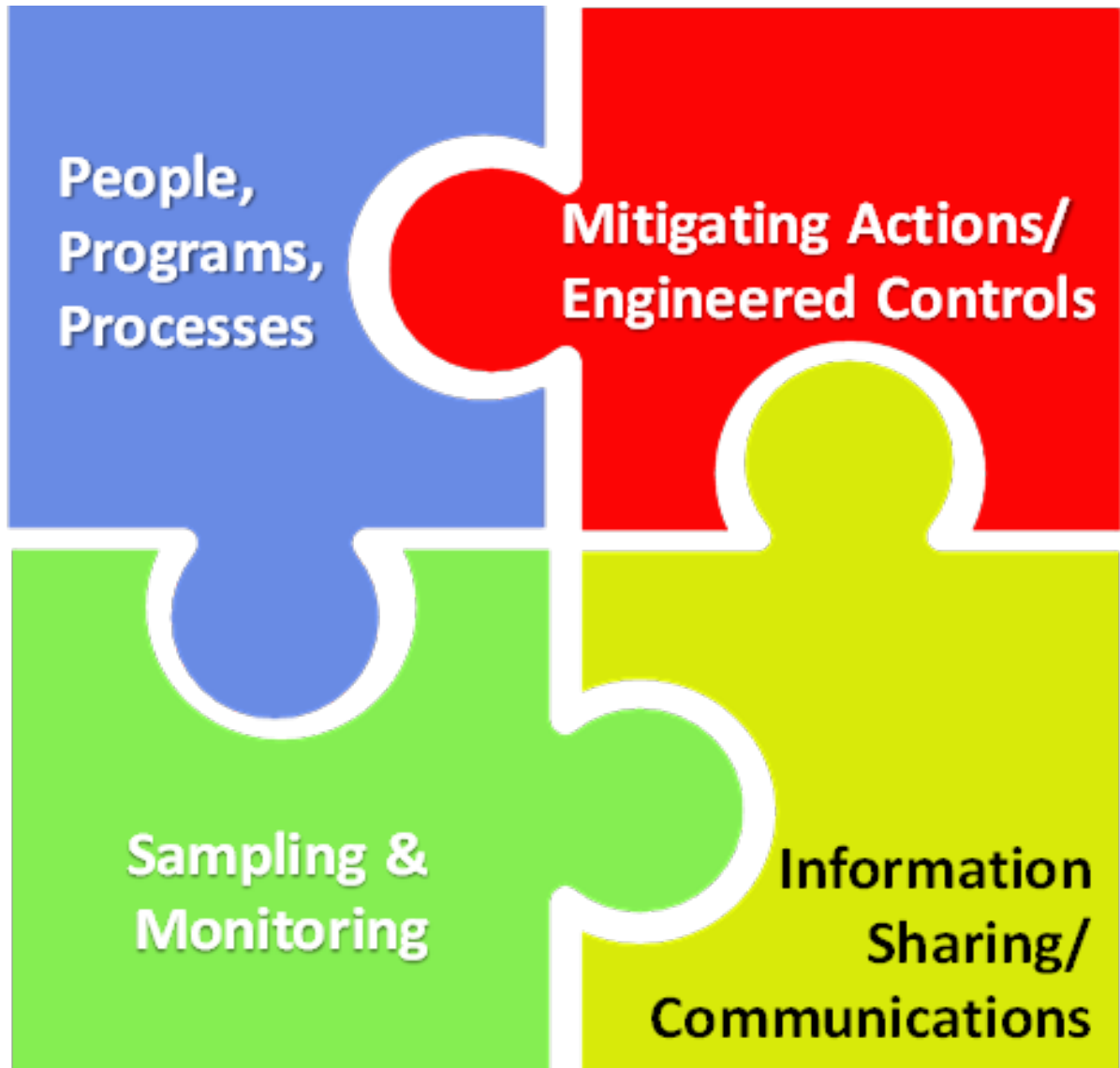


*WRPS Integrated Chemical Vapor Hazard Control
Program*

Monthly Report – April 2019

Published: May 23, 2019



At the end of Fiscal Year (FY) 2016, Washington River Protection Solutions LLC (WRPS) was completing Phase I of the *Implementation Plan for Hanford Tank Vapor Assessment Report Recommendations* (WRPS-1500142), developed to address Tank Vapors Assessment Team (TVAT) recommendations. The implementation plan actions were originally planned to occur in two phases. Phase I was completed at the end of fiscal year FY 2016. During the latter part of Phase I, multiple assessments were conducted on the progress of the implementation plan and/or the overall Industrial Hygiene (IH) program, including those conducted by the National Institute for Occupational Safety and Health (NIOSH), Office of Inspector General (OIG), Center for Toxicology and Environmental Health, LLC (CTEH), and Department of Energy (DOE)-Office Environment, Safety, and Health Assessments (EA-32). Assessment results, feedback from stakeholders, and the Phase II actions were incorporated into a comprehensive vapor management strategy, focusing on the vision that all workers on the Hanford Central Plateau continue to be protected by the comprehensive approach to vapors management, and that workers *are safe and feel safe*. The *Comprehensive Vapor Action Plan* (CVAP), as the plan became known, presented the new implementation strategy, and replaced the *Implementation Plan for Hanford Tank Vapor Assessment Report Recommendations*.

The CVAP was organized around eight Key Performance Parameters (KPPs):

- Engagement and effectiveness measurement
- Industrial hygiene technical basis
- Industrial hygiene program parity
- Engineered controls
- Unrestricted work boundaries
- Single shell tank stewardship program
- Chemical vapor respiratory protection hierarchy of controls, and
- Support medical program enhancements





The Plan was implemented during fiscal years 2017 and 2018.

The Chemical Protection Program Office (CPPO) was established in October 2016. The mission of the CPPO is to provide independent monitoring of vapor action status, and facilitate the flow of clear and transparent information throughout WRPS and to stakeholders to promote understanding of Hanford tank vapors by:

- Providing independent measures of progress to ensure actions achieved the required intent, and
- Both leading and supporting vapors engagement and communication efforts.

From FY 2017 to FY 2018, CPPO delivered KPP 1 of the CVAP: “[e]stablish a comprehensive vapor communication plan, engagement processes, and effectiveness measures,” in part by publishing the *CPPO Weekly Report*. The weekly report updated all the KPPs as described in the CVAP. WRPS’ ongoing actions, aimed at managing chemical vapor hazards from the Hanford Tank Farms, are now

focused around the outcomes of the CVAP. Instead of describing the outcomes in terms of KPPs, WRPS is now using the following descriptors:

-  **People, Programs and Processes**
-  **Mitigating actions/Engineering controls**
-  **Information Sharing/Communication**
-  **Sampling and Monitoring**

The *CPPO Weekly Report* is now the *WRPS Integrated Chemical Vapor Hazard Control Program Monthly and/or Quarterly Report*.

1. People, Programs, Processes

People, Programs, and Processes describes actions to ensure employees are qualified and trained, processes are in place to perform work safely, and programs are developed and updated.

Exposure Assessments

April 2019 Update:

IH and the Office of River Protection (ORP) agreed to a new exposure assessment (EA) review process in January. No longer do EAs require ORP review prior to publication. Content-only reviews will be conducted post-publication, and any necessary edits will be incorporated in subsequent revisions. The *Exposure Assessment for SY Farm* has been completed and is awaiting IH Program management approval. The process of creating the *Exposure Assessment for AY/AZ Farm* has been initiated.

IH Training

2nd Quarter Summary:

IH reported that 78 percent of IH technicians (IHTs) had completed *ToxiRAE Pro Laboratory Preparation & Calibration Training* by the end of February, and 100 percent by the end of March. Approximately 90 percent of IHTs completed *ToxiRAE Pro Field Use Training* for all on-the-job trainer /on-the-job-evaluator (OJT/OJE) qualified IHTs by the end of the 2nd quarter.

Health Process Plan (HPP) and Charter 71 (TFC-CHARTER-71)

April 2019 Update:

The following five HPP reports (also known as Charter 71 reports) were further developed by Pacific Northwest National Laboratory (PNNL) and WRPS during April 2019:

- ***Hanford Tank Farm Occupational Exposure and Risk Assessment Plan*** (PNNL-25791, Revision 1): This report is undergoing the WRPS Smart Plant review process.
- ***Proposed Risk-Based Approach for Nitrosamine Chemicals of Potential Concern*** (PNNL-26787): This report is also in the WRPS Smart Plant review process.
- ***Proposed Occupational Exposure Limits for Furans*** (PNNL-26775): This report is also in the WRPS Smart Plant review process.
- ***Chemical Mixtures and Modeling Recommendations*** (PNNL-27089): The Charter 71 comments are being incorporated and the health code number review is complete for the first 13 chemicals of potential concern (COPCs). An additional 28 health code numbers are being evaluated for addition to the HPP database.

- **Short-Duration Vapor Concentrations in Worker Breathing Zones in and near the Hanford Tank Farms: A Summary of Current Knowledge (RPP-RPT-61280) (BOLUS):** The project team received all comments from WRPS, the Washington State Qualified Technical Professional (QTP), and Stone-Turn Corporation. PNNL and WRPS are working on comment resolutions.

Chemical Worker Training

April 2019 Update:

The CTEH toxicologists have been moderating question and answer (Q&A) sessions at the conclusion of *Chemical Worker Training*, giving the course trainees an opportunity to get answers to their toxicology and health questions.

- **April 3, 2019:** Dr. Chris Kuhlman and Dr. Tami McMullin introduced CTEH and explained their role in supporting the CPPO. Dr. Chris Kuhlman addressed a question on air samples and explained how sampling data is used to determine how to keep workers and surrounding communities safe. Dr. Kuhlman also answered questions about the volatility of chemicals in the tank headspaces and explained how ammonia can be used as a leading indicator of the presence of other COPCs.
- **April 22, 2019:** Dr. Chris Kuhlman introduced CTEH, explaining how CTEH has reviewed the IH Technical Basis and has provided vapors-related outreach to Hanford workers. Dr. Chris Kuhlman also discussed the ten percent occupational exposure limit (OEL) action levels used by IH and explained how this is a very health-protective policy.
- **April 24, 2019:** Dr. Chris Kuhlman discussed CTEH's role supporting the CPPO, and explained how the 61 COPCs were determined out of the thousands of chemicals in the tanks.

The Data Access and Visualization Tool (DAV)

April 2019 Update:

PNNL and IH kicked off the Internal DAV (I-DAV) project in November, which will add efficiencies to the process used to analyze EA data. I-DAV uses Tableau Server and scripting languages to augment critical IH and engineering data analysis functions. The fully automated tool sets are expected to assist qualified IH staff in updating EAs. Below are the April accomplishments:

- Quality assurance test cases for EA upper threshold limit statistics code and data conditioning were successfully performed.
- I-DAV EA module design mock-ups were refined.
- PNNL worked toward finalizing design documentation for the I-DAV EA module.
- AY/AZ and 702-AZ data sets were analyzed in preparation for supporting the next EA to be conducted by WRPS IH.
- Data visualization tools were developed in Tableau per IH specifications for mobile laboratory data.
- The chemical mixture methodology was incorporated into Tableau, and prototype visualizations were created for the AX Farm data set developed for the EA.

Integrated Sampling & Monitoring Strategy

April 2019 Update:

IH established the scope and purpose for the *IH 200 Areas Surveillance Strategy* and briefed ORP. Additionally, IH began drafting a sampling and monitoring strategy for the IH Program. Assignments were adjusted in January, and again in March, to accommodate personnel changes. Progress continued on the draft sampling and monitoring strategy for the IH Program after meeting with IH leadership. A draft monitoring and sampling strategy was presented to IH Program management for review during the last week of April.

ToxiRAE¹ Implementation

2nd Quarter Summary: No further updates expected/completed

“Beginning February 26, 2019, the ToxiRAE Pro personal ammonia sensors [became] available for use on all shifts (days, back shift, overtime) for Risk Classification One (RC1) and RC2 work being performed in all actively ventilated farms. Industrial Hygiene technicians (IHTs) [issue] the ToxiRAE Pro monitors as a primary means of monitoring ammonia concentrations to establish any change of conditions in the farm,” announced Mr. Rob Cantwell in an all-employee message.

Root Cause Analysis (RCA)

April 2019 Update:

The final RCA report is drafted and will be finalized in May 2019.

2. Mitigating Actions/Engineered Controls

AW Stack Extension

2nd Quarter Summary:

The scope of this effort is to increase the stack's current height from 27 feet to 60 feet. As a result of issues identified during the permitting review, the schedule for completing the AW Stack extension was extended to FY 2019. Summarized below are the second quarter accomplishments:

- **Permitting:** The alternative respiratory protection assessment (ARPA) document was completed and is in review. WRPS is collaborating with the Department of Ecology on an approved permit.

A Farm Exhausters

April 2019 Update:

The goals for FY 2019 are to complete the following: 1) the installation of the exhausters, exhauster valve manifold, and ventilation ducting; 2) the removal of two thermocouples; and 3) the testing of the exhausters and ventilation system. Below is a summary of what was accomplished in April:



- **Exhausters:** During April, the installation of the moisture separator shielding structures started. Excavation of the exhauster electrical trench started and continued through the month. WRPS began installing electrical connections for the variable frequency drives (VFDs), the effluent monitoring cabinets, seal pots, and moisture separators. Work on installing the grounding, electrical conduits, lighting fixtures, and electrical racks (**Figure 1**) continued.

*Figure 1. (Left)
A-Farm Exhauster Electrical Rack
Installation
(Photo courtesy of Mark Allen)*

Figure 2. (Below)
Installation of A-Farm Exhauster Nearly Completed
(Photo courtesy of Mark Allen)



- **Exhauster Valve Manifold:** In April, the stairs, platform grating, handrails and a customized grating were installed. The installation of the manifold spool weldments was completed, and the installation of the work torque flanges continued through the month.
- **Procurement/Fabrication:** In April, procurement and engineering resources were assigned and organized to begin soliciting and fabricating grout boxes, work platforms, and spray rings.

NUCON^{®2} Thermal Oxidation Vapor Abatement Unit (VAU)

April 2019 Update:

The current goals for FY 2019 are to start the detailed design of the next generation VAU and tank farm infrastructure, and to apply for environmental permits, as necessary. This is a collaborative effort between WRPS, Pacific Northwest National Laboratory (PNNL), TerraGraphics, and NUCON. Below is a summary of what was accomplished through April 2019:

- **TerraGraphics:**
 - Continued developing the *Thermal Oxidation System (TOS) Infrastructure 60% Design* package.
 - Received comments from WRPS on the *TOS Infrastructure 60% Design*.
- **NUCON[®]:**
 - Continued evaluation of equipment selection for electric heater, booster blower and valves, and implementation into the *NUCON[®] VAU Skid 60% Design*.
 - Continued work on electrical schematics and panel layouts for *NUCON[®] VAU Skid 60% Design*.
 - Initiated review of the *TOS Infrastructure 60% Design* from TerraGraphics, and submitted design to WRPS for review.
- **WRPS:**
 - Initiated and completed review of the *TOS Infrastructure 60% Design* package.

- **PNNL:**
 - Completed scope of work regarding the instrumentation trailer; PNNL's FY 2019 scope of work is completed.

Strobic® Air Tri-Stack³

April 2019 Update:

Strobic® testing was completed. WRPS and DOE-ORP will determine the next steps.

AP Farm Ultra-Violet Fourier Transformer Infrared Spectrometer (UV-FTIR)

2nd Quarter Summary:

The goal for FY 2019 is to turn the AP Farm UV-FTIR over to Operations for ammonia monitoring. Below is a summary of the 2nd quarter accomplishments:

- **Ammonia-Only Turn-Over:** A number of parallel activities are being prepared in support of the ammonia-only turn-over and are discussed below:
 - Continued reviewing the ammonia-only results and continued interim reliability Operational Acceptance Test (OAT) testing.
 - Continued the no-gas OAT.
 - Instrumentation and Control Engineering continued developing the Integrated Document Management System (IDMS) interface, and continued reviewing the UV-FTIR software installation plan.
 - Continued preparing the maintenance and operating procedures.
 - Continued compiling evidence to support the readiness of turning over the UV-FTIR to Operations.
- **Multi-Gas Only Turn-Over:** No update until the ammonia turn-over is complete.

Continuous Emissions Monitor Sampler

April 2019 Update:

As of April, all procurements for the continuous emissions monitor sampler modification remain in process. The sampling test bed is being fabricated, and the skid is being assembled as the procured equipment arrives. AVANTech will demonstrate the system's capabilities for WRPS and DOE at a yet-to-be scheduled time.

Stack Monitor Turn-Over/VMDS Upgrade

April 2019 Update:

The goal for FY 2019 is to turn the monitors over to Operations. Below are the accomplishments for April 2019:

- **Set-Point Calculation:** All set-point calculations have been drafted for ammonia.
- **Operational Acceptance Test:** OATs have been drafted for ammonia and multi-gas for AX, AZ, AN, and AW Farms.

- **AX and AZ Farm Stack Monitors:** OATs for ammonia are in progress for AX-126, 127 and AZ-702.

Public Address System (PA)

April 2019 Update:

The goal of installing all the reader boards associated with the PA system in FY 2019 has been realized. The PA system was completed during the 2nd quarter, and in April, it was successfully turned over to Operations for formal readiness procedures. The PA system will be integrated and fully operational in the Shift Office Event Notification (SOEN) system once readiness is formally declared.

SST Farm Automation

April 2019 Update:

The purpose of the single-shell tank (SST) Stewardship Program is to identify and evaluate procedures requiring entry into SSTs and determine whether those requirements can be eliminated or reduced. The goals for FY 2019 are to install remote monitoring equipment at both TY and TX Farms, and to turn-over the equipment to Operations. The following was accomplished in April:

- **T-Complex Field Construction:** The construction contract was awarded, and fabrication of components has started and will continue through May and June. Several items have long-lead procurement times, which impacts the installation schedule.

Full-Face Air Purifying Respirators (FFAPR) and Powered Air Purifying Respirators (PAPR)

2nd Quarter Summary:

As part of the overall research and implementation of the FFAPRs in Tank Farms, an IH SME attended a tour of the Mine Safety Applications (MSA) factory for respiratory cartridges in North Carolina in mid-January. FFAPRs were rolled out in AX, AY, and AZ Farms on February 21, 2019, and in AP and AW Farms on March 19, 2019. FFAPRs are now implemented for all RC1 and RC2 work activities in all actively ventilated tank farms (SY, AN, AX, AY, AZ, AP, and AW). Employees may voluntarily upgrade respiratory equipment to supplied air. The IH Newsletter reported that, “[i]t was a smooth transition” and “work was performed efficiently.”

3. Information Sharing/Communication

Chemical Vapors Solution Team (CVST) Meetings

April 2019 Update:

April 10, 2019, CVST Meeting

CVST Sub-team Meetings

April 2019 Update:

April 4, 2019, CVST Integrated Project Team (IPT) Sub-team meeting

April 8, 2019, CVST Communications Sub-team meeting

April 20, 2019, CVST Communications Sub-team meeting

HanfordVapors.com Metric

April 2019 Update:

The Hanford Vapors website logged over 2,200 views in April 2019, an increase of 16% from the previous month. Total access to the site has dropped this FY from the previous year; however, since October, the website continues to experience an average of 65 hits per day. Communications and Public Relations (C&PR) reported that eight new items were posted to the site this month.

Figure 3.

Hanford Vapors Website – Total Hits Per Month and Average Hits Per Day, April 2019



 **CPPO Notebook Metric****April 2019 Update:**

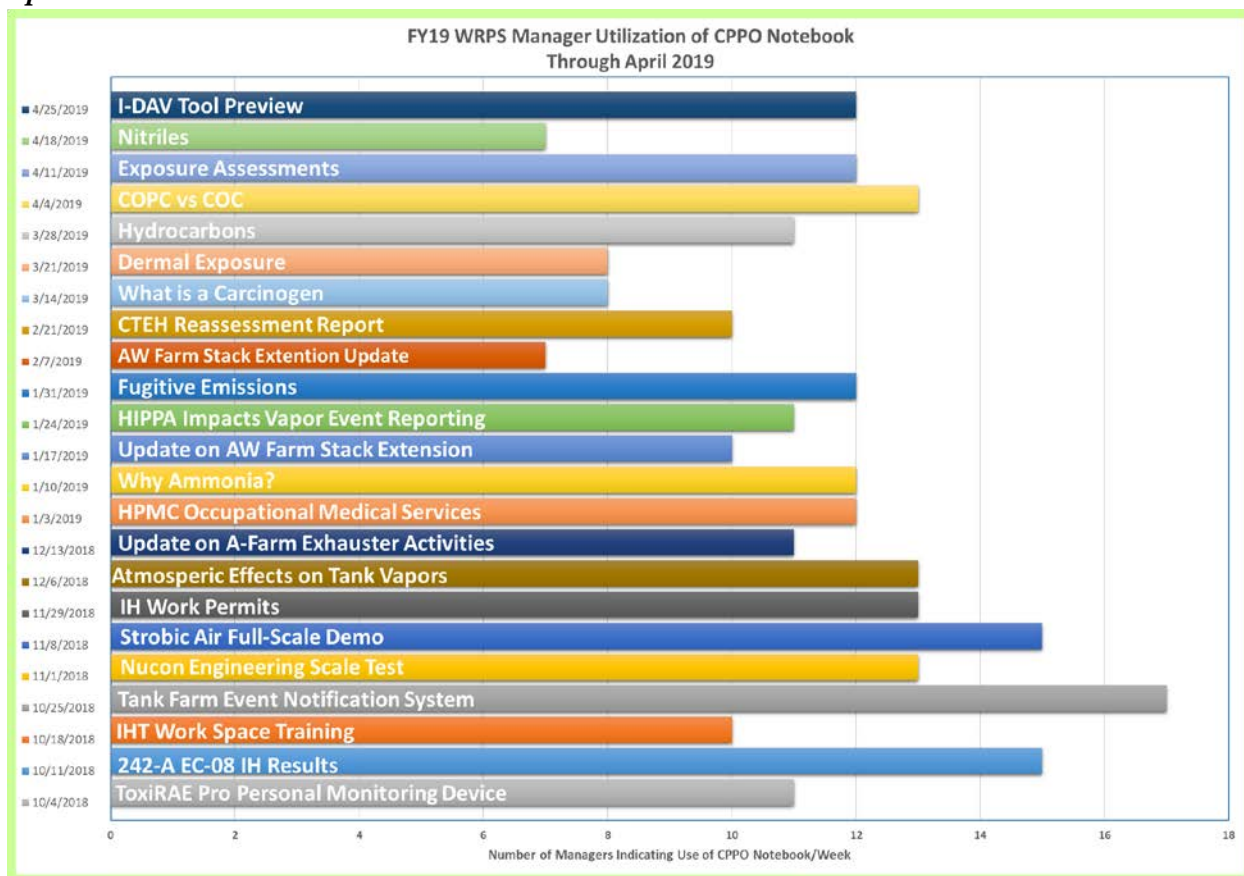
The CPPO Notebook is distributed on a weekly basis to aid managers in providing vapor-related information to staff on current topics of interest. Four editions were released this month providing information on:

- The differences between COPCs and chemicals of concern (COCs);
- Nitriles;
- The IH program EA process; and
- The I-DAV tool.

The notebooks are now provided as part of the weekly Safety Startup, and CPPO also continues to provide the information directly to managers to share with the workforce. Use of the notebook through this distribution route continues to be monitored through an email tally of voting replies from the managers who receive the notebook weekly via email. Since the notebook may be viewed weeks after distribution, the data regarding the utilization of individual editions may change over time and is reflected in updates to monthly reporting. The data for April, to date, show an average of 11 managers reported making use of notebook each week.

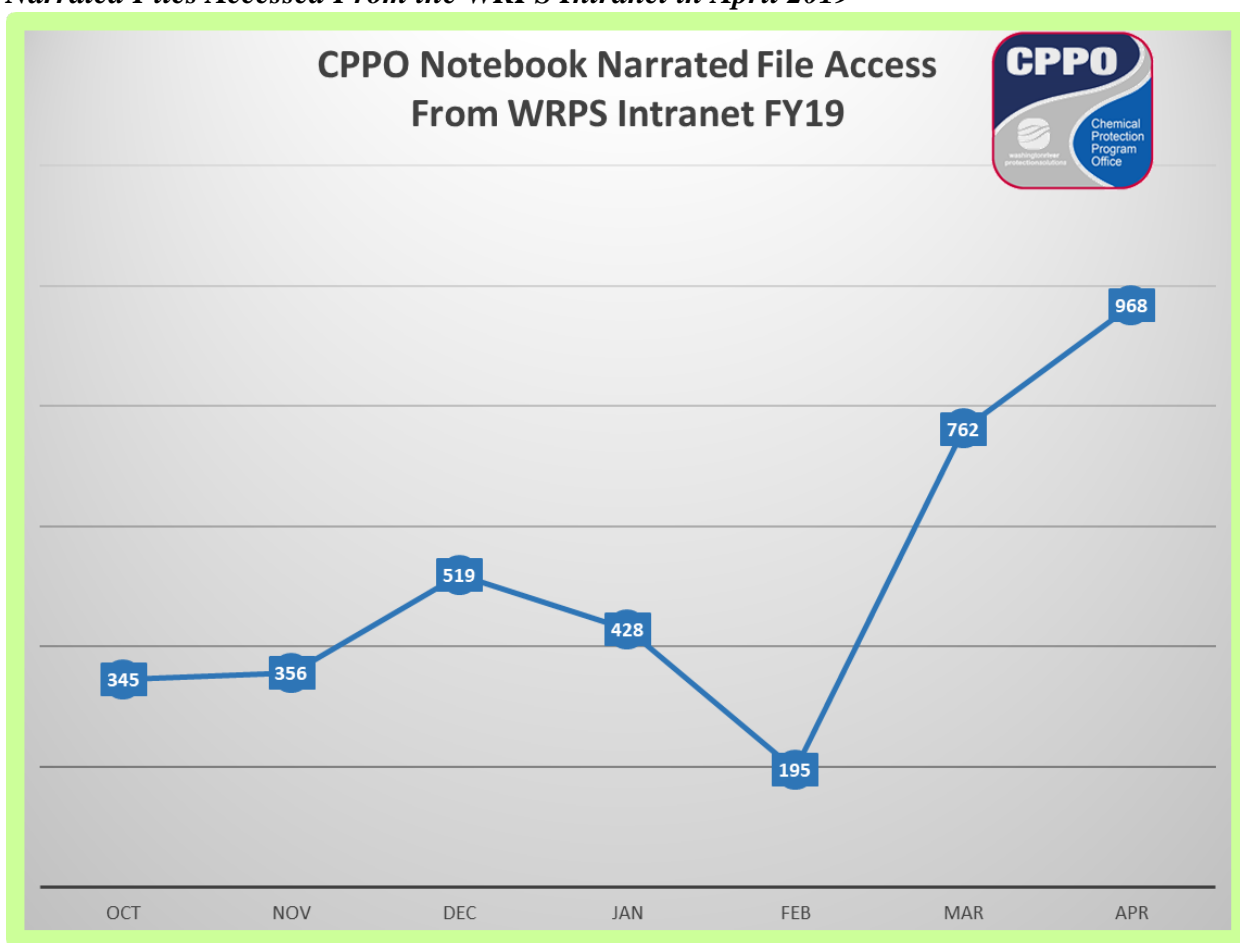
Utilization of the CPPO Notebooks by subject and transmission date is shown in **Figure 4**. Since the beginning of FY 2019, the data show WRPS managers reported utilizing the notebooks 263 times to present vapors-related information to the workforce.

Figure 4.
April 2019 CPPO Notebook Use



The notebooks are also posted to the intranet, available to all WRPS staff, who may access the content at will. **Figure 5** shows April website traffic statistics for visits to the CPPO Multimedia Library since the beginning of the FY, accessing a variety of the notebook audio files hosted on the WRPS intranet. The data suggest a larger reach than what is reported by the management distribution list. The April data are higher than previous months, likely due to a rebound following the facility closures for weather experienced late this winter.

Figure 5.
Narrated Files Accessed From the WRPS Intranet in April 2019



CPPO Requests and Production Metrics

April 2019 Update:

CPPO summarizes complex, technical, vapors-related information for the workforce through a variety of mechanisms including a monthly report on WRPS vapors activities, CPPO Notebooks, engagement activities, and other mechanisms.

The vapor-related materials CPPO produced in April and the three-month trend in number of items produced is shown in **Table 1**. In addition to the CPPO Notebook, the CPPO Quarterly Report was distributed in April. New material was provided to the HanfordVapors.com website, largely in support of the Settlement Agreement. CPPO continues to provide toxicological expertise to the workforce through answering questions at Chemical Worker training and making site visits.

Table 1.

CPPO Vapors Information Products April 2019

CPPO Vapors Information and Engagement Activities FY19	February	March	April	FY-to-Date Total
Presentations (includes CPPO Notebook and CVST)	2	3	4	24
CPPO Reports and Monthly/Quarterly/Annual Report	1	1	1	7
Articles, Summaries, and Message Maps	0	0	0	7
Surveys, Focus Groups, and Recommended Actions	0	1	0	4
Website Requests/Site Updates	4	3	8	119
Videos	0	0	0	1
Field Visits	1	6	2	30
Chem. Worker Training Support	0	3	2	15
Monthly Totals	8	17	17	207

The total number of documented WRPS vapors-related communications provided to the workforce in FY 2019 to date is shown in **Table 2**. The data for April is higher than the prior month, driven primarily through plan-of-the-day (POD) meetings and notebook presentations. April data include 486 documented vapors-related communications.

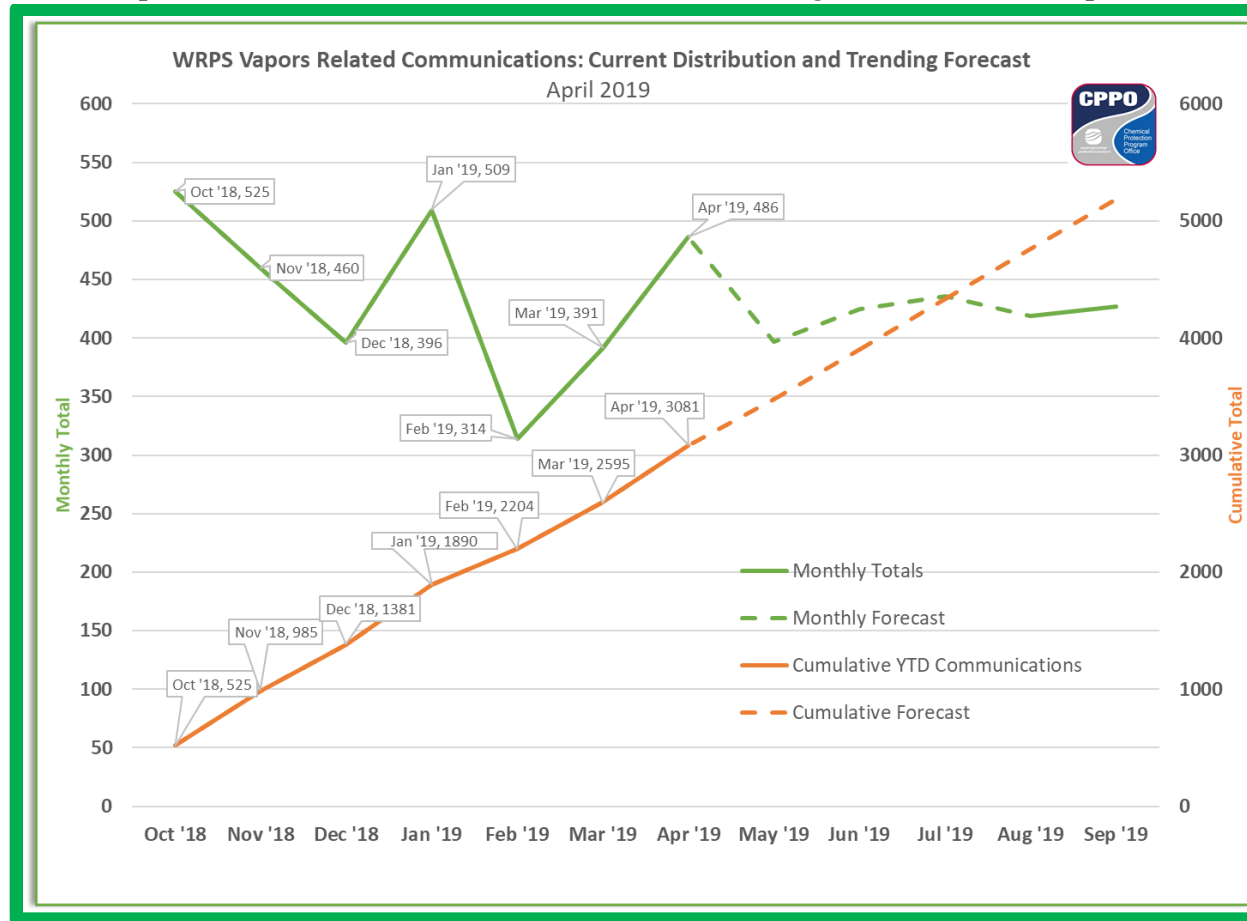
Table 2.
WRPS Vapors Information Distribution Avenue – April 2019

WRPS Vapors Information Distribution Avenue	February	March	April	FY-to-Date Total
All Employee Email/Meetings & ESHQ Comm.	6	0	0	28
CPPO Notebook*	17	27	44	250
CPPO Vapors Report	1	1	1	9
Fact Sheet & Information	0	0	0	0
Meeting - CVST *	0	1	1	5
Meeting - CVST Sub-team meeting *	0	1	1	6
Meeting - Hanford Advisory Board Briefing *	1	0	0	2
Meeting/Briefing*	0	0	0	19
Meeting -Morning/Pre-Shift Brief*	275	342	413	2569
Presentation*	0	0	1	1
Safety Start	2	3	2	16
SOEN	6	10	10	36
Solution Article	2	2	5	21
Survey and Focus Group	0	1	0	1
Tours*	0	0	0	0
Vapors Weekly Update or Website Post	4	3	8	120
Video	0	0	0	1
Monthly Totals	314	391	486	3084
* Face-to-face communication				

The forecast for delivery of WRPS vapors-related communications to the workforce in FY 2019, including monthly and cumulative estimates, is shown in **Figure 6**. The data trend indicates that WRPS is on track to deliver over 5,000 vapors-related communications to the workforce in FY 2019, largely through briefings and face-to-face interactions.

Figure 6.

WRPS Vapor Related Communications Distribution/Trending Forecast Avenue April 2019



WRPS Vapors Communications

April 1, 2019, Industrial Hygiene Communication:

Subject: “Clarification – Use of FFAPR in Actively Ventilated Tank Farms”

April 1, 2019, Solutions, Issue 475:

Subject: CPPO Notebook, *Hydrocarbons*

April 8, 2019, Solutions, Issue 476:

Subject: CPPO Notebook, *COPC vs COC*

April 15, 2019, Solutions, Issue 477:

Subject: CPPO Notebook, *Exposure Assessments*

April 16, 2019, 1:05 p.m., Shift Office Event Notification:

Subject: “Entering AOP-015 for Canton, Pl, east of AX Farm. All personnel stay clear of the area. CSM”

April 16, 2019, 1:22 p.m., Shift Office Event Notification:

Subject: “All personnel in AX tent, remain in place. All personnel in AX Farm, exit through AY2 change trailer. CSM”

April 16, 2019, 1:29 p.m., Shift Office Event Notification:

Subject: “Initiated EIR-2019-018 for AX Tent AOP-015 Event. POC Becky White. CSM”

April 16, 2019, 2:34 p.m., Shift Office Event Notification:

Subject: “Response actions for the TF-AOP-015 event have been completed and the results are at or below background levels. Exiting TF-AOP-015. CSM”

April 16, 2019, ESQ&H Communications

Subject: The full-scale implementation and widespread use of FFAPR for RC-1 and RC-2 work in actively ventilated tank farms

April 22, 2019, Solutions, Issue 478:

Subject: CPPO Notebook, *Nitriles*

April 22, 2019, 10:18 a.m., Shift Office Event Notification:

Subject: “Entering AOP-015 for odors reported west of U Farm change trailer. Access restricted to U farm change trailer. All personnel stay upwind of the area. CSM”

April 22, 2019, 11:33 a.m., Shift Office Event Notification:

Subject: “Initiated EIR-2019-019 for U Farm Change Trailer AOP-015 Event. POC: Larry Dickerson. CSM”

April 22, 2019, 3:03 p.m., Shift Office Event Notification:

Subject: “Response actions for the TF-AOP-015 event have been completed and the results are at or below background levels. Exiting TF-AOP-015. CSM”

April 30, 2019, Solutions, Issue 479:

Subject: CPPO Notebook, *Preview of the Tank Farms Internal Data Access & Visualization (I-DAV) Tool*”

April 30, 2019, 10:34 a.m., Shift Office Event Notification:

Subject: “Entered AOP-015 for strong odor on south side of C Farm. All personnel stay clear of south side of C Farm until further notice. CSM”

April 30, 2019, 12:58 p.m., Shift Office Event Notification:

Subject: “Response actions for TF-AOP-015 event have been completed and the results are at or below background levels. Exiting AOP-015. CSM”

April 30, 2019, 1:08 p.m., Shift Office Event Notification:

Subject: “Initiated EIR-2019-021 for MO579 AOP-015. POC Becky White. CSM”

Engagement/Site Visits

CPPO SMEs routinely engage with groups of workers on a face-to-face basis to provide vapors-related information and to answer their questions.

- **April 3, 2019:** Dr. Chris Kuhlman and Dr. Tami McMullen attended a pre-job meeting. The doctors were introduced to the staff and discussed the sampling processes at the tank farms.
- **April 4, 2019:** Dr. Chris Kuhlman and Dr. Tami McMullen attended a POD meeting where they discussed ToxiRAEs and hazardous materials (HAZMAT) response.
- **April 18, 2019:** Dr. Chris Kuhlman attended a POD meeting where he met IHT staff and discussed a recent power outage in the tank farms that took the exhausters offline.

Focus Groups/Surveys

April 2019 Update:

In April, CPPO submitted the report on the focus group discussions with first line, field supervisors. The effort evaluated the effectiveness of the vapor-related resources provided. Specific recommendations are below, and will be used to inform and drive improvement in future vapor communications:

- Continue developing IH's communication skills and encourage proactively discussing all the potential hazards facing workers in the tank farms
- Improve the planning of program changes to facilitate a smooth roll out that includes scheduled discussions with work crews about any pending changes.
- Utilize CPPO Notebooks to focus on other IH program elements (e.g. understanding worker protection for RC1 and RC2) and worker risks beyond chemical vapors (e.g. beryllium).
- Keep vapor-related messaging direct, simple, and non-technical, and
- Promote and support improving transparency by communicating information such as the results of an AOP-15 event or results of pilot programs in a more timely manner.

The report recommendations will be placed into the Problem Evaluation Request (PER) system to ensure tracking to completion. CPPO and C&PR co-led the focus group discussions.

Additionally, CPPO distributed surveys to 285 randomly selected workers, with twice as many surveys going to workers north of the WYE barricade. The survey was designed to achieve a plus or minus 10 percent confidence in responses and will assess progress from previous years in worker understanding of WRPS vapor mitigation efforts, the effectiveness of information channels, and worker-identified topics of interest. The results will be reported later this summer.

AOP-15 Events

April 16, 2019, 1:05 p.m., Shift Office Event Notification:

Subject: "Entering AOP-015 for Canton, Pl, east of AX Farm. All personnel stay clear of the area. CSM"

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External Assessments Recommendation Status

April 2019 Update:

The recommendations status columns in **Table 3** 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 validated the deliverable(s) as 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.

CPPO has validated that 97% of the recommendations have been addressed by actions/deliverables that are either **Complete** or **Field Work Complete**. Of the 371 total recommendations:

- 89% have been verified **Complete** and are considered closed.

- 8% are verified as **Field Work Complete** and are awaiting final deliverables (i.e. documentation) to close.
- 3% have ongoing actions and are **In Progress**.
- The majority of the remaining recommendations that are In Progress are scheduled to be completed in FY 2019 and FY 2020.

Table 3.

External Assessments Recommendations Status Table

Report	As of April 30, 2019				
	Total	Validated Complete	Field Work Complete	In Progress	Pending
TVAT	117	101	10	6	0
OIG	3	3	0	0	0
NIOSH	54	45	8	1	0
EA-32	31	28	2	1	0
CTEH	24	23	1	0	0
VMEP I, II	67	63	3	1	0
Other	75	69	5	1	0
Total	371	332	29	10	0

CVAP Corrective Actions Tracking Metric

April 2019 Update:

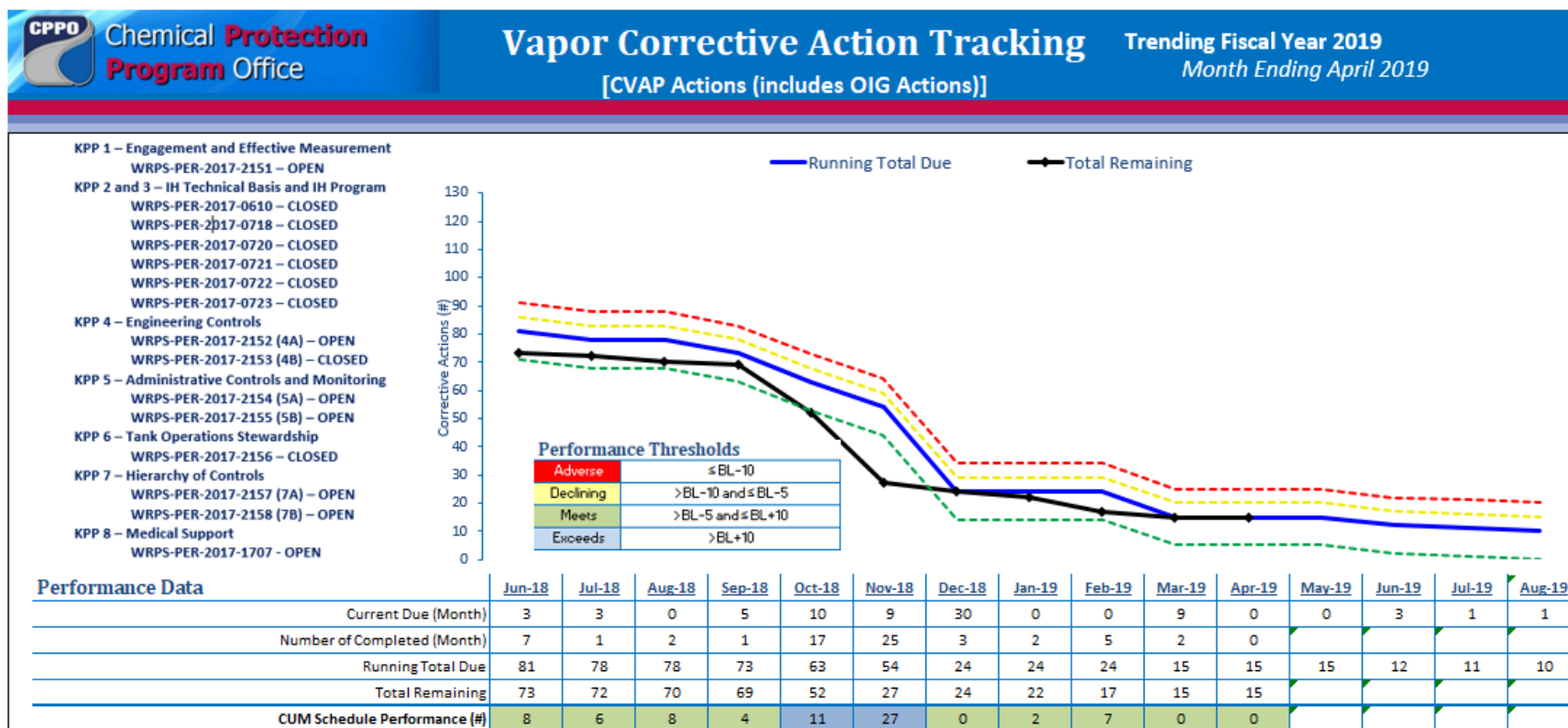
The CPPO tracks vapor-related PERs, with the goal of communicating PER resolution status. The performance data in **Figure 7** below are defined as follows:

- **Current Due** – Current corrective actions due for the month
- **Number of Completed** – 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 to be completed to the Running Total Due

The 128 draft CVAP actions are captured in the PERs listed in **Figure 7** below, including the three Office of Inspector General (OIG) actions captured in WRPS-PER-2016-2433 thru 2435, and four ORP Facility Representative Surveillance (17173-TF) actions captured in WRPS-PER-2018-0551 thru 0554. 63 TVAT actions were completed during Phase I (FY2016), and the OIG actions were completed in fiscal year (FY) 2017. Their completions are documented in the Electronic Suspense

Tracking and Routing System (E-STARS). The remaining TVAT actions have been rolled into the CVAP. The remaining recommendations from NIOSH, EA-32, CTEH and the VMEP were added to the PER system and corrective actions launched. **Figure 7**, following one corrective action due date extension, depicts the status of the CVAP total corrective actions and shows that no actions were due or completed in April; and, therefore, overall action closures are right on schedule. In addition, out of the original 128 E-STARS actions, which were identified at the beginning of FY 2016, 15 open actions remain with five actions due in FY 2019, nine actions due the 1st Quarter of FY2020, and one action due in FY 2021.

Figure 7.
Vapor Corrective Action Tracking



4. Sampling and Monitoring

Mobile Lab

April 2019 Update:

During the month of April, the mobile lab performed area monitoring in the 200 E A-Corridor and supported fugitive emissions monitoring.

Cartridge Test Reports

2nd Quarter Summary: No further updates expected/completed

Cartridge testing, to support efforts for the switch to FFAPR in the farms, was completed during FY 2018. The results of the testing were presented to the third party reviewers, STC, for review and comment. The review allowed the implementation of FFAPR in the double shell farms with the tested cartridges. The cartridge testing effort in the 1st quarter of FY 2019 focused on issuing the AX Exhauster report, titled, *Analysis of Air-Purifying Respirator (APR) and Powered Air-Purifying Respirator (PAPR) Cartridge Performance Testing on a Hanford AX Tank Farm Exhauster*, and were numbered PNNL-27860 Vol. 1 and Vol. 2. Following the issue of the AX Exhauster report, efforts focused on processing the data from BY-108 (PAPR) and BY-110 (APR) field testing. The results were included in a draft report that is in the 30 day review process.

Respiratory Protection Equipment and Surfaces: Monthly Routine Testing

2nd Quarter Summary: No Update

WRPS has a routine monthly testing program to evaluate randomly-selected respiratory protective equipment (RPE) and surfaces for chemicals and bacteria. This program involves IH wipe sampling on 60 randomly-selected RPE (face pieces and regulators) for chemical and bacterial presence from the three main mask issue and sanitizing stations (2704 HV, 278 AW, and MO 2256). Samples for chemical content are analyzed at ALS Labs in Salt Lake City Utah. Samples for bacterial content are analyzed at TriCities Labs, Kennewick, WA.

Analytical results from January, February, and March 2019's testing indicated that there were no instances of chemical disinfectant contamination on any of the RPE tested. Likewise, the results of bacterial testing on RPE and Mask Issue Station surfaces continue to indicate that they are considered exceptionally well-sanitized. Please note that there are no known federal standards or guidelines for clearance levels of either chemical (anions) or bacteria on RPE and related surfaces. Results are available on the WRPS Respiratory Protection Intranet.

- 1- RAE Systems by Honeywell, San Jose, California.
- 2 - NUCON is a registered trademark of Nucon International, Inc., Columbus, Ohio.
- 3 - Strobic Air Tri-Stack is a registered trademark of Strobic Air Corporation, Bensalem, Pennsylvania.