



washington **river**
protection solutions



Depicted is a bottle rack installation in support of the Vapor Monitoring and Detection System. For more information, read [KPP 5](#). (Photo courtesy of J. Laurenz)

Tank Operations Contract
Chemical Protection Program Office
September 27, 2018

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

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.

This is the last Weekly Report for FY2018. CPPO, busy with its efforts to create the FY2018 Annual Summary, will forego publishing the Weekly Report for the next few weeks. The Annual Summary will be issued on October 18, 2018.

CPPO Oversight and Tracking

CPPO Notebook

The CPPO Notebook is distributed on a weekly basis to aid managers in providing vapor-related information to staff on current topics of interest. In August, the CPPO released five Notebooks:

- *Leading Indicators for Monitoring Tank Vapors: Phase Two*
- *Air Dispersion Modeling Project: APGEMS-TF Update*
- *242-A Evaporator Campaign - EC-06*
- *Air Purifying Filter Cartridges*
- *Chemical in the Tank Headspace – Part 1: Total Tank Waste Chemical Characterization*

Managers are asked to reply **Yes** to their email when they intend to use the Notebook with their staff. Since the Notebook may be used weeks after distribution, the utilization data frequently changes over time, and is reflected in updates to monthly reporting. The data through August showed that an average of 20 managers each week reported using the Notebook.

WRPS Manager utilization of the CPPO Notebooks by subject and transmission date is shown in **Figure 1**. Since the beginning of FY2018, the data shows WRPS managers reported utilizing the Notebooks 838 times.

The Notebook material is provided in multiple formats, including an SME narrated/video presentation posted to the intranet, and available to all WRPS staff. **Figure 2** shows the monthly website traffic statistics for visits to the CPPO Multimedia Library since the beginning of the fiscal year. The data suggests a larger reach than that which is self-reported by the management distribution list. In August, Narrated Notebook files were accessed 681 times. The uptick appears to coincide with the increase in *Solutions* articles that highlight current Notebooks and the overall increase in the number of Notebooks produced in August. There were two *Solutions* article and five Notebooks released this month.

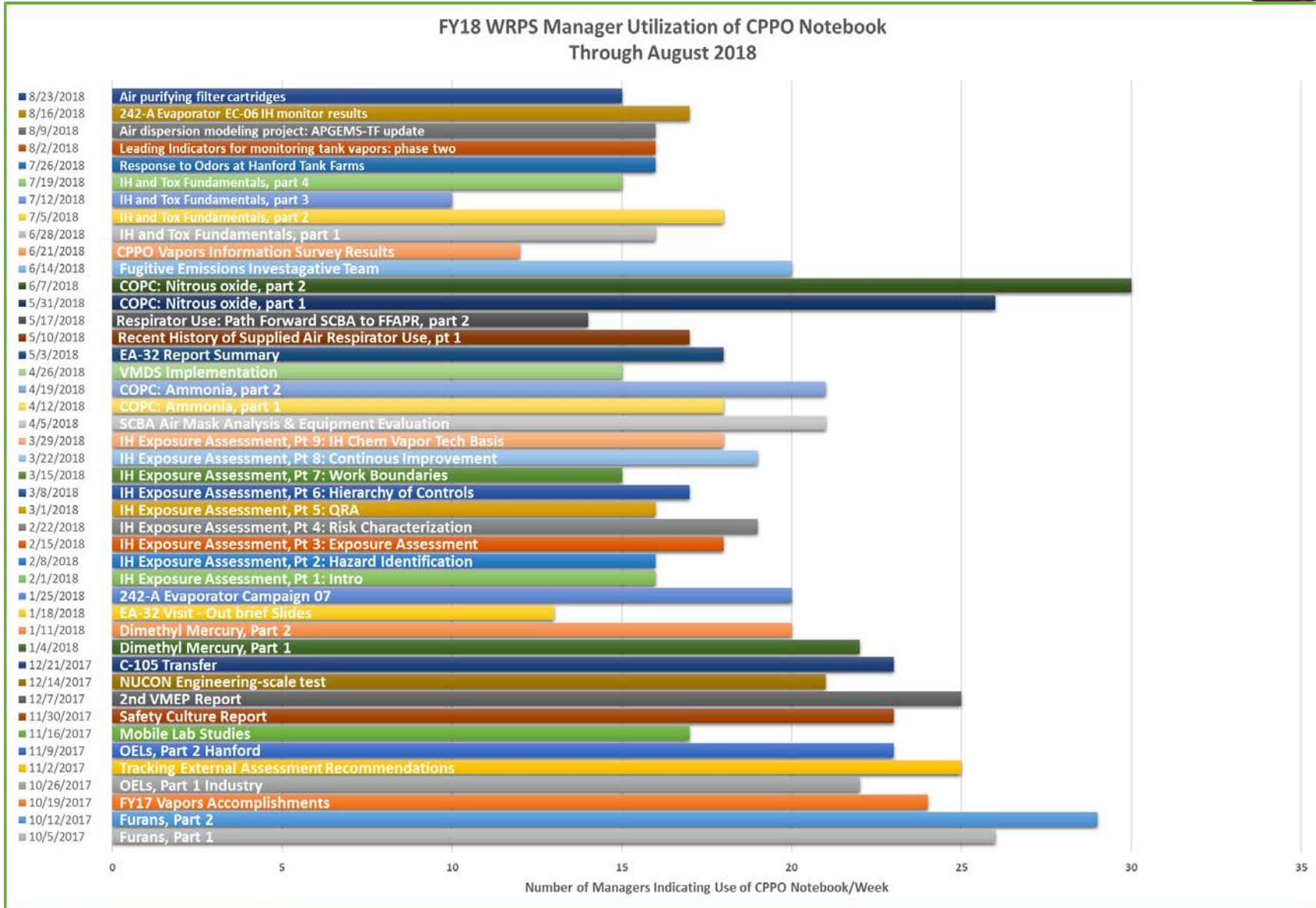


Figure 1. FY2018 Comprehensive Vapors Action Plan Costs

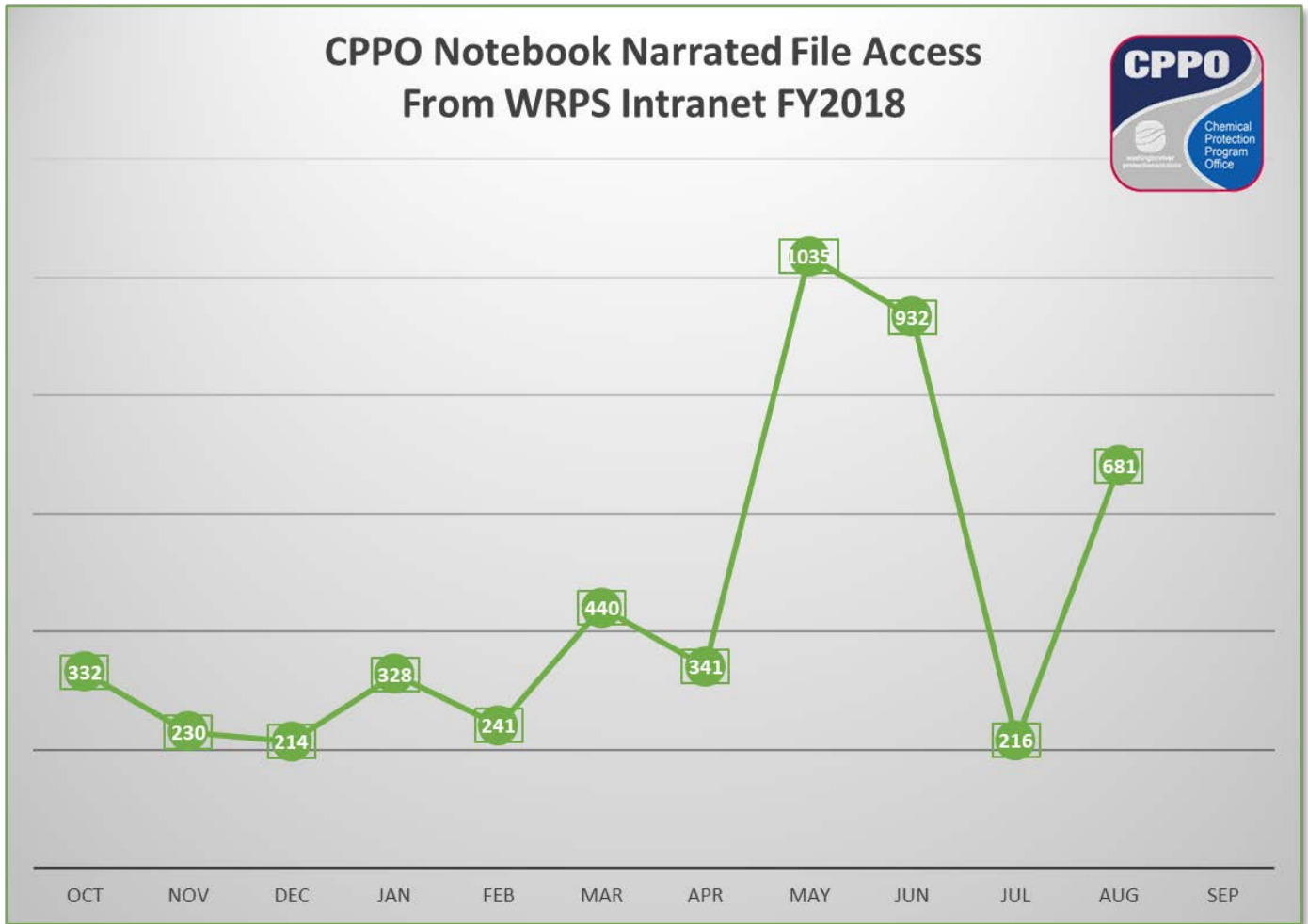


Figure 2. Narrated File Access of CPPO Notebooks from WRPS Intranet FY2018

CPPO Production Metrics

The CPPO summarizes complex, technical vapors-related information and provides monitoring results, report summaries, presentations, a weekly report on WRPS vapors activities, and other information for distribution to the workforce through established mechanisms such as the Solutions newsletter and the HanfordVapors.com website.

The vapor-related materials produced by the CPPO in August, and the three-month trend, is shown in **Table 1**. Data reports are no longer summarized for the website as VMDS reporting has transitioned to supporting full-time operations. In August, the CPPO produced and provided five Weekly Reports. In addition, five CPPO Notebooks were delivered. These materials provide vapors-related information to a variety of audiences and are distributed via email, and internal and external websites.

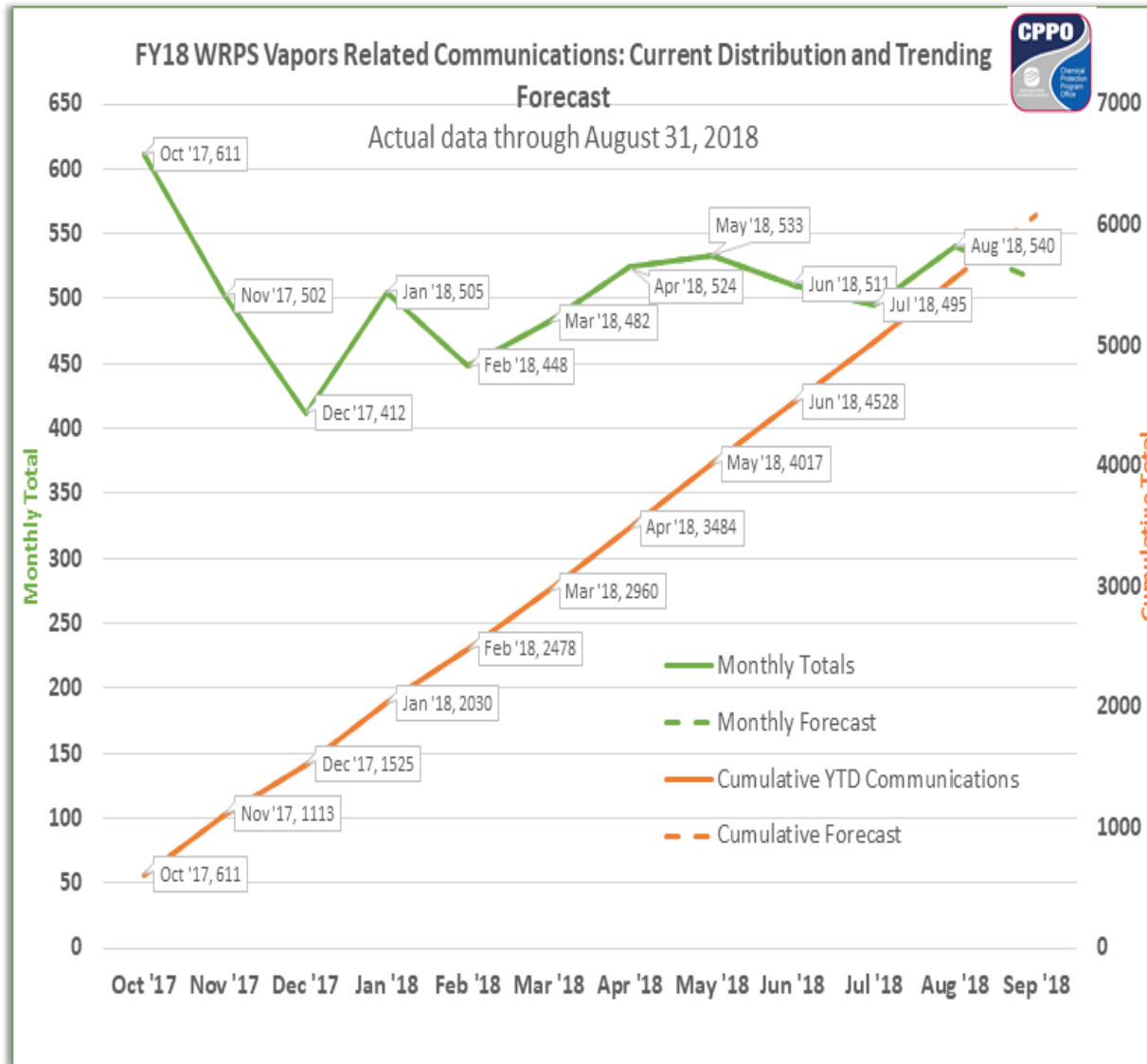
Table 1. CPPO Vapors Information Products Completed FY2018

CPPO Vapors Information Products Completed FY18	June	July	August	FY-to-Date Total
Data Report (Monitoring Data)	0	0	0	21
Presentations (includes CPPO Notebook and CVST)	4	4	5	46
CPPO Reports and Weekly Report	4	2	5	40
Information Requests†	0	0	0	1
Articles, Summaries, and Message Maps	1	4	1	17
Surveys, Focus Groups, and Recommended Actions	0	1	0	6
Website Requests/Site Updates	0	9	0	12
Videos	0	0	0	0
Monthly Totals	9	20	11	143

Table 2. WRPS Vapors Information Distribution Avenue

WRPS Vapors Information Distribution Avenue	June	July	August	September	FY-to-Date Total
All Employee Email/Meetings & ESHQ Comm.	6	2	4		39
CPPO Notebook*	78	59	66		889
CPPO Report and Weekly Report	4	2	13		48
Fact Sheet & Information	0	0	0		0
Meeting - CVST *	1	1	1		12
Meeting - CVST Sub-team meeting *	2	3	4		35
Meeting - Hanford Advisory Board Briefing *	1	0	0		2
Meeting/Briefing*	5	2	2		35
Meeting -Morning/Pre-Shift Brief*	384	409	433		4295
Presentation*	0	0	0		0
Safety Start	3	2	2		8
SOEN	9	0	3		24
Solution Article	3	1	2		22
Survey and Focus Group	0	1	0		3
Tours*	0	0	0		0
Website/Individual Inquiry †	0	0	4		4
Vapors Weekly Update or Website Post	15	13	6		147
Video	0	0	0		0
Monthly Totals	511	495	540	0	5563

* Face-to-face communication †Data reported with all vapor questions in quarterly metric



WRPS Vapors Related Communications Distribution

The total number of documented WRPS vapors-related communications provided to the workforce in FY2018 to date is shown in **Table 2**. The data for August shows a moderate increase in the otherwise steady rate of around 500 vapors-related communications per month. POD meetings remain the primary source of vapors-related information provided to the workforce, followed by utilization of the CPPO Notebook. The forecast delivery for WRPS vapors-related communications to the workforce in FY2018, including monthly and cumulative estimates, is shown in **Figure 3**. The data trend indicates that, at this rate, WRPS remains on track to deliver over 7,000 vapors-related communications to the workforce in FY2018 - largely through briefings and face-to-face interactions with the workforce.

2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

KPP 1. Engagement and Effective Measurement

CTEH

Update:

CTEH toxicologists engaged with various groups of workers throughout the week. Drs. Chris Kuhlman and Angela Perez met with workers at the AP-103 jumper repair pre-job, where they discussed factors of the work that could result in potential vapor exposures. CTEH met with a group of HAMTC safety reps, where an open discussion was held regarding FFAPR filter cartridge dust releases. Drs. Kuhlman and Perez visited the Chemical Worker Tier III training class and answered toxicology and health risk-related questions for 45 minutes. Questions included whether or not all COPCs had occupational exposure limits, the use of ammonia as a real-time leading indicator of potential COPC exposure, the frequency of tank vapor constituent characterization, and implications for FFAPR filter cartridge dust releases (a question deferred to WRPS IH). When not meeting with workers, the CTEH toxicologists continued to develop CPPO Notebooks summarizing the EC-08 air monitoring data and IHT training. CTEH toxicologists continue to look for new opportunities to engage with tank farm workers that have not yet had an opportunity to meet with them.

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 *Interim Use of the 241-AP Stack Monitor for Reliable Ammonia Monitoring*. This week's Notebook is titled *Single Shell Tank Stewardship Program*.

The CPPO/ HAMTC Safety Representatives interface meeting was held on September 19, 2018. The CPPO, HAMTC Safety, NCOs, and IH Programs were in attendance.

Solutions, Issue 452, published on September 17, 2018, featured the new 10-wide, Building MO-2563. *Solutions* reported, "[t]he new 10-wide building in the 200 East Area will soon house about 100 members of the WRPS Industrial Hygiene staff."

Solutions, Issue 452, published on September 17, 2018, alerted its audience to a new three-part CPPO Notebook, *Chemicals in the Tank Headspace, Parts 1-3*. A link to the Notebook was provided.

A Shift Office Event Notification (SOEN) issued on September 18, 2018, at 11:33 a.m. stated, “Entering AOP-015 for odors causing symptoms in SX Farm.”

An all-employee email, issued on September 18, 2018, at 12:40 p.m. reported, “A Hanford worker reported symptoms and is undergoing precautionary medical evaluation today after smelling odors at the SX Tank Farm. Industrial hygiene technicians were monitoring at the time and are collecting samples in the area. “

A SOEN issued on September 18, 2018, at 1:04 p.m. stated, “Initiated Event Investigation (EIR-2018-033) for the SX Farm AOP-015 event.”

A SOEN issued on September 18, 2018, at 6:32 p.m. stated, “Sample analysis for the SX TF-AOP-015 event has been completed and the results are below action limits. Exiting TF-AOP-015.”

“Odors reported at SX Farm,” read the title of a September 18, 2018, post to the HanfordVapors.com website. Furthermore, it read, “A Hanford worker has been released back to work after undergoing precautionary medical evaluation today for odors reported at the SX Tank Farm.”

News from Hanford Tank Vapors reported that the “Department of Energy (DOE) and Washington River Protection Solutions, LLC (WRPS) are pleased to announce today that a settlement agreement has been signed regarding lawsuits brought by the State of Washington and by Hanford Challenge and Local 598 of the United Association of Plumbers and Steamfitters.” The Settlement Agreement was posted to the external website and is available [here](#).

Chemical Protection Engagement: Chemical Vapors Solutions Team (CVST)

Update:

There were no CVST meetings last week.

Chemical Protection Engagement: Hanford Vapors Website Updates

Update:

Posted to the [HanfordVapors.com](#) last week were the following:

- CPPO Weekly Report 09062018
- [Odors reported at SX Farm notification](#)
- Settlement Agreement Reached on Hanford Vapors Litigation

Chemical Protection Engagement: Workforce Engagement New Updates begin October 1, 2018

KPPs 2 and 3. IH Technical Basis and IH Program

IH Manual and Technical Basis

Update:

Industrial Hygiene held an all-hands meeting last week to communicate the progress on the TOC-IH-58435, *Industrial Hygiene Manual*. The re-formatted document navigated the ORP review successfully, and is in the Smartplant Foundation for publication.

Industrial Hygiene communicated a major revision to TFC-ESHQ-IH-C-48, *Managing Tank Chemical Vapors*, intended to “simplify risk classification categories, align terminology with industry standards, and assist in the demarcation and communication of areas with greater potential of tank chemical hazards.” *Exclusion Zones* **replaces** *Vapor Control Zone* as the term used to demarcate “the boundary of potential vapor emission source greater than 50% of the OEL.” The revision includes a white paper detailing the incorporation of boundaries, changes to the signage, and the consolidation of the double shell tank and single shell tank risk classification tables.

TFC-PLN-34, *Industrial Hygiene Exposure Assessment Strategy*, is WRPS’s published guideline for developing exposure assessments. TFC-IH-C-69, *Exposure Assessment Procedure*, was published on September 4, 2018. The exposure assessments for A Farm, AW Farm, and AP Farm in SPF for publication.

TFC-PLN-173, *Use of FFAPR in Actively Ventilated Tank Farms*, is posted on the website for implementation in SY, AP, and AN Farms. It was edited to include AN Farm on September 4, 2018.

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

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.

Health Process Plan (HPP)

Update:

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,
- 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.

The report, *Proposed Risk-Based Approach for Nitrosamine Chemical-of-Potential Concern*, has been reviewed by IH for economic and technical feasibility impacts. The report, *Proposed Occupational Exposure Limits for Furans*, will proceed further through the Charter 71 process in FY2019.

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

Update:

The Air Pollutant Graphical Environmental Monitoring System – Tank Farms (APGEMS-TF), Version 1.0 was originally released in May, along with its final report. The modeling software has since been refined to version 1.1 and extensively tested against actual IH data under various weather and tank farm operational conditions. Acceptance testing has been completed. Representatives from Process Engineering and Chief Technology Office (CTO) Fugitive Emissions team were trained in the software use. APGEMS-TF is scheduled to be available for download via the Hanford Information Systems Inventory (HISI) by the end of this week.

Central Residence for Industrial Hygiene Technicians (IHT)

Update:

“About 100 members of the WRPS Industrial Hygiene (IH) staff will soon have a new home closer to the tank farms where they perform the bulk of their work,” stated last week’s *Solutions*. Building MO-2553 is commonly known as the 10-wide and is “the nearly completed office building on 4th Street, a little northwest of the PUREX plant.” Solutions reported, “Construction Manager Jeremy White said the new building should be finished by Oct. 20.”

KPP 4. Engineering Controls

A Farm Exhausters

Last update 9/20/2018:

Procurement/Fabrication: In the last two weeks, 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 continued. Subcontracts for fabrication of the stand assemblies, demister shields, and grout boxes were awarded. Commenced fabrication of the concrete blocks, work platforms and cover plates.

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. Cameras were installed in A-104 and A-106 to support thermocouple investigation and removal design activities.

Exhauster Valve Manifold: The fill and compaction construction work for the POR518/POR519 exhauster valve manifold slab continued last week as well.

Key Performance Parameter 4

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

AW Stack Extension

Last update 9/20/2018:

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. Comments are being resolved on the final lift plan.

AN Stack Extension

Last update 9/20/2018:

The draft of the dispersion modeling reports continued over the last two weeks. In addition to the modeling report, a meeting was held to review the proposed engineering evaluation and current dispersion modeling results with WRPS management. Preliminary indications are the cons for installing the AN Farm stack extension may currently outweigh the pros, and therefore this effort may be placed on-hold.

Strobic®¹ Air Dilution Fan

Last update 9/20/2018:

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

NUCON®² Thermal Oxidation Vapor Abatement Unit (VAU)

Last update 9/20/2018:

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: *NUCON® Vapor Abatement Unit Performance on Hanford Tank Farm Chemical of Potential Concern*, which captures the test results from the NUCON® engineering-scale test, was submitted to WRPS. Additionally, PNNL conducted a walkthrough with WRPS engineering and project teams to evaluate potentially purchasing the trailer to support future NUCON® testing.

WRPS: Issued the final test report summarizing the NUCON® engineering-scale activities 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 9/13/2018:

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:** Efforts to modify the algorithm have not been started because CEREX®³ was directed to support the installation of the stack monitor.
 - **No-Gas Testing OAT:** Efforts are ongoing to approve the OAT.
 - **Gas Testing OAT:** Efforts are ongoing to prepare the OAT.

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.

- Efforts also continued on installing the bottle racks, calibrating the flow controller, and procuring permeation tubes and calibration gases.

✚ Stack and Boundary Monitors

Update:

702-AZ Stack Monitor: Installation of the 702-AZ Ultra-Violet-Differential Optical Absorption Spectrometer (UV-DOAS) stack monitor has been completed, and final startup and testing is being performed.

AN Farm Stack Monitor: Installation of the AN Farm UV-DOAS stack monitor has been completed, and final startup and testing is being performed.

AX Farm Stack Monitors: Installation of the two UV-DOAS monitors was started.

AW Farm Stack Monitor: The UV-FTIR unit was received and delivered to the site. Installation activities were started.

✚ Establishing Safe Work Boundaries

Last update 9/13/2018:

Depicted on last week's Weekly Report cover, and depicted in **Figure 4**, is one of the new signs marking the boundary of a potential vapor emission source greater than or equal to 50% of the OEL. On September 5, 2018, Industrial Hygiene, in an all-employee email, notified the workforce of a major revision to TFC-ESHQ-IH-C-48, *Managing Tank Chemical Vapors*. 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. The new Exclusion Zone signs will be installed "in the coming days."



Figure 4. New Exclusion Zone Warning Sign.

Public Address (PA) System

Update:

The functional tests for S, T U, and B Farm public address (PA) systems were completed and paperwork was submitted documenting completion of the performance based incentive activities. Efforts also continued on completing punch-list items associated with the C Farm PA system.

KPP 6. Tank Operations Stewardship

Pilot SST Stewardship Program

Update:

The activities completed over the last couple of weeks include the following:

- Continued preparing a statement-of-work for FY 2019 activities in support of the T Farm Complex construction activities.
- Mission Support Alliance continued development of an excavation permit and work package to support unplugging of the fiber conduit.

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:

In the last two weeks, the TerraGraphics Mobile Laboratory sampled around the SX Tank Farm during the initial activities associated with a paving project. The team sampled around the AY Tank Farm during the AY-102 rinse. Additionally, the mobile team started troubleshooting and repairing the CEREX® FTIR module.

Personal Vapor Monitor

Update:

The final report for the wearable ammonia detector field trials in A Farm was completed. The field trial included the following detectors: ToxiRAE Pro⁴, Ventis™ Pro5⁵, GfG Micro IV⁶ and the ChromAir^{®7} badge. Concurrences were received from reviewers for all of the comment resolutions. The report is now being processed through SPF.

C₂Sense^{®8}, Inc. submitted a presentation summarizing recent efforts to improve its ammonia sensor algorithm. They concluded the C₂Sense[®] ammonia sensor prototype in its current state cannot be used to reliably quantify ammonia concentration in real time. C₂Sense[®], Inc. is working to deliver a final report by the end of the fiscal year.

This is the final weekly report on C₂Sense[®] activities, as the ToxiRAE Pro detectors are being rolled out into the field, and the field trial report has been completed.

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.

3. Settlement Agreement

On September 19, 2018, the Department of Energy (DOE) and Washington River Protection Solutions, LLC (WRPS) signed a settlement agreement with the State of Washington, Hanford Challenge, and Local 598 of the United Association of Plumbers and Steamfitters resolving law suits that had been initiated in 2015. The lawsuits were based on concerns about potential health risks posed by vapors vented from mixed waste stored in underground tanks at Hanford.

The settlement agreement will become effective only if the court in a separate case involving DOE and the State of Washington (the “Consent Decree” matter) grants a joint motion by DOE and the state to extend certain tank waste retrieval milestones and the court in the vapors litigation grants a joint motion to stay further proceedings.

The settlement agreement acknowledges the extensive actions DOE and WRPS have taken to protect workers from potential exposure to chemical vapors, including implementing recommendations from independent program reviews conducted between 2014-2018 by the Savannah River National Laboratory’s Tank Vapors Assessment Team, the Center for Disease Control and Prevention’s National Institute for Occupational Safety and Health, the DOE Office of Enterprise Assessments, and the DOE Office of the Inspector General.

DOE and WRPS have instituted a programmatic strategy to protect workers from potential exposure to chemical vapors. This strategy comports with Hanford’s rigorous site-wide integrated safety management system that identifies industrial hazards and implements worker safety and health protections appropriate for the work to be performed. The chemical vapors protection program integrates industrial hygiene best practices with engineering controls, use of personal protection equipment, and robust communications with the workforce before, during, and after work is performed. To complement this approach, WRPS continues to hold regular meetings with workers to foster open dialogue and early identification of safety concerns. In addition, WRPS has developed a website to provide workers and stakeholders with timely access to information about Hanford tank vapors and workforce protections. The hanfordvapors.com website provides current and historical data, sampling results, background information, reference materials, and regular industrial hygiene program updates.

WRPS continues to work with the Hanford Atomic Metal Trades Council (HAMTC), the bargaining unit for Hanford’s direct-hire union employees, to implement a 2016 Memorandum of Agreement (MOA) between WRPS and HAMTC. The MOA addresses respiratory protections, cartridge testing for air-purifying respirators, and the implementation of additional engineered controls and other approaches to tank vapors.

The settlement agreement includes completion of ongoing testing of a system that may prove capable of reducing vapors by thermal treatment. The system is designed to pull tank vapors through filters into combustion chambers, which could greatly reduce chemical concentrations. If continued off-site testing meets performance criteria, DOE and WRPS will pursue final design, permitting, and

procurement of a unit for on-site tests in accordance with the settlement agreement.

Additionally, testing is underway on a vapor control system that uses a high velocity fan to mix the contents of a tank ventilation stack (gases and vapors) with ambient air and then expels them from the stack at high speed above workers' breathing zones.

The settlement agreement also includes additional work to install an active exhaust ventilation system in the A Farm; to evaluate (and implement consistent with the outcomes of the work planning process) a customized set of hazard controls for each waste-disturbing activity in the tank farms; and to complete the design of the optimal components and configuration of the Vapors Monitoring and Detection System for exhaust stack monitoring in the A and AX Farms. The agreement notes that DOE and WRPS installed public address and event notification systems in the tank farms to facilitate immediate notifications to workers.

Worker safety is DOE's top priority. WRPS, in conjunction with DOE and in cooperation with HAMTC, continues to take a very conservative approach to protecting workers from potential exposures to chemical vapors. The Settlement Agreement is based on and reinforces this ongoing effort.

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.

³CEREX® Stack Monitor CEREX trademark by TECAN SP, INC. Baldwin Park, California.

⁴RAE Systems by Honeywell, San Jose, California.

⁵Ventis™ Pro5 Multi-Gas Monitor is a registered trademark by Industrial Scientific in Pittsburgh, Pennsylvania

⁶GfG Micro IV Single Gas Detector from GfG Instrumentation, Inc.

⁷ChromAir is registered to Morphix Technologies, Virginia Beach, Virginia.

⁸C₂Sense is a registered trademark by C₂Sense®, Inc., Cambridge, Massachusetts.