

	Total	Validated Complete	Field Work Complete	In Progress	Pending
TVAT	117	94	10	13	0
OIG	3	3	0	0	0
NIOSH	54	29	11	14	0
EA-32	31	17	6	8	0
CTEH	23	21	0	2	0
VMEP I, II	67	41	16	10	0
Other	74	43	5	26	0
Total	369	248	48	73	0

External Assessments Recommendations Status

The CPPO reviews the status of the corrective actions created to answer the external assessment recommendations. See the Oversight and Tracking Metric Section for the latest update.

Tank Operations Contract
Chemical Protection Program Office
September 6, 2018

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

The Chemical Protection Program Office continues updating the metrics which inform the CVAP Dashboard for Fiscal Year (FY) 2019.

CPPO's evaluation of the status of the external assessment recommendations is featured in this week's Oversight and Tracking section.

The CPPO-led focus group report has been drafted. The final report, including observations and recommendations for improving the effectiveness of vapors information, is in management review.

CPPO Oversight and Tracking

External Assessments Recommendations Status

The recommendations status columns in **Table 1** below are defined as follows:

- **Complete** - The scope and deliverable(s) (i.e. final report or documentation) addressing the recommendation is complete and closed. CPPO has validated deliverable(s) complete.
- **Field Work Complete** - The scope addressing the recommendation is complete, but the final deliverable(s) is not complete (i.e. final report or documentation).
- **In Progress** - The scope addressing the recommendation is in progress.
- **Pending Validation** - Status of the scope addressing the recommendation and associated deliverable(s) is awaiting initial CPPO review.

Table 1. External Assessments Recommendations Status

Report	As of August 31, 2018				
	Total	Validated Complete	Field Work Complete	In Progress	Pending
TVAT	117	94	10	13	0
OIG	3	3	0	0	0
NIOSH	54	29	11	14	0
EA-32	31	17	6	8	0
CTEH	23	21	0	2	0
VMEP I, II	67	41	16	10	0
Other	74	43	5	26	0
Total	369	248	48	73	0

External Assessments Recommendations Status

Significant progress has been made to address these recommendations. CPPO has validated that 80% of the recommendations have been addressed by actions/deliverables that are either **Complete** or **Field Work Complete**. Of the 369 total recommendations:

- 67% have been verified **Complete** and are considered closed.
- 13% are verified as **Field Work Complete** and are awaiting final deliverables (i.e. documentation) to close.
- 20% have ongoing actions and are **In Progress**.

The pending recommendations from the previous month's update have been reviewed and statused by the CPPO. There are no **Pending** recommendations.

Vapors Corrective Action Status

The CPPO tracks vapor-related Problem Evaluation Requests (PER), with the goal of communicating PER resolution status. The performance data in **Figure 1** below are defined as follows:

- Current Due (Month) – Current corrective actions due for the month
- Number of Completed (Month) – Number of corrective actions completed for the month
- Running Total Due – Total cumulative actions scheduled to be completed
- Total Remaining – Total cumulative actions remaining to be completed
- Cumulative Schedule Performance – Total cumulative actions completed compared to the Running Total Due.

The 128 draft CVAP actions are captured in the PERs listed in **Figure 1** below, including the 3 Office of Inspector General (OIG) actions captured in WRPS-PER-2016-2433 thru 2435, and 5 Office of River Protection (ORP) Facility Representative Surveillance (17173-TF) actions captured in WRPS-PER-2018-0551 thru 0554. Sixty-three TVAT actions were completed during Phase I (FY2016) and the OIG actions were completed in FY2017; its completions are documented in the Electronic Suspense Tracking and Routing System (E-STARS). The remaining TVAT actions have been rolled into the draft CVAP. The recommendations from National Institute of Occupational Safety and Health (NIOSH), EA-32, CTEH, and the VMEP were added to the PER system and corrective actions launched. **Figure 1** depicts the status of the draft CVAP total corrective actions. A total of 55 actions have been completed for FY 2018. Furthermore, even though no actions were due in August, two actions were completed ahead of schedule. This brings the total actions completed ahead of schedule to eight (8).

Vapor Corrective Action Tracking

Trending Fiscal Year 2018
Month Ending August 2018

[Draft-CVAP Actions (includes OIG Actions)]

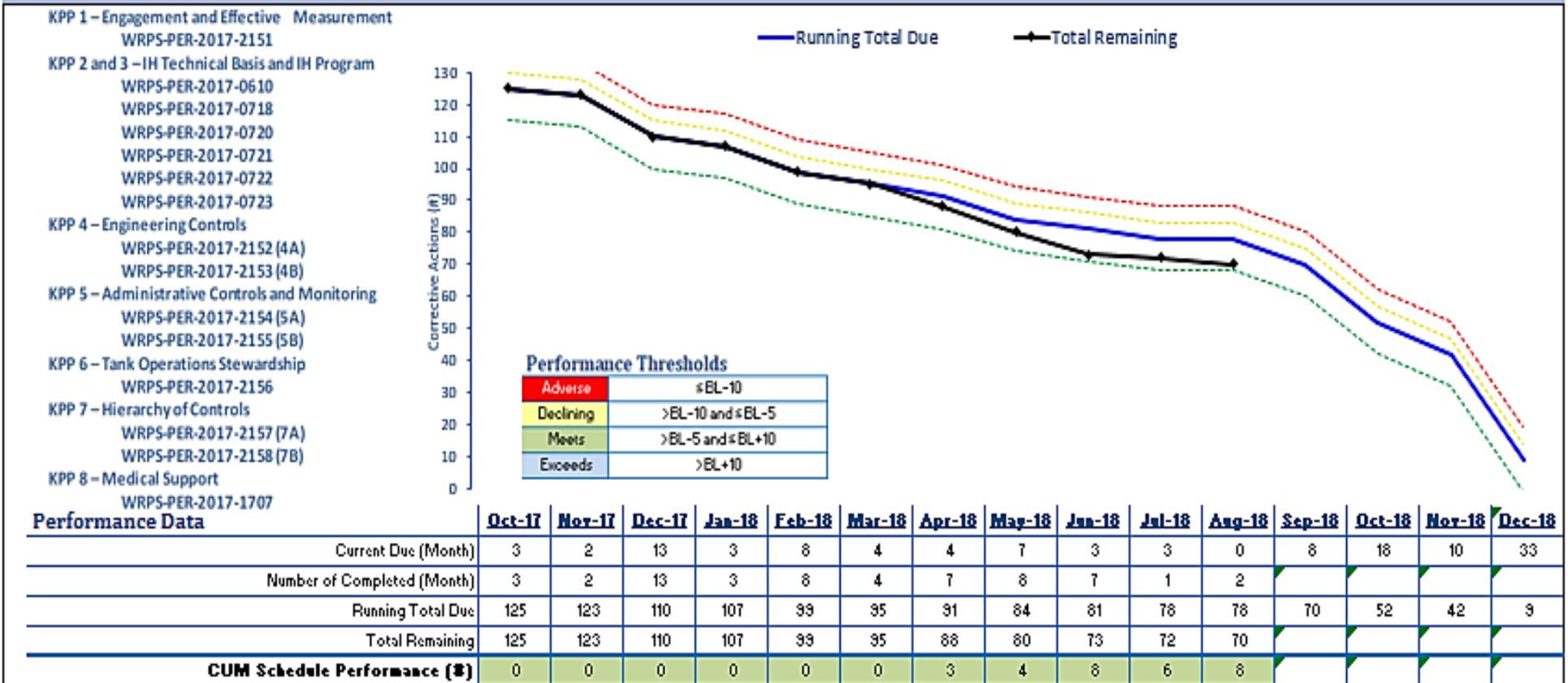


Figure 1. Vapor Corrective Action Tracking August 2018

2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

KPP 1. Engagement and Effective Measurement

CTEH

Update:

CTEH toxicologists Drs. Lumpkin and Tijerina worked with CPPO staff to finalize a 3-part notebook series describing the past, present, and future methods and technologies used to identify chemicals in the tank headspaces. This series helps to answer questions CTEH often hears from workers about the certainty of knowledge of tank vapor contents. CTEH also met with medical staff at HPMC to update them on progress made in researching application of new and existing clinical tests for potential effects from vapor exposures. Finally, CTEH toxicologists met with about 20 workers at the conclusion of their Chemical Worker Tier 3 training to answer questions on tank vapor toxicology and health risks. The discussion lasted for 1 ¼ hours and covered a wide breadth of worker concerns. CTEH continues drafting the re-assessment of the IH program's approach to managing tank vapor issues.

Key Performance Parameter 1

Establish a comprehensive vapor management communication plan, engagement processes, and effectiveness measurements.

Chemical Protection Engagement: Communications

Update:

Last week's CPPO Notebook is titled *Chemicals in the Tank Headspace – Part 1: Total Tank Waste Chemical Characterization*. This week's Notebook is titled *Chemicals in the Tank Headspace – Part II: Tank Headspace Characterization*.

Missed in last week's weekly report was Doug Greenwell's all-employee message from August 23, 2018. Mr. Greenwell described the "aggressive industrial hygiene (IH) and monitoring plan to protect workers from potential chemical vapors" during the final water rinse in double-shell tank AY-102.

WRPS Communications & Public Relations sent an all-WRPS-employees email on August 29, 2018, stating, "[b]eginning Sept. 4, workers will have the option to use full-face air-purifying respirators (FFAPRs) equipped with filter cartridges for low-hazard, non-waste-disturbing work in the AN double-shell tank farm."

On August 29, 2018, an *Industrial Hygiene Flash* updated the WRPS employees on "Charcoal dusting when using Scott 7422-SC1 and 7422-SD1 cartridges."

Hanford Vapors posted an announcement on the HanfordVapors.com website reading, *[Air-purifying respirators approved for AN Farm](#)*, on August 30, 2018. An email with a link to the announcement was sent to WRPS employees on August 31, 2018.

Chemical Protection Engagement: Data Access and Visualization Tool **Update:**

Since the launch of the Data Access and Visualization (DAV) tool in October 2017, WRPS has been working with Pacific Northwest National Laboratory (PNNL) to enhance its capabilities to include the next iteration of data generated by the Vapors Monitoring Detection System (VMDS). The first phase of the DAV tool brought to the viewer the more than one hundred thousand chemical samples taken, analyzed and logged into the Site Wide Industrial Hygiene Database (SWIHD). The VMDS equipment has the capability to test air samples 24 hours a day, 7 days a week, providing a much more extensive look at which chemicals exist in which farms, the levels of each chemical, and in close to real time.

The first VMDS monitoring system to be placed in operation will be the AP Stack monitor. It is expected to be fully functional later this year. This will be followed by AN, AW, AX and 702-AZ stacks. As these systems are turned over to operations in 2019, they will start showing data on the DAV site. It is titled *IH Data Access & Visualization portal* on the external website [HanfordVapors.com](#), and is **here**.

Chemical Protection Engagement: Chemical Vapors Solutions Team (CVST) **Update:**

The CVST Communications Sub-committee held a meeting on August 27, 2018. Communications, Management, Operations, HAMTC Safety Representatives, IH Program Representatives, Nuclear Chemical Operators (NCO) and CPPO were in attendance. The Communications lead provided status on litigation and settlement discussions, and the AN Farm FFAPR rollout. It was announced that the next meeting will be on Monday, September 24.

Chemical Protection Engagement: Hanford Vapors Website Updates **Update:**

The following documents were posted to [HanfordVapors.com](#) last week:

- Strobic® Air Technologies¹ Factory Acceptance Testing Report Hanford Site
- CPPO Weekly Report 08232018
- CPPO Weekly Report 08162018

Chemical Protection Engagement: Workforce Engagement **New Updates begin October 1, 2019**

KPPs 2 and 3. IH Technical Basis and IH Program

IH Manual and Technical Basis

Last update 8/2/2018:

Since the beginning of the 4th Quarter, the TOC-IH-58435, *Industrial Hygiene Manual's* updated sections expanded to include Section 5, *Reporting Occupational Exposure, and Medical Monitoring*, which is now on the Industrial Hygiene webpage on the Intranet. Section 6 is renamed and repurposed, and is now titled, *Work Control*. It is in draft review with Department of Energy (DOE) Office of River Protection (ORP). Section 7, *IH Program Administration*, is drafted and is in internal WRPS review. Section 8, *Documents and Records*, is also in draft and in internal WRPS review. TFC-PLN-173, *Use of FFAPR in Actively Ventilated Tank Farms*, is posted on the website for implementation in SY and AP Farms. It is being edited to include AN Farm.

The Industrial Hygiene organization is reporting 100% of the IH workforce has been trained in *Risk Communication Techniques* and ~100% trained in *Crucial Conversations*.

Health Process Plan (HPP)

Last update 8/23/2018:

The following HPP studies conducted by PNNL have been released as final versions under the TFC-Charter-71 process: *Proposed OELs for Chronic Exposures – COPCs with Regulatory Guidelines, Hanford Tank Vapors FY 2017 Chemicals of Potential Concern Update, and Proposed OELs for Chronic Exposures – Nitrile Class COPCs and 2,4-Dimethylpyridine, Proposed Acute Exposure Limits for COPCs with Regulatory Guidelines and Recommendations for Sampling and Analysis of Hanford Waste Tank Vapors. Sampling and Analysis Plan* is cleared for release to the public as of last week. The study *Proposed Risk-Based Approach for Nitrosamine Chemical-of-Potential Concern* is being considered further for evaluation of economic impact and technical feasibility. The study *Proposed Occupational Exposure Limits for Furans* will be further evaluated via the Charter-71 process in FY2019.

Key Performance Parameter 2

Maintain Industrial Hygiene Chemical Vapor Technical Basis and the chemicals of potential concern (COPC).

Institutionalize a disciplined and rigorous process for updates to include new scientific findings and enhanced understandings of potential exposures.

Key Performance Parameter 3

Maintain Industrial Hygiene Program and institutionalize vapor program requirements, best practices and program parity, and complete necessary training to support full implementation at the beginning of FY2018.

✦ Air Dispersion Modeling

Last update 8/2/2018:

The Air Pollutant Graphical Environmental Monitoring System (APGEMS) modeling software (version 1.0) and accompanying report were released in May. The report describes the APGEMS-TF software and presented three test cases illustrating model performance for simulations involving the AP, AW, and AN Stacks, as well as the 242-A Evaporator. The test cases were selected to provide model predictions of ammonia and mercury air emissions during low, medium, or high wind conditions. The APGEMS-TF software was refined and version 1.1 was delivered to WRPS for acceptance testing. WRPS Engineering and IH are evaluating the software and providing feedback to the PNNL team. Representatives from Process Engineering and Chief Technology Office (CTO) Fugitive Emissions team were trained in the use of APGEMS-TF Version 1.1 last week.

✦ Central Residence for Industrial Hygiene Technicians (IHT)

Update:

The HLAN installation is ongoing in the new 10-Wide facility. Furniture is being assembled and installed. The roof was completed on August 23, 2018. The fire protection piping, drain piping and power installation have been scheduled. The contractor continues creating forms for the perimeter sidewalks (Figure 2).

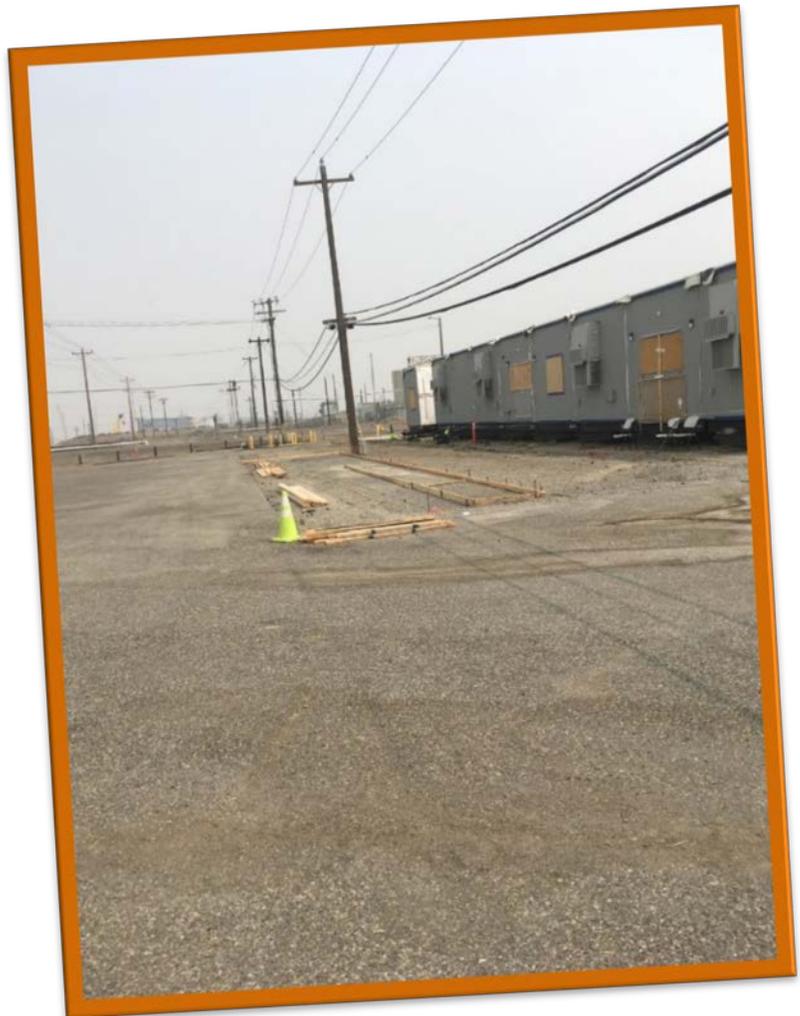


Figure 2. Perimeter Concrete Forms in front of the new 10 Wide IHT Trailer.

KPP 4. Engineering Controls

A Farm Exhausters

Update:

Exhausters: In the last two weeks, concrete was poured on the west half of the exhauster slab thus completing the concrete pad in support of the exhauster skid operation.

Procurement/Fabrication: Continued procurement of the POR518/POR519 exhauster valve manifold, manifold support and access platform, ventilation ducting, riser assemblies, work platforms, cover plates, grout boxes and large spray rings. Received bids for the ventilation ducting, riser assemblies, work platforms, cover plates and grout boxes, and awarded

subcontracts for fabrication of the demister shields and concrete support blocks.

Construction Subcontract: Prepared the requisition for installation of the A-Farm exhauster manifold and ductwork. **Equipment Removal:** Continued planning to remove thermocouples from A-101, A-103, A-104 and A-106 to accommodate vent installation. **Exhauster Valve Manifold:** Mobilized to place the POR518/POR519 Exhauster Valve Manifold slab.

Key Performance Parameter 4

Complete engineering control concept demonstrations for Strobic Air Tri-Stack^{®2} and NUCON^{®3} International, Inc. thermal combustion in support of unrestricted

AW Stack Extension

Update:

The AW Farm stack extension installation continued the last two weeks; the following was accomplished:

- Preparations of the non-radiological and radiological permit applications continued. The radiological permit is with ORP for review while comments from Ecology on the non-radiological permit continue to be resolved.
- Stack installation and fabrication activities continued. For installation activities, the draft lift plan was completed and comments are being resolved for approving the final lift plan. Fabrication efforts have been delayed approximately a month in order to support higher priority work and because of delays in approving the non-radiological permit.

AN Stack Extension

Update:

In the last two weeks, the team performed dispersion modeling and worked on the dispersion modeling report. A meeting has been scheduled to review the proposed engineering evaluation and current dispersion modeling results with WRPS management.

Strobic® Air Dilution Fan

Update:

The evaluation of the test results and data from the recently completed off-site Strobic® Air Unit is well under-way, and the report is being drafted.

NUCON®² Thermal Oxidation Vapor Abatement Unit (VAU)

Update:

Terragraphics: Terragraphics, having received feedback on the 90% Conceptual Design of the NUCON® infrastructure for the field demonstration on BY-108, continued to work on comment-resolution.

NUCON®: Continued providing telephone consultations.

PNNL: Resolved all reviewer comments on the draft A test report, entitled *NUCON® Vapor Abatement Unit Performance on Hanford Tank Farm Chemical of Potential Concern*, which captures the test results from the NUCON® engineering-scale test.

WRPS: Reviewed and provided comments on the 90% conceptual design for the BY-108 field demonstration. Additionally, WRPS completed its review of the draft report summarizing data results from the NUCON® engineering-scale test, entitled *NUCON® Vapor Abatement Unit Performance on Hanford Tank Farm Chemical of Potential Concern*.

KPP 5. Administrative Controls and Monitoring

Permanent Installation of VMDS Equipment in AP Farm

Last update 8/30/2018:

Efforts to obtain approvals on the Phase 2 Pilot-Scale Report continue. For the AP Farm ultra-violet fourier transform infrared spectrometer (UV-FTIR) turnover, numerous activities were on-going during the last two weeks, including the following:

- Completing the Operational Acceptance Tests (OAT) needed to support turnover. The OAT was split into three separate tests to optimize the approval process. The first OAT addresses interim reliability of the system to support startup testing, the second OAT addresses startup activities where no gas testing is required, while the third OAT addresses startup activities where gas testing is required. A status of each OAT is provided below:
 - **Interim Reliability OAT:** Non-linear responses were observed during testing, confirming the need to modify the analytical algorithm before further testing can be performed. Test data has been provided to Cerex, who will perform the algorithm

Key Performance Parameter 5

Define unrestricted work boundaries and implement monitoring on active stack ventilation and unrestricted work boundaries in the A farms to provide defense-in-depth.

modification. The OAT resumes after the modifications have been completed.

- **No-Gas Testing OAT:** The draft OAT has been reviewed by the Joint Test Working Group and comment resolution is on-going.
- **Gas Testing OAT:** Awaiting further development of other support activities before proceeding.
- Efforts also continued on installing the bottle racks, and procuring permeation tubes and calibration gases.

Stack and Boundary Monitors

Last update 8/30/2018:

702-AZ Stack Monitor: Installation of the 702-AZ UV-DOAS stack monitor continued.

AN Farm Stack Monitor: The UV-DOAS unit was delivered to the site. The site preparation work was completed, and installation of the monitor was started.

AX Farm Stack Monitors: The factory acceptance test has been completed for the UV-DOAS monitors and are scheduled to be delivered in the near future. In addition, site preparation work for the units continued.

AW Farm Stack Monitor: Both the factory acceptance test of the UV-FTIR unit and site preparation work for installation of the UV-FTIR are on-going.

Establishing Safe Unrestricted Boundaries

Last update 8/2/2018:

Signs have been prepared to identify the Industrial Area, Exclusion Zone, and Contamination Reduction Zone. Signs will not be prepared to identify the Support/Administrative Zone or Site Boundary at this time. Meetings have been held with other site representatives informing them of the pending changes to farm signage.

Public Address (PA) System

Last update 8/30/2018:

Work continued on the B, S, T and U Farms public address (PA) systems over the last two weeks. Functional testing for S, T and U-Farm PA systems was started. B Farm wire installations continue and have been completed for six of the eight tanks.

KPP 6. Tank Operations Stewardship

Pilot SST Stewardship Program

Update:

The design package for TX Farm was completed. Mission Support Alliance (MSA) continued network development activities by installing conduit that will store communications fiber. MSA is experiencing challenges in completing this effort as it's speculated the conduit may be plugged; troubleshooting efforts are on-going.

In addition to these activities, efforts to prepare a statement of work (SOW) for FY2019 activities continued. The SOW will support T Farm complex construction activities.

Key Performance Parameter 6

Institutionalize a tank operations stewardship program that minimizes required Tank Farm personnel entries; and establishes parameters for locating ancillary personnel and offices.

KPP 7. Hierarchy of Controls

Cartridge Testing and SCBA Alternatives

Last update 8/2/2018:

IH attended meetings with WRPS management to discuss the status of self-contained breathing apparatus (SCBA) alternatives. Cartridge testing has been completed for FY2018, and the SX-101 and SX-104 APR and powered air purifying respirator (PAPR) reports have been issued. The BY sampling data is being analyzed by PNNL. The headspace comparison/line-loss project data is being analyzed as well.

Key Performance Parameter 7

Provide options to promote the hierarchy of controls for chemical vapor respiratory protection beyond current use self-contained breathing apparatus.

Mobile Laboratory

Update:

Construction of the new Mobile Lab with enhanced capability is complete. Tours of the new Mobile Laboratory were conducted at the 3110 Port of Building parking lot last week. The laboratory provided area monitoring support for the AY-102 rinse evolution and continued supporting the Fugitive Emissions initiative in the following ways:

- Sampled around the septic tanks located near the 242-A evaporator
- Sampled downwind of the septic tanks near 244-AR
- Sampled in the vicinity of a local onion producer



Figure 3. CPPO joined dozens of WRPS and Department of Energy Employees on a tour of the newly outfitted TerraGraphics Mobile Laboratory during last week's Open House (Photo courtesy of C. Tidrick).

Personal Vapor Monitor

Update:

A draft report covering Phase I and Phase III testing of the personal vapor monitoring devices was completed. The test report discusses the results and conclusions of field tests performed on personal vapor monitoring devices, including Ventis™ Pro V³, GfG Micro IV⁴, ToxiRAE Pro V⁵, and the ChromAir⁶ ammonia badge. The draft report was submitted to the C₂Sense^{®7} Integrated Project Team (IPT) members for review. C₂Sense[®] devices are not evaluated in this report.

As reported last week, C₂Sense[®] submitted an interim draft report covering data analysis and development of an alpha version of the device algorithm. While the algorithm has improved, false positives in the data reveal that more work is required. C₂Sense[®] is continuing to enhance the algorithm, and a new revision of the report is expected before the end of FY2018.

Due to limited Radiological Control Technicians (RCT) and IHT support for the remainder of FY2018, IH management decided to stop Phase II C₂Sense testing with the mobile laboratory and proceed directly to report preparation.

KPP 8. Medical Support

The scope of KPP-8 is to support RL medical program enhancements in conjunction with other Hanford Site organizations. **The last update from HPMC was April 12, 2018, for the 2nd Quarter.**

During the 2nd Quarter:

- The Office of the Ombudsman visit was cancelled. No new visit has been confirmed.
- Discussions continue between the HAMTC President and committee related to revising the Access Control Entry System (ACES) exclusion note in the TFC-BSM-HR_EM-C-10, *Reasonable Accommodations* procedure. No agreement has been reached as of the date of this publication.
- HPMC confirmed that it is currently working on the epidemiology study comparing Tank Farm Vapor Exposures and Non-Exposed Group of Hanford Workers.

Key Performance Parameter 8

Support medical program enhancements in conjunction with responsible Hanford Site organizations and establish update to WRPS process/procedures.

¹Strobic Air Tri Stack is a registered trademark of Strobic Air Corporation, Bensalem, Pennsylvania.

²NUCON is a registered trademark of Nucon International, Inc., Columbus, Ohio.

³Ventis™ Pro5 Multi-Gas Monitor is a registered trademark by Industrial Scientific in Pittsburgh, Pennsylvania

⁴GfG Micro IV Single Gas Detector from GfG Instrumentation, Inc.

⁵RAE Systems by Honeywell, San Jose, California.

⁶ChromAir is registered to Morphix Technologies, Virginia Beach, Virginia.

⁷C₂Sense is a registered trademark by C2Sense®, Inc., Cambridge, Massachusetts.