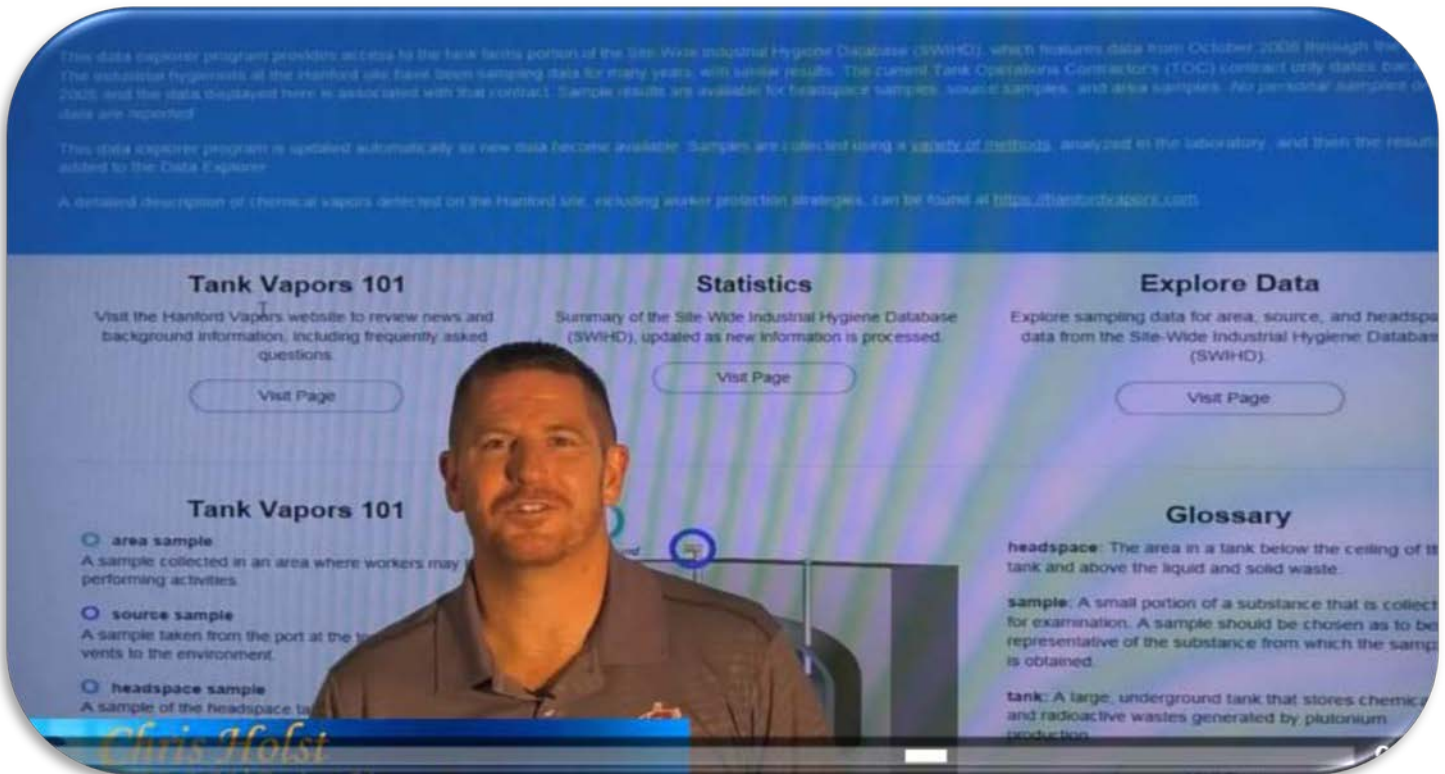




washington **river**
protection solutions



Mr. Chris Holst of the Chemical Protection Program Office appears in a video that explains several web-based resources available to employees on the topic of chemical vapors. The video was shown at the November 28, 2017, Chemical Vapors Solution Team meeting, and featured in the Solutions Issue 418.



Additionally, Mr. Holst leads the Data Access Visualization Tool Steering Committee.

**Tank Operations Contract
 Chemical Protection Program Office
 Weekly Report
 December 14, 2017**

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

The draft Comprehensive Vapors Action Plan (CVAP), developed by Washington River Protection Solutions (WRPS) and the Office of River Protection (ORP), includes actions that address the recommendations made by Tank Vapor Action Team (TVAT) and the other external assessments performed through FY2017. Significant progress has been made to address these recommendations; the current estimate is that over half had been addressed by the end of FY2017. In order to validate this status, the Chemical Protection Program Office (CPPO) has undertaken an exercise to review the status of each recommendation. The data, in **Table 1** below, shows that of the 337 total recommendations, 96 have been verified to be complete and closed; 40 have completed the field work stage and are awaiting documentation to close; 25 are still in progress; and 176 recommendations have yet to be reviewed by the CPPO as part of this assessment.

Completion Status of External Assessments Recommendations

Report	As of December 7, 2017				
	Total	Completed	Field Work Complete	In Progress	Pending*
TVAT	117	69	6	4	38
OIG	3	3	0	0	0
NIOSH	54	6	7	6	35
EA-32	28	4	6	0	18
CTEH	23	2	2	2	17
VMEP	43	4	6	6	27
Other	69	8	13	7	41
Total	337	96	40	25	176

***Pending** indicates that recommendations/actions have not been viewed by CPPO for validation.

CPPO Oversight and Tracking

Cost and Schedule Metric

Ongoing vapor projects supporting the draft Comprehensive Vapor Action Plan (CVAP) Key Performance Parameters (KPP) are still moving forward as planned, while new projects are in the design phase. Spending will begin to pick up as procurements start going out to vendors near the end of the first quarter. Year to date, \$39.5M has been spent implementing the CVAP KPPs. Eighty-three and a half percent (83.5%) of our revised not to exceed (NTE) value of \$47.3M has been spent. Monthly costs are expected to remain at about \$4M per month for the

remainder of the year. At this rate we expect the NTE to last through December 2017 into January 2018.

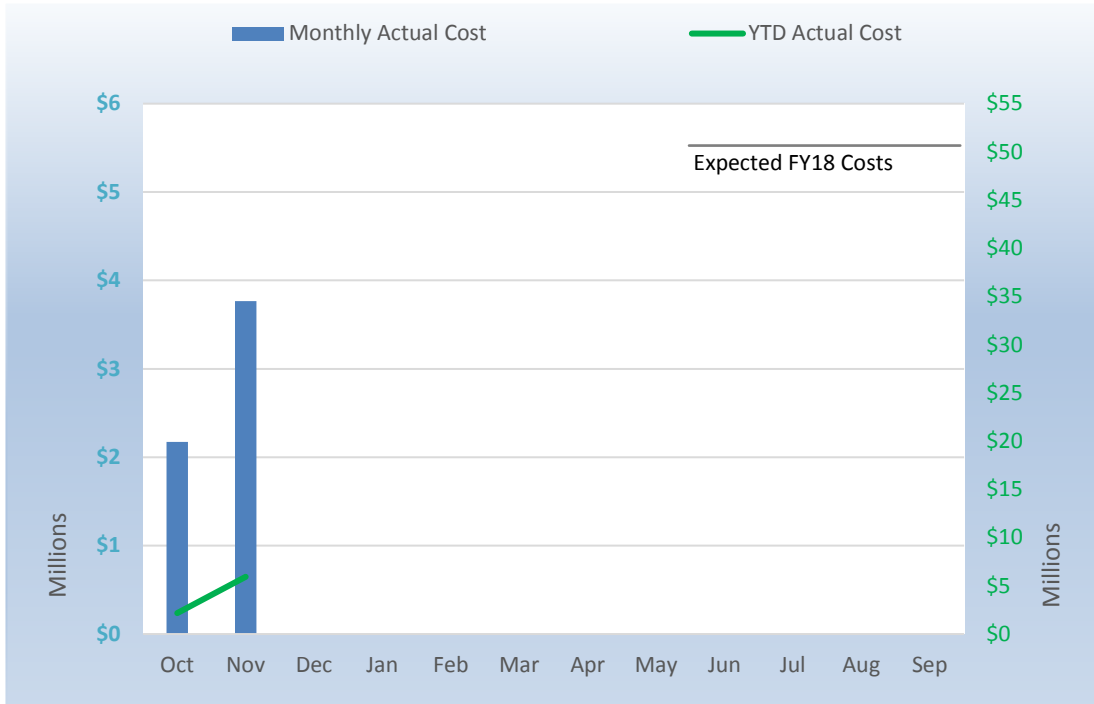


Figure 1. Cost and Schedule Metric

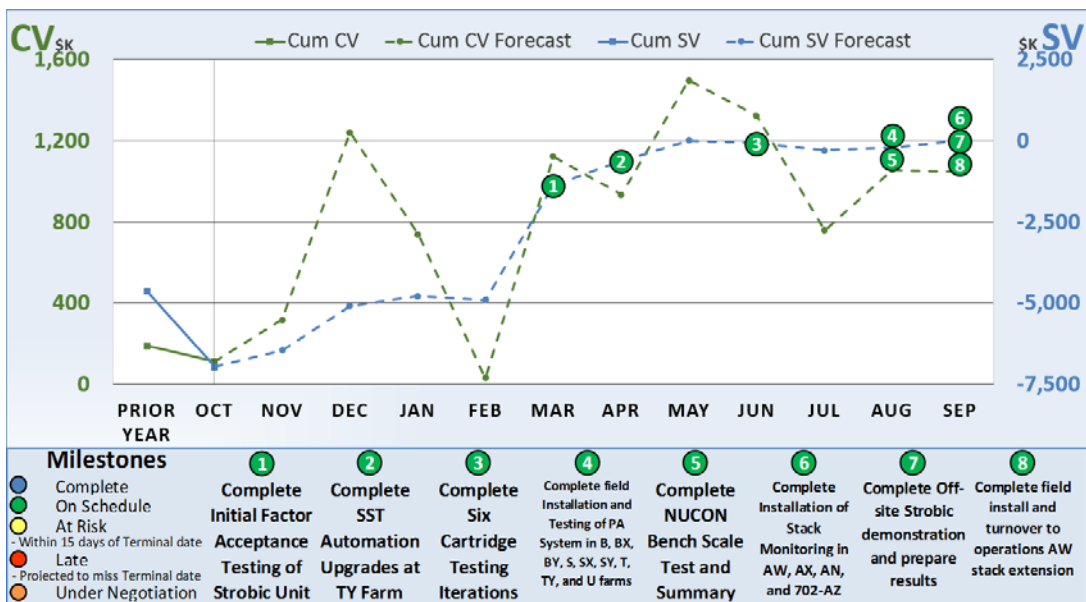


Figure 2. FY2018 Cost and Schedule Variances for the Draft CVAP

2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

KPP 1. Engagement and Effective Measurement

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

A CTEH team member attended the Project's Industrial Hygiene (IH) Plan-of-the-Day meeting every work day last week. After the daily shift report was discussed and work assignments were distributed, time was afforded CTEH and the workers to discuss questions and concerns. CTEH attended the pre-job meetings for the AX Sluicer removal project. An electrician asked about the availability of the mobile lab data. CTEH explained that a CPPO Notebook and website summary of FY2017's data is forthcoming.

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

✚ Chemical Protection Engagement: Chemical Vapors Solutions Teams

The CVST Chemical Cartridge Sub-committee met on December 6, 2017.

The topics of discussion during this sub-committee meeting included:

- The hazard assessment for SY Farm was completed and approved by STC.
- The hazard assessment for AP Farm is being conducted. This and other implementing documents will be forwarded to STC for its approval. Upon STC's concurrence, the roll out process will commence for AP Farm for SEG 1 and SEG 2 activities on the same lines as SY Farm.
- STC and WRPS have concurred on the boilerplate for the hazard assessment process. Upon successful rollout of FFAPRs at the AP Farm, future hazard assessments could be approved within WRPS. This concurrence on hazard assessments would speed up FFAPR implementation at other double shell ventilated tank farms. A rollout schedule for the remaining farms is currently being discussed.

The CVST SAFEIIT Sub-committee, colloquially known as the Fugitive Emissions Sub-committee, met on December 6, 2017.

✚ Chemical Protection Engagement: Communications

Last week's CPPO Notebook is titled *Vapor Management Expert Panel (VMEP) Second Periodic Report Summary*. This week's CPPO Notebook is titled *NUCON® Vapor Abatement Unit: Engineering-Scale Testing (Key Performance Parameter #4, Engineered Controls)*.

Message from Mark, News from the Project Manager, distributed as an all-employee email on December 7, 2017, delivered the news that WRPS and HAMTC “agreed to allow use of full-face air-purifying respirators (FFAPRs) in Hanford’s SY Farm for specific work evolutions. The decision is consistent with the Memorandum of Agreement (MOA) for use of respiratory protection between WRPS and HAMTC issued in August 2016.”

Chemical Protection Engagement: Worker Feedback

The weekly **HAMTC Safety Representatives/CPPO Interface** meeting was held on December 6, 2017. This group has been meeting for a year. It is always the focus and intention of CPPO and the HAMTC Safety Representatives to afford workers the opportunity to investigate contemporary vapors-activities in this meeting.

The ESH&Q Chemical Protection Integration Manager, Mr. Steve Killoy, attended the December 6 meeting. As questions were asked about boundaries, he explained the process being developed to address boundaries and exposure assessments. The CTEH Team members, versed in the rules of Health Insurance Portability and Accountability Act of 1996 (HIPAA), were able to answer a few questions posed by the attendees about the difficulties of sharing medical information. The group offered topics of interest for future discussions and/or communications.

The permanent installation of Vapor Monitoring and Detection System (VMDS) equipment in A and AP Farms is a draft KPP 5 tenet. The Autosampler will have the capability of collecting real-time samples using an Ultra Violet- Differential Optical Absorption Spectrometer (UV-DOAS) near real-time samples using a Gas Chromatography-Flame Ionization Detector (GC-FID) and the ability to collect samples for laboratory analyses. Efforts are on-going to modify the Autosampler. Key WRPS IH personnel are being briefed on Autosampler activities and their feedback is sought.

Chemical Protection Engagement: Hanford Vapors Website Updates

- [APRs approved for use in SY Farm](#)
- [CPPO Weekly Report - Dec. 7, 2017](#)
- [CVST Minutes - Nov. 29, 2017](#)

Chemical Protection Engagement: Effectiveness Measures

CPPO is developing the next Vapors Communications Effectiveness Survey. The survey is in draft and will be reviewed at a future HAMTC Safety Representative/CPPO Interface meeting.

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, were routing for approval through the work review flow and approval (WRAP) when a reviewer identified information that needed further clarification. The tech basis is currently being revised to incorporate these clarifications, after which the document will be re-routed through the WRAP again. The expected delivery date of the revised tech basis is very early in the 2nd Quarter of FY2018.

Health Process Plan

Last update 12/7/2017: Currently, all but one of the following PNNL-prepared reports has been submitted to the Internal Review Panel (IRP):

- *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 Limits for COPCs with Regulatory Guidelines*
- *Proposed HTFOELs for Chronic Exposures - Nitrile Class COPCs and 2,4-Dimethylpyridine*
- *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*

Still in progress is *Assessing the Potential for Chronic or Acute Health Effects from Exposure to COPC Mixtures*. This study incorporates the chemical mixtures modeling, Acute Transient Exposure Concentration (TEC) Standard Operating Procedure (SOP) & Initial Screening, and a potential approach to fill gaps in acute TECs and mixture effects. After the IRP review, and before finalizing the submittal to WRPS, the studies will be reviewed by an external expert panel.

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.

✦ Parity Implementation with Established Programs

Last update 12/7/2017: Chemical Worker Tier 1 training course is complete. It is now part of the Tank Operations Contractor Hanford General Education Training (TOC GET) program, and included as part of WRPS's all-employee annual training. It is also a stand-alone class that can be taken at any time, by anyone on site. The Chemical Worker Tier 2 training course is complete too, and is coded for the new computer based training (CBT) computer system that Mission Support Alliance (MSA) will roll out at the beginning of the 2nd Quarter, FY2018. Tier 2 training is aimed at those employees who are located on site (200 East/West). 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. This class is focused on workers who enter the farms and it will be an ACES requirement. Currently, Training and IH is identifying instructors to teach the Tier 3 class. A "train the trainer" style class is tentatively scheduled for Tier 3 instructors in mid-December. Tier 3 training is scheduled to begin in mid-January with enhanced Chemical Hazard Awareness Training, known as CHAT, to be discontinued at that time. Training is working with Radiological Controls (RADCON) to ensure that ACES is updated with the new courses to ensure a seamless transition for workers that require farm entry.

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)

Update: Retrieval Industrial Hygiene Technicians (IHT) and their first-line supervisors will be relocated to a centralized mobile office (MO) building. 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 on 4th Street near 218A across from PUREX. 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. Delivery of the 10 wide mobile office building for the IHTs is slated for February 2018. Move-in is expected sometime in May or June.

✦ Air Dispersion Modeling

Last update 12/7/2017: The air dispersion modeling team established an algorithm to combine emissions from multiple sources, and are in the process of developing documented base emission rates for selected locations based on Vapor Control Zone (VCZ) reports, the Site Wide Industrial Hygiene Database (SWIHD), cartridge testing data, and air permits. Test cases of the model are being conducted

using single emission sources (242-A Evaporator) and multiple emission sources (AP, AW, and AN stacks). These cases are being used to evaluate low wind speed periods and assess the periods when AOP-015 events occurred. The final test cases reports are expected to be delivered to WRPS the 2nd Quarter of FY2018.

KPP 4. Engineering Controls

A Farm Exhausters

Last update 12/7/2017: A Farm: During the month of November, American Electric was awarded a subcontract to isolate the A Farm ventilation ducting; the mock-up activities for the duct isolation commenced shortly thereafter. In addition to the ducting activities, a preliminary engineering design for relocating the exhausters is on-going and will be completed in late December. The design will enable the request-for-proposal (RFP) for construction of the exhauster pad and exhauster erection to be completed.

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

AW Stack Extension

Last update 12/7/2017: The 60% design package was issued for review and comments were submitted. The majority of the comments were resolved, and the design is on-track to be completed the week of 12/3. A contract was awarded to Terragraphics in mid-November for dispersion modeling support. The scope of the contract is to identify the dispersion (or plume effects) from the stack's current elevation of 27 feet to its new elevation of 60 feet.

AN Stack Extension

Update: Management has agreed to provide funding to evaluate the AN Exhauster for stack extension. Engineering evaluations should begin in February to determine the optimum height required for the stack and whether the existing superstructure can support that stack height increase.

Strobic Air Dilution Fan

Last update 12/7/2017: In late November, a contract was awarded to Strobic to support factory acceptance testing (FAT), and Strobic began fabricating equipment. The FAT is currently scheduled to be performed at Strobic's facility in March 2018. In addition, the test plan statement-of-work (which will be used to support integrated testing in late spring/early summer 2018) was approved last week.

NUCON Thermal Oxidation Vapor Abatement Unit (VAU)

Last update 12/7/2017: Development of the engineering-scale testing continued, with the following being accomplished during the reporting period:

WRPS:

In early November, WRPS sent a request for proposal to NUCON for a diesel conversion kit design. Shortly thereafter, NUCON submitted its proposal, and a technical evaluation was performed. Near the end of November, WRPS awarded a contract to NUCON to proceed with its design of the diesel conversion kit. WRPS continued to prepare the technology maturation plan for the NUCON VAU.

▪ TerraGraphics:

Issued a revised work plan detailing the scope, schedule and resources needed to support the engineering-scale testing in FY2018. TerraGraphics issued procurement documents on the test trailer rental to WRPS for approval. Throughout November, the subcontractor continued preliminary work on the revised functions and requirements document. In mid-November, Terragraphics continued work on the electrical rack and test trailer procurement documents and requested WRPS approval to issue the contract for the electrical rack. In late November, the contract for fabrication of the electrical rack was issued to American Electric.

▪ PNNL:

PNNL continued to work on the draft of the test plan, submitting the plan to WRPS for review around Thanksgiving. Last week, WRPS completed the reviews and returned them to PNNL for resolution. PNNL continued to identify equipment necessary to the equipment-scale test. The Fourier transform infrared spectroscopy (FTIR), PTR-MS, and pre-concentrator have been deemed acceptable to support testing. The PTR-MS has been moved to PNNL's Central Lab; functional checks are on-going. The pre-concentrator will be moved to the PNNL Central Lab the week of 12/4.

In early November, PNNL evaluated COPC gas simulants with the gas vendor. The final selection of the simulated gases was made in late November. Procurement of the COPC gas simulant is tentatively scheduled to be placed the week of 12/4.

▪ NUCON:

In mid-November, NUCON submitted a diesel conversion kit design proposal, which was subsequently awarded towards the end of November. NUCON immediately started working on the design and fabrication of the diesel conversion kit.

KPP 5. Administrative Controls and Monitoring

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

Update: Numerous activities were performed throughout the week, including the following:

- Comments on the Phase 2 Pilot-Scale Report were resolved, and approvals are forthcoming.
- Efforts are on-going to schedule a meeting between the Chief Technology Office (CTO), Projects, and Operations to determine a path forward for VMDS equipment currently in A and AP Farms. At the weekly VMDS Integrated Projects Team Meeting, the Project Manager solicited feedback from his staff on methods for transitioning VMDS equipment.
- Efforts are on-going to develop coverage maps for A, AP, and AN Farms, and the Evaporator.
- Efforts are on-going to modify the Autosampler. In support of developing test gas standards, samples were collected during recent waste disturbing and quiescent (inactive or dormant) activities at AP Farm. The samples were sent to an off-site vendor for analysis. GC-FID, which will be used to analyze the samples, is currently being set-up to support analyses. Efforts are also underway to brief key WRPS IH personnel on Autosampler activities and solicit their feedback.
- Probes, pumps, UV-DOAS, gas standards, and other items needed to develop the gas standards and Autosampler are being procured. In parallel with these activities, design drawings for the test bed manifold and Hanford E-Skid are being prepared.
- The Ultra-Violet Fourier transform infrared spectroscopy (UV-FTIR), currently installed at AP Farm, is going to be turned over to operations. The draft F&R is in technical edit. Reviews are scheduled to start next week. This is a key document that will provide direction for much of this project moving forward. In addition to the F&R, ARES continues to prepare a calculation that refines the set point for ammonia. The calculation is headed to review too. Turnover activities include the development of training plans and preventive maintenance sheets.

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

Update: The procurement of 13 UV-DOAS fence-line units continues to be delayed pending implementation of a WRPS approved Quality Assurance (QA) program. It has been suggested that a third party QA program could support procurement efforts.

Establishing Safe Unrestricted Boundaries

Last update 12/7/2017: The scope of work defined in the draft CVAP under KPP 5 is to define unrestricted work boundaries, implement monitoring on active stack ventilation, and unrestricted boundaries in the A Farms to provide defense-in-depth. A full write-up is forthcoming in the CPPO 1st Quarterly Summary.

Public Address System

Update: The A Farm functional testing was completed. Efforts are now focused on completing the A, AX, AY, and AZ Farm's PA systems to Operations by the week of 12/18. The excavation and conduit installations at both C Farm and AP Farm continue.

KPP 6. Tank Operations Stewardship

Pilot SST Stewardship Program

Update: Remote Monitoring Equipment: Efforts have been started for both the TY-Farm temperature and surface level designs, with drafts currently expected to be completed by early February 2018. Bench-scale activities were completed and procurement of both the temperature and level equipment have been initiated. Discussions with MSA also were initiated to help define its scope and schedule for supporting communications activities. Last week, at the CVAP FES meeting, it was announced that TX-Farm would be the second SST farm to be designed in FY2018. For this second SST, only the design needs to be completed by the end of FY2018.

Update: FY LEAN 2015 Report: A draft of the SST Stewardship Execution Strategy Document is being prepared, with the first draft expected the week of 12/18. Currently working to assemble team that will provide necessary feedback to review this first-of-its-kind document.

Work Location Evaluations: Recently, it was announced that the Work Location Evaluation Report would not be included in the SST Stewardship Execution Strategy Document. Instead, this would be addressed in a separate correspondence, which has already been started. Management recently met to review the current draft correspondence, define the remaining scope, and assign

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.

responsibility for completing the correspondence. The remaining work scope was defined and a tentative completion date is 1/31/18.

KPP 7. Hierarchy of Controls

Cartridge Testing and SCBA Alternatives

Last update 12/7/2017: 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 went final in September 2017. 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) and WRPS agree that use of FFAPR equipped with the Scott 7422-SC or the Scott 7422-SD1 cartridge is adequate when supported by a hazard assessment conducted on a farm by farm basis. The schedule for FFAPR is currently being built.

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

FY2018 scope is being finalized and the RJ Lee Mobile Lab activities continue to be on-hold until a new contract is issued.

Personal Vapor Monitor

Last update 12/7/2017: November saw the successful completion of the integrated field test, including testing of the prototype readers and sensor chip, at the R. J. Lee facility in Pasco, Washington. C₂Sense and WRPS completed review and comment resolution of the technical report summarizing the test activities. A notable omission from the final report was the conversion of raw conductance data from the sensor material to ammonia concentration values. C₂Sense intends to develop the algorithms necessary to perform this function during the FY2018 field test in the tank farms. Towards the end of November, prototype units were shipped to WRPS as a final deliverable of the existing contract. These prototype units will be used to support the FY2018 field test at tank farms. C₂Sense also started working

on the proposal for the next phase of the project, which is to provide support for the FY2018 field test.

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.