolution is a product under the same name, manufactured by the same company, in a 5-gallon bucket. There are a few constituents that are in the 1-gallon container that are not in the 5-gallon container, including Kaolin Clay (CAS #1332-58-7) at 1.0-2.5% by weight, Sodium Nitrite at 0.1-1.0% by weight, 2,2,4-Trimethyl-1,3-Pentanediol Monoisobutyrate (CAS #25265-77-4) at 0.1-1.0% by weight, and 2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (CAS #94-28-0) at 0.1-1.0% by weight. There are no new constituents that are in the 5-gallon bucket that were not evaluated under IHEA-PROG-MULTI-L4001. Only one constituent is present at higher levels in the 5-gallon bucket than in the 1-gallon bucket, and that is Hydrous Magnesium Silicate (CAS #14807-96-6), commonly known as "talc." In the 1-gallon bucket, it is present at 1.0-2.5% by weight. In the 5-gallon bucket, it is present at 2.5% to 10.0% by weight. However, this constituent is a particulate and, as such, remains bound in the matrix of

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

Additional Information:

the primer during wet application. Therefore, even at a higher percentage by weight, it is not anticipated that it presents an increased hazard to workers. At the time of the C-67 event response, IH had access to the correct SDS for the 5-gallon product and used it to set appropriate action levels.

Odors were reported by 3 individuals initially (an additional affected worker reported smelling odors on 2/5/2024). Two of the initial reporters were not building occupants and did not receive the communication on the work being performed. All workers that reported symptoms (headache) were sent to medical and released to return to work without restrictions.

Recommendations/Conclusions:

IH concludes the odors were most likely present from the application of the primer compound as anticipated by the work evolution. However, it is likely that the quantity of product utilized contributed to the strength of the odor. Despite the odor being "strong" it is not anticipated that there was any over exposure to chemical constituents in the products, regardless of the quantity utilized.

IH recommends evaluating if notification was sufficient when compounds known to be odiferous are to be used in occupied buildings.

IH recommends consideration of posting signage at the building entrance or work areas, so that non-occupants that enter the building are properly notified of any odors.

IH recommends that the FWS communicate changes in quantity of chemicals prior to work taking place, to ensure that the proper controls are implemented.

Others:

- Two of the four Affected Workers reported symptoms and were sent for precautionary medical surveillance.
- The fourth Affected Worker did not report odors or complete an OVRC until 736 on 2/5/2024. They reported no symptoms but was offered medical surveillance and declined.

Associated Documents:

iCAS Number: N/A

EIR Number: 24-00783

Industrial Hygienist:

Print First and Last Name

Signature / Date

Digitally signed by _____
Date: 2024.02.06 08:54:43 -08'00'

Industrial Hygiene Level 3 Manager

Print First and Last Name

Signature / Date

Digitally signed by _____
Date: 2024.02.06 12:39:40 -08'00'

Industrial Hygiene Level 2 Manager:

Print First and Last Name

Signature / Date

Digitally signed by _____
Date: 2024.02.06 13:04:21 -08'00'

ODOR/VAPOR RESPONSE CARD

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

- Date and time of event: 02/01/2024
- Check Applicable:
 - ☒ Odor
 - ☐ Ammonia Alarm (6 ppm)
 - ☐ Ammonia Alarm (12 ppm)
 - ☐ Alarm (other - describe): _____
- Your name and the work you were performing: [REDACTED]
- Other Work Underway? Describe: Replacing Carpet in Above Offices
- Location of event (mark area on map and wind direction): 2750E - C105 Lunch Room
- 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): _____
- Is source known/likely? Describe: Smelled like adhesive from possible carpet install?
- 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: 2-1-24
- Check Applicable:
 - ☒ Odor
 - ☐ Ammonia Alarm (6 ppm)
 - ☐ Ammonia Alarm (12 ppm)
 - ☐ Alarm (other - describe): _____
- Your name and the work you were performing: [REDACTED] LEAVING MEETING
- Other Work Underway? Describe: CARPENTRY
- Location of event (mark area on map and wind direction): 2750 E - C105
- 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): _____					
- Is source known/likely? Describe: CADET GUE / PRIMER
- 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.

250 E / C105 Lunch/room

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: 2/1/24 1410
- Check Applicable:
☒ Odor ☐ Ammonia Alarm (6 ppm) ☐ Ammonia Alarm (12 ppm) ☐ Alarm (other - describe): _____
- Your name and the work you were performing:
[REDACTED], computer work in my office
- Other Work Underway? Describe:
crew was installing new carpet down the hall
- Location of event (mark area on map and wind direction):
2750E 2nd floor C wing
- 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>paint</u>					
- Is source known/likely? Describe:
Probably whatever the crew was spreading on the carpet.
- 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.