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CPPO

## IH and Occupational Exposure Limits (OELs)

Part 1: Industry



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## IH and Occupational Exposure Limits (OELs)

Part 2



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*CPPO Notebooks are published weekly by the CPPO. They are available for managers to review with their staff and available to the entire workforce through the intranet "Vapors Protection" tab. IH and Occupational Exposure Limits (OELs) Parts 1 and 2 are two of the over 40 CPPO Notebooks published since October 2016.*

Tank Operations Contract  
Chemical **Protection** Program Office Weekly Report  
November 16, 2017

## 1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

The revised draft Comprehensive Vapors Actions status dashboard reflecting fiscal year 2018 scope has been updated for October. The dashboard is designed to monitor the progress of the draft Comprehensive Vapors Action Plan (CVAP) Key Performance Parameters (KPP) 1 thru 7. Per the October update, the status of CVAP actions overall meets the established performance thresholds.

The Department of Energy Office of Enterprise Assessment (EA-32) team returned to WRPS last week for a follow-up review of Hanford Tank Farms vapor issues. The team hosted focus groups, facilitated individual interviews, and reviewed reports and meeting minutes as they documented WRPS's tank farm vapor improvements. CPPO continues to support EA-32's document review requests.

### CPPO Oversight and Tracking

#### **Communications Metrics Data**

##### THE CPPO NOTEBOOK

The CPPO Notebook is distributed on a weekly basis, giving managers vapor-related information with which to engage their staff.

Four Notebooks were released in October: a two-part series on furans (14 furan compounds are on the Hanford Chemicals of Potential Concern list), a summary of WRPS vapors-related accomplishments in FY2017, and the first of a two-part series on Occupational Exposure Limits (OELs).

The use of the Notebooks is tallied via email 'voting' replies sent in response to the distribution email. Since the Notebook is frequently used several weeks after distribution, the data regarding the utilization of individual editions may change over time. The data for Fiscal Year 2018 to date, show that an average of 22 managers reported making use of Notebook each week. Utilization of the CPPO Notebooks by subject is shown in **Figure 1**. Since the beginning of FY2018, the data show the Notebooks have been used by WRPS managers to present vapors-related information to the workforce 89 times.

The Notebook material is provided in multiple formats, including a subject matter expert narrated presentation. The audio and slide presentation is posted to the intranet, and available to all WRPS staff. In October, the website traffic statistics identified 578 hits accessing the Notebook audio files hosted on the WRPS intranet. This information will be presented graphically beginning next month, when more data is available to trend.

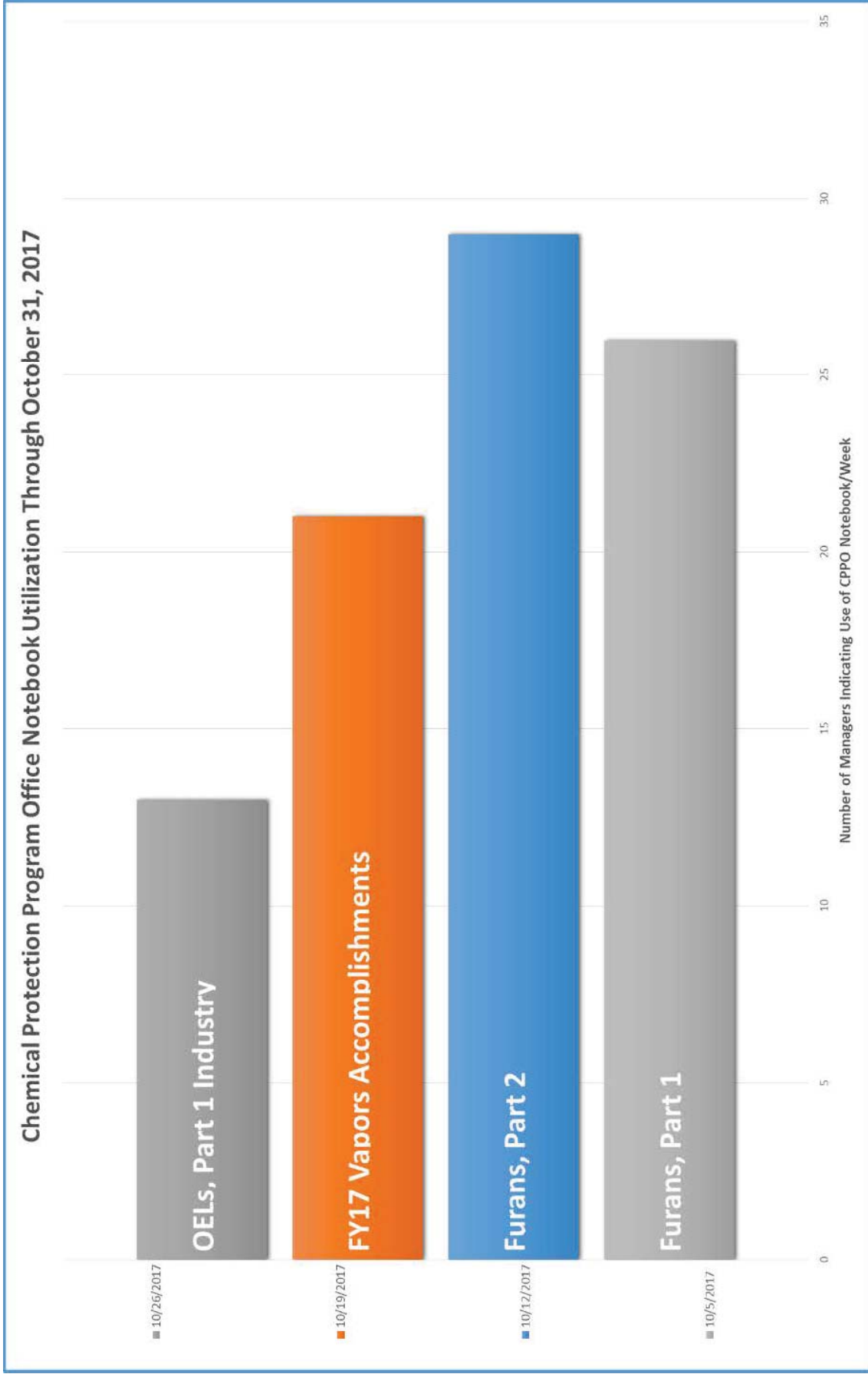


Figure 1. CPPPO Notebook Use for October 2017 (FY2018)

**Table 1. CPPO Vapors Information Products Requested from August FY2017 through October FY2018**

CPPO Vapors Information Products Requested FY18	August - FY17	September - FY17	October - FY18	FY-to-Date Total
Data Report (Monitoring Data)	14	1	10	10
Presentations (includes CPPO Notebook)	5	4	4	4
CPPO Reports and Weekly Report	5	3	5	5
Information Requests	1	0	4	4
Articles, Summaries, and Message Maps	4	1	15	15
Surveys, Focus Groups, and Recommended Actions	0	0	7	7
Website Requests/Site Updates	0	0	3	3
Videos	0	0	3	3
<b>Monthly Totals</b>	<b>29</b>	<b>9</b>	<b>51</b>	<b>51</b>

**Table 2. CPPO Vapors Information Products Completed from August FY2017 through October FY2018**

CPPO Vapors Information Products Completed FY18	August - FY17	September - FY17	October - FY18	FY-to-Date Total
Data Report (Monitoring Data)	2	3	5	5
Presentations (includes CPPO Notebook and CVST)	5	4	4	4
CPPO Reports and Weekly Report	5	3	4	4
Information Requests	1	0	0	0
Articles, Summaries, and Message Maps	7	1	0	0
Surveys, Focus Groups, and Recommended Actions	1	0	2	2
Website Requests/Site Updates	0	1	0	0
Videos	0	0	0	0
<b>Monthly Totals</b>	<b>21</b>	<b>12</b>	<b>15</b>	<b>15</b>

## CPPO REQUESTS AND PRODUCTION METRICS

The CPPO routinely 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.

In October, 51 vapors-related information products were requested from the CPPO; of these, 15 were completed and delivered in October. **Table 1** and **Table 2** show the volume of activity over the course of the month, and the three month trend. Data monitoring reports, the CPPO Notebook and CPPO Weekly Report continue to make up the bulk of the information provided.

The CPPO led a Focus Group with the CVST Tank Vapor Representatives (TVR) in October, the focus of which was to explore ways to maximize the TVR role, enhance workforce engagement, and promote the TVR's effectiveness with engaging their respective teams. **Table 1** shows that the CPPO has 7 actions linked to a Survey or Focus Group. In this instance, the pending actions are the results of the CPPO sponsored FY2017 LEAN Management Event, and focus solely on improving vapors-related communications to the workforce.

## WRPS VAPORS RELATED COMMUNICATIONS DISTRIBUTION AND TREND

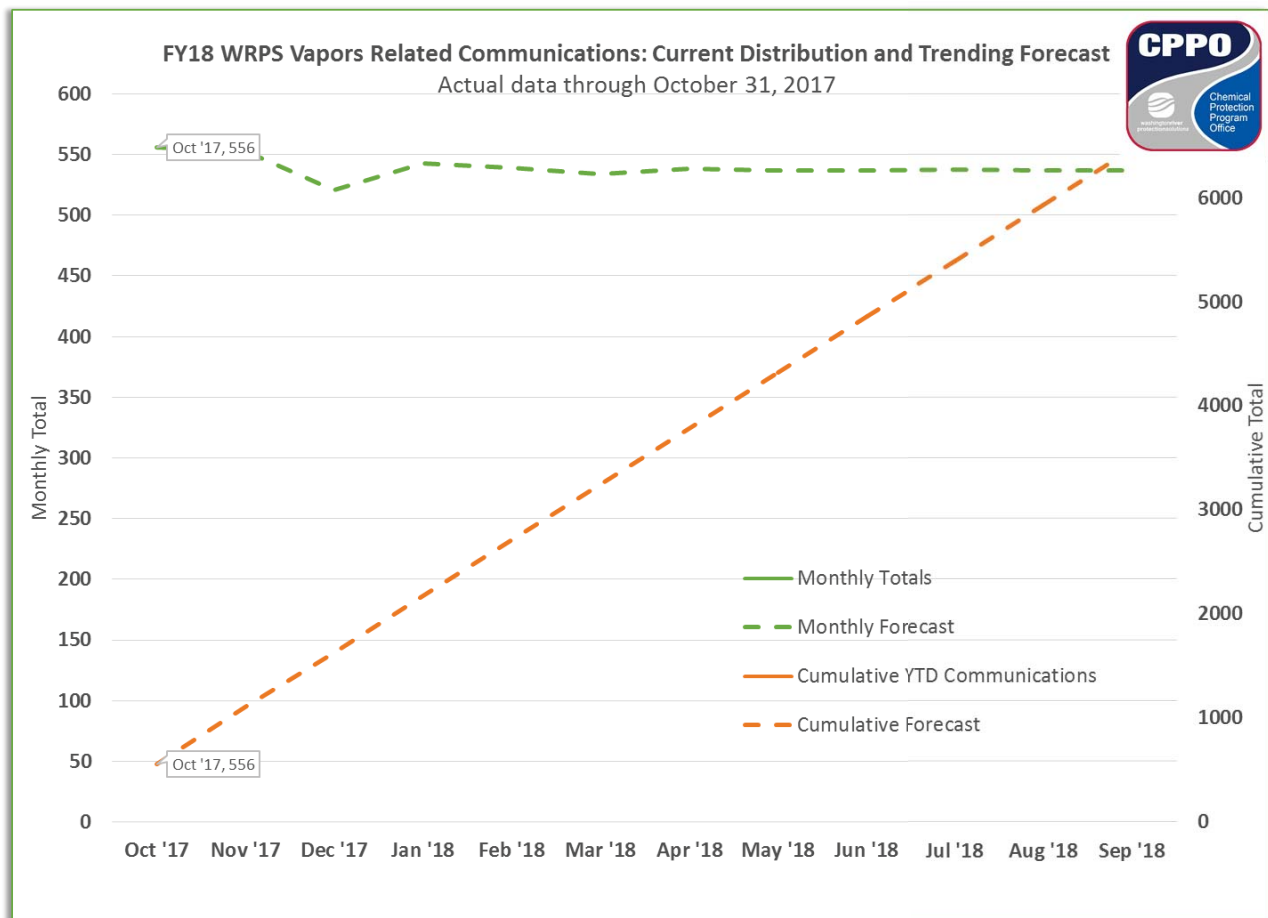
The total number of documented WRPS vapors-related communications provided to the workforce in FY2018 is shown in **Table 3**. The data for October include 556 vapors-related communications, which continue to be led by the CPPO Notebook, the number of plan-of-the-day (POD) meetings, and items posted to the HanfordVapors.com website. The three month trend shows that this level of vapors-related communication remains fairly consistent.

Table 3. WRPS Vapors Information Distribution Avenue

WRPS Vapors Information Distribution Avenue	August - FY17	September - FY17	October - FY18	FY-to-Date Total
All Employee Email/Meetings & ESHQ Comm.	5	2	9	9
CPPO Notebook*	96	76	89	89
CPPO Report and Weekly Report	5	3	4	4
Fact Sheet & Information	0	0	0	0
Meeting - CVST *	1	2	2	2
Meeting - CVST Sub-team meeting *	4	2	4	4
Meeting - Hanford Advisory Board Briefing *	0	0	0	0
Meeting/Briefing*	57	10	7	7
Meeting - Morning/Pre-Shift Brief*	414	347	415	415
Presentation*	0	0	0	0
Safety Start	0	0	0	0
SOEN	0	0	1	1
Solution Article	4	3	2	2
Survey and Focus Group	0	0	1	1
Tours*	2	0	0	0
Website/Individual Inquiry	0	0	0	0
Vapors Weekly Update or Website Post	61	8	22	22
Video	0	0	0	0
<b>Monthly Totals</b>	<b>649</b>	<b>453</b>	<b>556</b>	<b>556</b>



The FY2018 vapors-related communications delivered to the workforce, including monthly and cumulative totals, along with the forecasted trend for the year is shown in **Figure 2**. At the start of the new fiscal year, both monthly and cumulative totals reflect the 556 vapors-related communications delivered through the end of October. This data, combined with historical FY2017 data, provides the calculated forecast, which shows that WRPS is on track to deliver over 6,000 vapors-related communications to the workforce in FY2018 - largely through briefings and face-to-face interactions with the workforce.



**Figure 2. FY2018 WRPS Vapors Related Communications Distribution and Trending Forecast**

## 2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

### KPP 1. Engagement and Effective Measurement

#### Chemical Protection Engagement: Center for Toxicology and Environmental Health (CTEH)

The CTEH team members developed CPPO Notebook presentations on chemicals, including dimethyl mercury, nitrous oxide, and ammonia, as well as on topics including the process of OEL development and IH program fundamentals.

**Key Performance Parameter 1**  
Establish a comprehensive vapor management communication plan, engagement processes, and effectiveness measurements.

#### Chemical Protection Engagement: Communications

The New Technologies Chemical Vapors Solution Team (CVST) Sub-committee held a meeting on November 8, 2017.

The Fugitive Emissions Sub-committee held a meeting on November 14, 2017.

The full CVST meeting scheduled for November 8, 2017, was cancelled.

The CPPO Notebook published last week is titled *IH and Occupational Exposure Limits (OELS), Part 2*. This week's CPPO Notebook is titled *2017 Mobile Laboratory Vapor Monitoring at the Hanford Site: Monitoring during Waste Disturbing Activities and Background*.

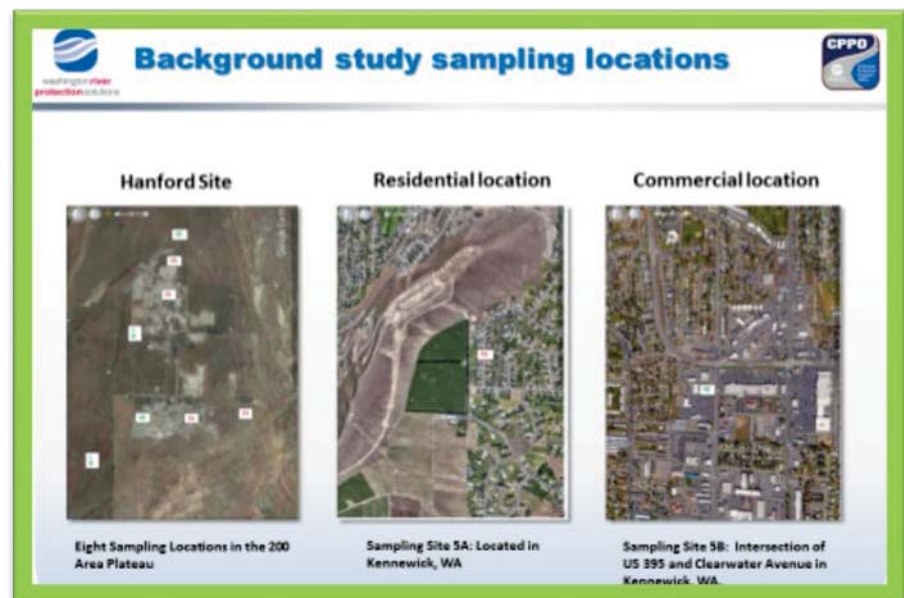


Figure 3. A page from this week's CPPO Notebook: Background study sampling locations.



#### Chemical Protection Engagement: Hanford Vapors Website Updates

- Updated COPC list
- CPPO Weekly Report - Nov. 2, 2017
- CPPO Weekly Report - Nov. 9, 2017

#### Chemical Protection Engagement: Effectiveness Measures

CPPO is developing and planning the next Vapors Communications Effectiveness Survey. The survey is in the initial stages of being drafted.

### 3. KPPs 2 and 3. IH Technical Basis and IH Program

#### Develop New or Revised Chemicals of Potential Concern (COPC)/Occupational Exposure Limit (OEL)

**Update:** The IH Manual (with specific focus given to institutionalizing the Chemical Vapors elements), and the 17 revised/new implementing documents and procedures, including the three identified above, are routing for approval through the work review flow and approval (WRAP) process. These changes will be fully implemented in FY2018.

#### Health Process Plan

**Last update 11/9/2017:** The following PNNL prepared draft reports were provided to WRPS during FY2017, completing the Health Process Plan deliverables:

- *Proposed HTFOELs for Chronic Exposures – COPCs with Regulatory Guidelines*
- *Proposed Occupational Exposure Limits for Furans*
- *Proposed Risk-Based Approach for Nitrosamine Chemical of Potential Concern*
- *Proposed Acute Exposure Concentration Limits for COPCs with Regulatory Guidelines*
- *Proposed HTFOELs for Chronic Exposures - Nitrile Class COPCs and 2,4-Dimethylpyridine*

#### 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.

- *Assessing the Potential for Chronic or Acute Health Effects from Exposure to COPC Mixtures*
- *Recommendations for Sampling and Analysis of Hanford Waste Tank Vapors*
- *Hanford Tank Vapors FY 2017 Chemicals of Potential Concern Update*

The draft reports will be evaluated using the process established in TFC-CHARTER-71, *WRPS Internal Review Panel and External Review Panel Process for Review of Health Process Plan Recommendations*, which is as follows:

- Understand the feasibility of implementation based on technology implications and operational impacts.
- Resolve any technical questions with the authors through assistance of the external expert panel.
- Provide final recommendations to DOE-ORP for changes to the IH Chemical Vapor Technical Basis.

The draft reports will be evaluated in FY2018. Following resolution of the Internal and External Review Panel's comments and evaluation, PNNL will reconcile any changes necessary in the particular reports and issue the reports as final.

#### Parity Implementation with Established Programs

**Update:** WRPS made strides in improving parity with other well established programs such as the radiological controls program. WRPS Industrial Hygiene Programs implemented the Enhanced Chemical Hazard Awareness Training (CHAT) developed in 2016, and completed a training evaluation report to capture recommendations from students on improvement. Chemical Worker Tier 1 training is complete. As planned, it is now part of the Tank Operations Contractor Hanford General Education Training program, and available to take immediately. Chemical Worker Tier 2 was coded for the computer use by Mission Support Alliance (MSA), which will roll out the product at the beginning of the second FY2018 quarter. Chemical Worker Tier 3 training was successfully piloted October 4, 2017. Comments from the pilot class have been incorporated in the lesson plan for final approval. The plan is to discontinue enhanced CHAT once the Tier 3 training is in service. Ongoing parity activities in FY2018 include enhancing IH involvement in the work planning process by the following:

- Develop and implement an IH work permit process.
- Increase IH participation in the work planning process.
- IH field presence gain through increased IH department staffing in FY2017.

#### 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.

### **✦ Central Residence for Industrial Hygiene Technicians (IHT)**

**Last update 11/2/2017: Introduction:** Retrieval Industrial Hygiene Technicians (IHT) and their first line supervisors will be relocated to a centralized mobile office (MO) building in February/March of FY2018. The MO is slated to house approximately 100 workers. According to retrieval field support, this new space will be large enough to house all retrieval IHTs and their first line supervisors. Plans are to install the MO in 200 East area near the vicinity of Baltimore Avenue and 4th street. The installed and occupied MO will satisfy KPP 3 for retrieval IHTs. KPP 3 advocates a central location for IHTs that is commensurate with other technician level employees.

## **KPP 4. Engineering Controls**

### **✦ A Farm Exhausters**

**Last update 11/9/2017: A Farm:** WRPS issued a request for a proposal from American Electric to isolate A-Farm vent ducting. Isolation is necessary to establish enough vacuum for tank ventilation. The proposal from American Electric is due this week.

### **✦ AW Stack Extension**

**Last update 10/12/2017:** The 60% design package is nearing completion and reviews are expected to start the week of 11/6.

### **✦ Strobic Air Dilution Fan**

**Last update 11/9/2017:** Strobic submitted its proposal for the factory acceptance test to WRPS for evaluation and potential award.

### **✦ NUCON Thermal Oxidation Vapor Abatement Unit (VAU)**

**Last update 11/9/2017:** Development of the bench-scale testing continued, with the following being accomplished last week:

- WRPS:
  - Issued contract revisions to PNNL and TerraGraphics for FY18 scope and funding. The PNNL and TerraGraphics contracts allow for continued support of bench-scale activities.
  - Completed all paperwork and approvals for NUCON contract for support of the propane-to-diesel conversion design. The NUCON contract allows for support of the propane-to-diesel conversion design.
  - Continued preparation of the technology maturation plan for the NUCON VAU.

**Key Performance Parameter 4**  
Complete engineering control concept demonstrations for Strobic Air Tri-Stack® and NUCON® International, Inc. thermal combustion in support of unrestricted work boundaries

- TerraGraphics:
  - Continued revising Work Plan that will detail scope, schedule and resources needed to support bench-scale testing in FY18.

## KPP 5. Administrative Controls and Monitoring

### ✦ Permanent Installation of Vapor Monitoring and Detection System (VMDS) Equipment in A and AP Farms

**Last update 11/9/2017:** Numerous activities were performed throughout the week, including the following:

- Continued resolving comments on the Phase 2 Pilot-Scale Report.
- Efforts continued on the Autosampler modification. The development of test gas standards will be delayed approximately 1-2 months as a result of modifications required on the testing equipment. This will not impact completion of the factory acceptance testing scheduled for 2018. Additionally, efforts are on-going to collect samples during upcoming waste transfers to support the development of the Autosampler.
- The Ultra-Violet Fourier transform infrared spectroscopy (UV-FTIR), currently installed at AP Farm, is going to be turned over to operations. A draft functions-and-requirements is being prepared that will capture the results of equipment set point discussions. In addition, efforts are on-going to collect samples during upcoming waste transfers to support development of VMDS equipment.

#### 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.

### ✦ Stack and Boundary Monitors

**Last update 11/9/2017:** Stack monitor activities included:

- Procurement of the 13 Ultra Violet- Differential Optical Absorption Spectrometer fence-line units was delayed as a result of questions raised by the WRPS Quality Assurance (QA) department. Approximately a 1 month slip in delivery is expected, but will not impact any scheduled activities. Procurement of the stack monitors is delayed as well due to the QA issue; however, this delay is not anticipated to impact any field installation activities either.
- WRPS sent comments back to the vendor (Cerex) on the 702-AZ stack monitor design, and is awaiting the final version to initiate the WRPS design revision process.

- The plant force work review ruling was determined on the stack installation activities, and the work will be performed by construction forces.

#### ✦ Establishing Safe Unrestricted Boundaries

**Update:** The updates for Establishing Safe Unrestricted Boundaries is being reworked for future publications.

#### ✦ Public Address System

**Last update 11/2/2017:** Excavation work at C Farm resumed. Excavations are scheduled to be finished the first week in November. AP Farm excavations are to follow.

### KPP 6. Tank Operations Stewardship

#### ✦ Pilot SST Stewardship Program

**Last update 11/9/2017: Remote Monitoring**

**Equipment:** A proposal for the TY Farm automation design was submitted to WRPS, which was reviewed and returned to the subcontractor for clarification. The level and temperature bench-scale tests have been delayed by approximately 2 weeks as a result of higher priority work. This delay is not expected to impact the design completion date.

**Update: FY LEAN 2015: Report/Work Location Evaluations:** A detailed draft outline of the SST Stewardship Execution Strategy Document has been prepared. The outline addresses all issues identified in the FY2015 LEAN event, in addition to numerous other activities which may help reduce SST entries.

#### 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 11/2/2017:** Prior to June 30, 2017 cartridge testing was conducted at the AP Stack, A-101, 702-AZ, AN Exhauster, AW Stack, BY-108, AX-101, SX-101 and SX-104 tank farm locations. PNNL reports are complete for all of the above except for SX Farm. Copies of the completed reports are available [HERE](#). In August, cartridge testing was performed at the AX Stack. The PNNL reports for the SX Farm and the AX Stack are currently being written. More information on these cartridge tests will be made available as the reports go final. PNNL has developed a summary report rolling up the information contained in the cartridge testing reports issued to date. This summary report is currently being reviewed by WRPS management. The final

#### Key Performance Parameter 7

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



summary report is expected soon. Cartridge testing for FY-2017 was completed at the end of August. Cartridge testing for FY2018 is slated to begin in January/February of 2018.

The third party (STC) review has indicated that use of full face air purifying respirators (FFAPR) equipped with the Scott 7422-SC or the Scott 7422-SD1 cartridge is acceptable when it is supported by hazard assessment conducted on a farm by farm basis at the following locations:

AP Farm	AZ Farm	A-101	AW Farm
241-AY	SY-102	AN Farm	

To date, the use of FFAPR is limited to SEG-1 activities.

### Mobile Laboratory **No Update.**

### Personal Vapor Monitor

**Last update 11/9/2017:** Approximately 80 liters of material was collected from the AP Farm stack to support the upcoming C<sub>2</sub>Sense laboratory test at RJ Lee. The test, which is scheduled for the week of 11/6, will be used to prepare the monitor for future field testing and deployment. Laboratory testing continued on the prototype sensor chip. Testing focused on exposing the sensor to humidity and ammonia, which allows for development of the algorithm needed to convert a raw signal to concentration.

## **KPP 8. Medical Support**

The scope of KPP-8 is to support RL medical program enhancements in conjunction with other Hanford Site organizations.

### **Key Performance Parameter 8**

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