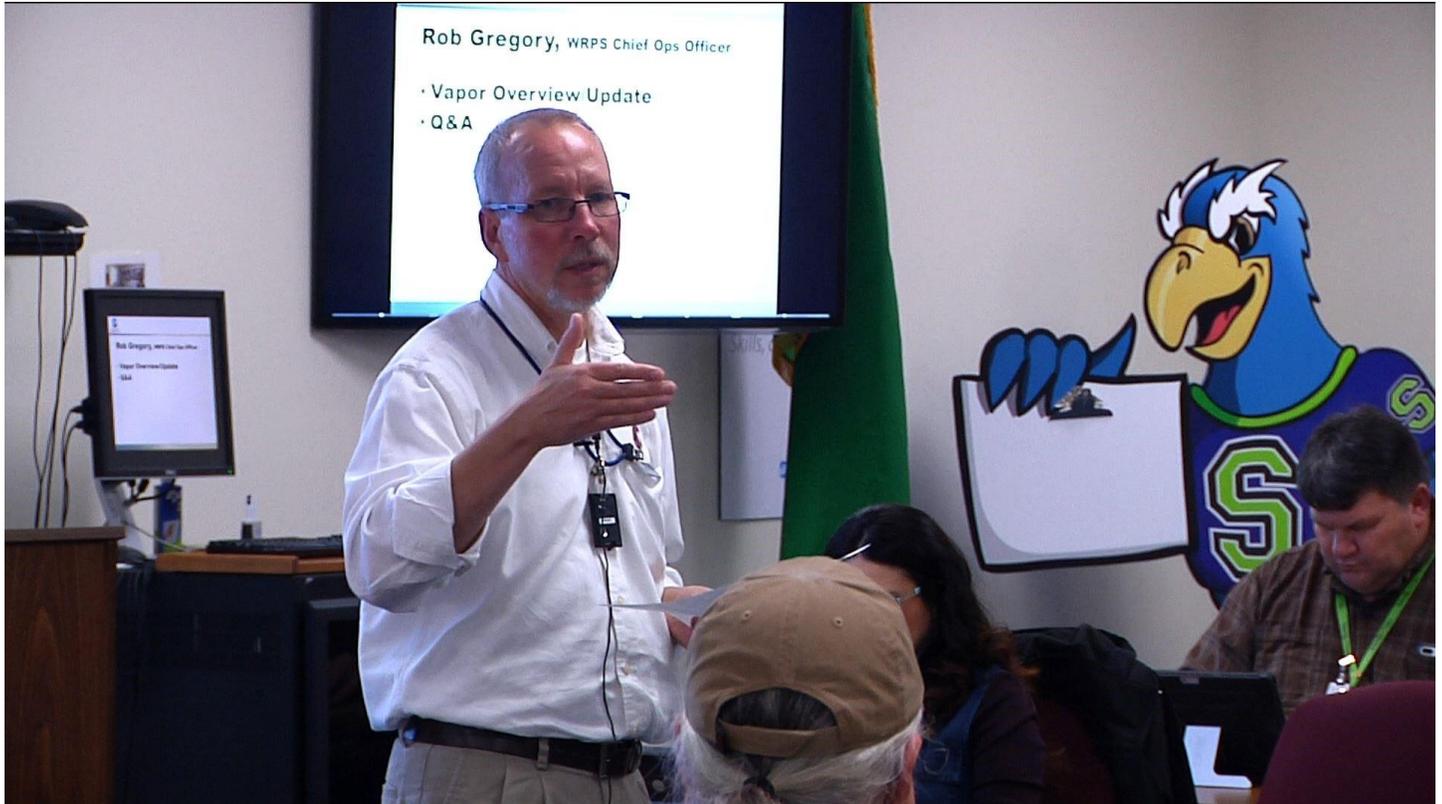




washington **river**  
**protection** solutions



*CVST March Meeting – WRPS Chief Operating Officer Rob Gregory*

**Tank Operations Contract  
Chemical **Protection Program** Office Weekly Report  
& Fiscal Year 2017 Quarter 1 and Quarter 2 Summary  
April 13, 2017**

Department of Energy Contract NTE 16-TF-0089

## 1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS Quarterly Summary (Fiscal Year 2017 Q1 & Q2)

The Chemical Protection Program Office (CPPO) was established in Oct 2016. The office is staffed with technical subject matter experts, project managers, and communications expertise to provide vapor mitigation tracking and reporting, and communication oversight and integration. The CPPO is responsible for addressing Key Performance Parameter #1 (Communications) of the Comprehensive Vapor Action Plan (CVAP). In the first two quarters of FY2017, the CPPO has made significant progress toward its mission. The following description of CPPO's ongoing scope and contributions to the vapors efforts were initiated and maintained by a newly established program office that, at the end of Q2 FY2017, is just 6 months old. Now that the CVAP has laid the foundation for FY17 – FY18 activities, the momentum is set for full integration of the program office into established and understood roles and responsibilities in support of chemical vapors activities at Hanford.



IH Technician in Training with Dr. Covello

In the first two quarters of fiscal year 2017, CPPO began facilitating and contributing to multiple WRPS communication efforts on a regular basis. As part of a vapors communication improvement initiative, the HanfordVapors.com website was revamped in September 2016.



Since then, the CPPO has been a primary content provider to the vapors-specific website. CPPO also contributes articles to *Solutions* and the *Vapors Weekly Update* periodicals. In Q1, a total of 37 content contributions were made to the 3 platforms; in Q2, 29 contributions were distributed to the 3 platforms. Enhancements to the website are planned, including a publically accessible data link which maps the location

of tank waste, and links the tank to pertinent industrial hygiene information. To deliver this feature, the CPPO has contracted with Pacific Northwest National Laboratory (PNNL) to develop the PHOENIX Data Explorer (Tank Vapors Data Access and Visualization program) for use on the HanfordVapors.com website. At the end of Q2, Phase 1 of this project, a web interface that successfully integrated Hanford site data, was complete.

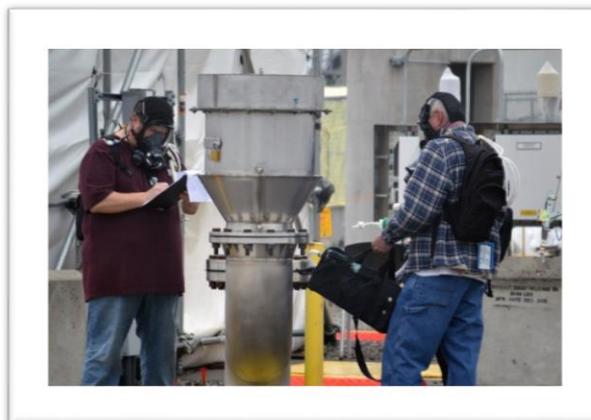
The CPPO has teamed with multiple technical subject matter experts working on vapors activities to create vapor-related communication materials. The materials are distributed to WRPS managers who in turn share it with their staff. The cooperative efforts of CPPO and managers provides timely and transparent updates to the workforce. In Q1, 10 CPPO Notebook or Chemical Vapors Solutions Team (CVST) presentations were provided; in Q2, an

additional 15 presentations were distributed. The CPPO SMEs also supported vapors-related activities through Message Mapping which effectively communicates complex topics, such as the use of full-face air purified respirators (FFAPRs), to the workforce. An Abnormal Operating Procedure-015 (AOP-015) Summary Report was developed to enhance communication surrounding these notifications. The Summary Report is a template that assists the Shift Office in accurately capturing the most important information about the abnormal event. With timely, accurate and comprehensive information from the Shift Office, management can transparently cascade the information to the workforce.

CPPO staff participates in multiple vapors-related project meetings. The CPPO served in an advisory capacity, or provided technical support, to many vapors related efforts, including:

- Meeting with Site staff when requested to address vapors-related questions or concerns
- Performing tank vapor and industrial hygiene monitoring data analysis
- Participating in VMDS equipment and potential conceptual design
- Providing training and education on vapors-related issues
- Leading a technical writing skills improvement course for engineering and other interested staff
- Participating in Health Planning Process (HPP) meetings
- Contributing to the Integrated Vapors Sampling Strategy Data Quality Objective (DQO) process
- Engaging in a weekly information exchange with HAMTC safety representatives

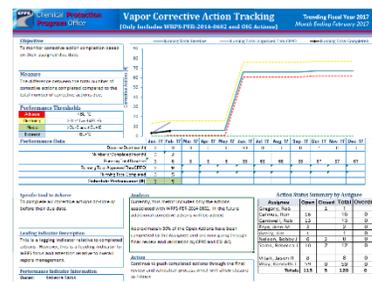
Additional CPPO support to WRPS management in the first half of FY2017 included participation in 29 CVST or CVST sub-committee meetings, as well as several 'Bringing the CVST to the Workforce' meetings aimed at facilitating vapors-related discussion, and increasing management presence and interaction with field staff. The CPPO is a member of the WRPS-DOE Integrated Project Team, and has made significant contributions the Comprehensive Vapor Action Plan (CVAP).



*March 14, 2017 - AP Farm Full Face-Air-Purifying Respirator*



In order to provide accurate and meaningful vapor mitigation tracking, the CPPO provided a critical review of all recommendations in recent WRPS external assessments, including TVAT, NIOSH, DOE-OIG, EA-32, and the Center for Toxicology and Environmental Health, LLC (CTEH). A database was developed to track these recommendations, and at the end of FY2017 Q2, 330 separately identified actions were identified and logged. Working with the WRPS Contractor Assurance organization, these are being entered into the Problem Evaluation Requests (PERs) system and will be tracked to resolution.



The CPPO develops and produces a weekly newsletter narrating the CPPO activities, providing metrics on cost, schedule, communications and vapors related PERs and describing the eight Key Performance Parameters (KPPs) in the CVAP. The eight KPPs are: Communications, IH Program and Technical Basis, Engineering Controls, Administrative Controls & Monitoring, Tank Operations Stewardship, Hierarchy of Controls, and Medical Support. Included in the Weekly Report are the vapors mitigation program plan risks, an itemization of the articles posted on HanfordVapors.com, and write-ups of unique events such as an AOP-015. Nineteen editions have been delivered since CPPO's inception.

The many FY2017 activities heretofore described directly address two of the three recommendations made in the DOE-OIG assessment: creation of a database for tracking the status of vapor-related commitments, and improve communications to staff regarding prior vapor abatement proposals (CPPO developed report was provided on the HanfordVapors.com website) and the rationale for acting on them, or not.

The CPPO led the Hanford Vapors Usability Focus Group website assessment in Q1, conducting an initial assessment of staff impressions of the usefulness of the HanfordVapors.com website. CPPO is currently working to realize the seven areas of improvement that were identified, including follow-up documentation on an AOP-015 event, and improving the interactive AOP-015 map. At the end of Q2, a follow-up assessment was conducted to investigate the effectiveness of current vapors-related communications and products to the workforce. A mailed survey was distributed to a random sample of staff, with an approximate participation rate of 43%. The analysis of the results will be presented in Q3, and will inform communications planning efforts for the remainder of FY2017.

During the first half of FY2017, the CPPO developed effective relationships within and external to the company (ISMS, C&PR, IH, HAMTC and the Building Trades unions, project management, contractor assurance, and with other Site contractors). Working with WRPS management and other partners, CPPO has made important progress coordinating and driving integration in WRPS's vapors-related efforts, ensuring effective communications, and monitoring and tracking progress against external assessment recommendations.

## 2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

In October 2016, the WRPS-DOE ORP IPT began working on developing vapors scope for fiscal year 2017 and 2018. Eight key performance parameters were developed, and the Comprehensive Vapors Action Plan was written. In March 2017, WRPS received direction from DOE-ORP to continue comprehensive vapors plan actions with a “not to exceed” cost value and a request for proposal. The CVAP forms the basis for the scope to be proposed. While the proposal is under development, WRPS is proceeding with implementation of activities to accomplish the KPPs. In addition to “completion” of the CVAP (still under review/ comment with DOE), WRPS continues to implement scope as is summarized for FY17 Q1 and Q2 below.

### KPP 1. Communications

**Quarterly Summary:** Beginning in FY 2017, CPPO began tracking vapors related communications and types of vapors communications. These communications included:

#### 1st Quarter Highlights

- The Hanford Advisory Board’s Tank Waste Committee was given a tour of AP Farm, where chemical vapor detection and monitoring technologies are being pilot tested, the Central Control Room located in 274-AW, and the RJ Lee mobile laboratory. The tour was conducted by Chief Technology Officer Karthik Subramanian and Chemical Vapor Integration Manager Rob Gregory.
- WRPS launched the new and expanded [www.HanfordVapors.com](http://www.HanfordVapors.com) website. The site, which includes new content developed by a cross-section of workers who are leaders in their fields of expertise, provides more information about chemical vapors at the Hanford Site. Available tools include access to field data and sampling results, more complete information as to how WRPS protects workers, and an explanation of technologies being developed and tested.
- Local labor union leaders toured the AP Farm and were briefed by Chief Technology Officer Karthik Subramanian on vapor technology pilot testing.
- An all-employee FY 2017 Safety Kickoff and luncheon was held for all WRPS, staff augmentation, and subcontractor employees. WRPS President and Project Manager Mark Lindholm, ESH&Q Manager Rob Cantwell and Chemical Protection Integration Manager Rob Gregory addressed employees.
- WRPS President and Project Manager Mark Lindholm sent a message to employees thanking them for a successful year. The messages included

#### Key Performance Parameter 1

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

references and callouts to specific projects that helped enhance worker protection in relation to potential chemical vapors exposure.

- The HAMMER Medical Surveillance Subcommittee was briefed on the respiratory cartridge filter testing program by Chemical Vapor Integration Manager Rob Gregory.
- A message to employees was distributed on an AOP-015 at the AX Farm change tent where six workers reported odors.
- A message to employees was distributed after a federal judge rejected a motion to remove the State of Washington from a lawsuit filed by the attorney general related to chemical vapors.
- A message to employees was distributed after a federal judge denied a motion for preliminary injunction filed by the attorney general, Hanford Challenge and Local 598 to implement additional interim measures in Hanford's tank farms to protect workers from chemical vapors.
- A message to employees was distributed detailing the findings of the DOE-Inspector General report on chemical vapor concerns in the tank farms. The OIG review "did not reveal significant issues with regard to the Department's and WRPS' strategy and ongoing actions to address vapor risks." The message also covered three recommendations that WRPS committed to implement: strengthen the Problem Evaluation Request (PER) system, share ongoing engineering control evaluation reports with workers and the public, and sustain a strong safety culture by using the Chemical Vapors Solutions Team for employees to raise safety concerns.
- Industrial Hygiene Communication Boards containing aerial views of tank farms showing hazards and monitoring points were implemented for use in work planning and pre-job briefings. All employees have access to the boards through information kiosks on the Hanford Local Area Network.



*Chemical cartridge filters for air-purifying*



*SCBA equipment*

- The NIOSH report on chemical vapors management was made available. A message to employees and newsletter article explained the four areas reviewed – exposure assessment, exposure control, safety and health management, and medical – and the NIOSH recommendations for improvements.
- A message to employees was distributed after three workers reported smelling odors outside of a tank farm in an area that does not require respiratory protection. The odors were later found not to be from the tank farms.
- The full Hanford Advisory Board was briefed by DOE-ORP Manager Kevin Smith on the new [www.HanfordVapors.com](http://www.HanfordVapors.com), which he called a “phenomenal improvement” over the old website.
- All Hanford employees were briefed on the Vapor Control Strategy for the AY-102 waste retrieval. Briefings were held for other Hanford contractor employees as well as WRPS workers.
- The AY-102 retrieval team declared readiness to begin the next phase waste removal from the tank. Retrieval operations resume and weekly updates of AY-102 retrieval are provided to employees. The updates include information on the Chemical Vapor Management Strategy employed during retrieval operations.



*A WRPS employee tests SCBA*



*WRPS ESH&Q Manager Rob Cantwell briefs employees on the AY-102 vapor control strategy*

### 1st Quarter CPPO Notebooks

- CPPO Notebook Nov. 30 – Handord Vapors ISMS Strategy
- CPPO Notebook Dec. 7 – AY-102 Retrieval
- CPPO Notebook Dec. 15 – VMDS Vapor Technologies

### 1st Quarter HanfordVapor.com posts

- [Vapors Weekly Update – October 5](#)
- [WRPS expands web-based tools on chemical vapors](#)
- [Vapors Weekly Update – October 13](#)
- [Updated data on WMDS pilot-scale testing](#)
- [Vapors Weekly Update – October 20](#)
- [Vapors Weekly Update – October 27](#)
- [Vapors Weekly Update – November 3](#)
- [Clarification on today’s court decision](#)
- [Video: The Hanford Story – Tank Waste Cleanup](#)
- [Vapors Weekly Update – November 10](#)

- [OIG special report on chemical vapors now available](#)
- [Court ruling on preliminary injunction](#)
- [OP-FTIR Weekly Report \(Oct. 5-12, 2016\)](#)
- [Vapors Events](#)
- [AOP015 DRI 05032016 Buffalo](#)
- [Vapors Weekly Update – November 30](#)
- [Odors reported at AX change tent – November 30](#)
- [NIOSH report on tank vapors now available](#)
- [Odors reported – December 1](#)
- [New VMDS pilot-scale testing data sets](#)
- [Vapors Weekly Update – December 7](#)
- [AY-102 retrieval information page](#)
- [Vapors Weekly Update – December 21](#)
- [Preliminary report on cartridge filter testing](#)
- [Vapors Weekly Update – December 29](#)
- [Response to DOE Office of Inspector General](#)
- [Proposed technologies for addressing chemical vapors](#)

## 2nd Quarter Highlights

- CVST to the Workforce initiative, was held Monday January 16th with the AY/AZ Tank Farms Staff. The Chemical Protection Integration Manager, ESH&Q manager and the CPPO Manager attended the staff meeting and provided vapors information to the area team. The discussion was well received, with a number of questions pertaining to cartridge testing, the potential of moving to PAPR/APRs, and what is the time frame for implementation.
- CVST to the Workforce initiative, was held Wednesday January 25th with the 616/WS Staff. The Chemical Protection Integration Manager, Rob Gregory; ESH&Q Manager, Rob Cantwell; and the CPPO Manager, Rebecca Sams attended the staff meeting and provided vapors information to the area team. The discussion was well received, there was a question pertaining to the daily report displaying N/A for Ammonia and Mercury, addressed by ESH&Q Manager, Rob Cantwell who provided information that the samples were not taken due to the weather conditions during that time.
- A message to employees was distributed on 1/25/2017 odors reported near work trailers outside of Hanford's AP Tank Farm. None of the workers reported symptoms, nine workers declined preliminary medical evaluation.
- A message to employees was distributed on 1/26/2017 three Hanford workers reported odors at the 702-AZ facility, outside the AZ Tank Farm. None of the workers reported symptoms and, at this time, have chosen not to undergo medical evaluation. An updated message was sent out reporting Industrial hygiene technicians responded, and no elevated readings were identified. Additional air samples were collected and analyzed, and the results are at or below background levels. Access to the facility has been restored.

- A message to employees was distributed announcing the Enterprise Assessment Report is available. The messages included information that WRPS is evaluating the Office of Enterprise Assessment (OEA) report and will use its results to improve our future work. We are also working with union representatives to find additional ways to protect workers and we are improving transparency and communication with the Hanford workforce. A presentation of the “Comprehensive Vapors Action Plan” was given by the Chemical Protection Integration Manager.
- Chemical Protection Integration Manager met with the construction team at the end of the shift, and training teams at HAMMER to provide information and answer questions regarding Hanford vapors and the Chemical Protection Plan moving forward.
- ESH&Q Industrial Hygiene Flash was distributed on Monday Feb. 6 regarding the AW Farm Temporary Fence line to facilitate the installation of a new bottle change tent. The temporary fence will become the new AW Farm boundary. The new Bottle Change Tent will support 30+ workers which are needed to replace the AW-106 pump, which must be operational by May 2017 in order to support the EC-07 evaporator campaign.
- A message to employees was distributed on 2/2/2017 Upcoming testing for AX Farm exhausters. With the completion of Cold Operational Acceptance Testing (OAT) and tie-in of the POR-126 and POR-127 exhausters to AX Farm tanks, the project team is set to perform Hot OAT for the new exhausters. Testing is scheduled to begin Friday and run through the weekend. Upon completion of the Hot OAT, the team will begin daily operations of active AX Farm ventilation. One of the exhausters will remain in operation post-OAT testing to continue to exhaust the AX tanks in support of field work.
- A message to employees was distributed on 2/8/2017 Weekend DST to DST waste transfer. Preparations are underway to transfer supernatant waste this weekend between two double-shell tanks, AP-103 and AY-101. AY-102 waste retrieval will not be operating during this time.
- A message to employees was distributed on 2/14/2017 UPDATE: Upcoming testing for AX Farm exhausters. Due to weather, testing of new exhausters in AX Farm was not completed as planned two weeks ago. With the completion of Cold Operational Acceptance Testing (OAT) and tie-in of the POR-126 and POR-127 exhausters to AX Farm tanks, the project team is moving forward with plans to perform Hot OAT for the new exhausters this weekend. Testing is scheduled to begin Thursday and run through Sunday. Upon completion of the Hot OAT, the team will begin daily operations of active AX Farm ventilation. One of the exhausters will remain in operation post-OAT testing to continue to exhaust the AX tanks in support of field work. No waste-disturbing activities will take place during the Hot OAT.

- CPPO Workforce Communications Survey has been sent out to a random sample of WRPS employees. This survey is to measure the vapors communications efforts of the CPPO team and if we are providing information to the workforce that is of interest. We are also requesting feedback on topics of interest the workforce.
- WRPS, DOE talk vapors, AY-102 at HAB committee meeting – March 2<sup>nd</sup> Chemical Protection Program Manager Rob Gregory briefed the Hanford Advisory Board on various vapors management activities. He reviewed recent progress and outlined next steps in implementing the Hanford vapors strategy. His presentation can be viewed [here](#).
- A message to employees was distributed on 3/9/2017 announcing an upcoming Occupational and Environmental Health course. Dr. Rock, the HPMC OMS Risk Communicator will be leading a two-hour course on Occupational and Environmental Health located at HAMMER
- A message to employees was distributed on 3/9/2017 announcing the APR use in AP Tank Farm. WRPS and HAMTC have reached this decision after testing and analysis demonstrated that air-purifying respirators fitted with chemical filter cartridges are effective for protecting workers from vapors in some areas during certain work activities in AP Farm. Specifically, workers in the AP tank farm, working outside of a Vapor Control Zone while non-waste-disturbing and non-tank-intrusive activities are taking place, will have the option of wearing air-purifying respirators equipped with approved filter cartridges instead of a Self-Contained Breathing Apparatus (SCBA) or other available supplied-air systems.
- A message to employees was distributed on 3/30/2017 odors reported near SX Farm change trailer. None of the workers reported symptoms, three Hanford workers declined precautionary medical evaluation.

### **2nd Quarter CPPO Notebooks**

- CPPO Notebook Jan. 4 – Cartridge Testing Briefing (AP Tank Farm)
- CPPO Notebook Jan. 19 – Penser/Worker's Comp
- CPPO Notebook Jan. 26 – AY-102 Retrieval Ops Summary
- CPPO Notebook Feb. 2 – NIOSH Out-briefing
- CPPO Notebook Feb. 9 – WRPS Response to DOE – OIG Report
- CPPO Notebook Feb. 16 – Engineering Controls
- CPPO Notebook Feb. 23 – Strobic Air Feasibility Study
- CPPO Notebook March 2 – PTR-MS Mobile Lab
- CPPO Notebook March 8 – Leading Indicators Summary
- CPPO Notebook March 16 – Announcement of Workforce Communications Survey

### **2nd Quarter HanfordVapor.com posts**

- [Odors reported east of Hanford's AP Tank Farm](#)
- [Odors reported outside of Hanford's AZ Tank Farm](#)

- [Vapors Weekly Update – January 31](#)
- [New VMDS pilot-scale testing data sets](#)
  - [UV-DOAS Weekly Report 11/09/16 – 11/16/16](#)
  - [UV-DOAS Weekly Report 11/16/16 - 11/23/16](#)
  - [UV-DOAS Weekly Report 11/23/16 - 11/30/16](#)
  - [Direct Reading Instrumentation Weekly Report 11/09/16 – 11/16/16](#)
  - [Direct Reading Instrumentation Weekly Report 11/16/16 - 11/23/16](#)
  - [Direct Reading Instrumentation Weekly Report 11/23/16 - 11/30/16](#)
  - [OP-FTIR Weekly Report 11/09/16 – 11/16/16](#)
  - [OP-FTIR Weekly Report 11/16/16 - 11/23/16](#)
  - [OP-FTIR Weekly Report 11/23/16 - 11/30/16](#)
- [TVAT Landing page](#)
- [National Institute for Occupational Safety and Health \(NIOSH\) Report](#)
- [Event notification system tested at tank farms](#)
- [On the Vapors Sources page, a link to the Centers for Disease Control \(CDC\) website providing general information about environmental odors](#)
- [On the Individual Sensitivity page, a link to a CDC discussion of potential health effects caused by environmental odors](#)
- [Vapors Weekly Update – March 2](#)
- [Vapors Weekly Update – March 16](#)
- [Office of Inspector General \(OIG\) report](#)
- [Office of Enterprise Assessments \(EA-32\) report](#)
- [Landing page for air-purifying respirators \(APRs\)](#)
- [CTEH Summary page and full report](#)
- [Odors reported near Hanford’s SX tank farm](#)
- [UPDATE: Odors reported near SX Farm – 3/30/17](#)
- [Vapors Weekly Update – March 30](#)

#### [Chemical Protection Communication](#)

It was a year ago, April 2016, that WRPS contacted CTEH, a nationally recognized industrial hygiene (IH), toxicology and environmental consulting company, to provide an independent technical review of the IH program and the IH Chemical Vapor Technical Basis. CTEH conducted their assessment from July to September of 2016, and in November, reported that, “[o]verall, the technical basis is sound from both a toxicological and industrial hygiene standpoint” (pg. iii). Not only was the CTEH report last week’s CPPO Notebook, the report was posted on the Hanfordvapors.com website.

The recommendations from the *Critical Assessment of the Technical Basis and Implementation of the WRPS Hanford site Waste Tank Farm Industrial Hygiene Program* report are helping drive improvements in the WRPS IH program, and support the Overarching Recommendation in the Tank Vapor Assessment Report (TVAR). CTEH also established that WRPS has developed a sound strategy for



determining chemicals of primary concern (COPCs) and developing and implementing acute Occupational Exposure Limits (OELs) to guide in-field decision-making. This approach helps to minimize worker exposures that would be of concern for adverse health effects. To review all of the recommendations and conclusion of this report visit the website. CTEH report.

In March 2017, the CPPO performed a Vapors Communication Workforce Survey. 192 questionnaire surveys were distributed by the CPPO in the third week of March. Eighty-six surveys were completed and returned for a 43% response rate. The responses have been tabulated and the analysis is underway. The analysis will be published in Q3.

No Weekly Notebook was published on March 30, 2017. April 6<sup>th</sup>'s Weekly Notebook featured the Center for Toxicology and Environmental Health (CTEH) report, *Critical Assessment of the Technical Basis and Implementation of the WRPS Hanford Site Waste Tank Farm Industrial Hygiene Program*. The video file, narrated by a CTEH Subject Matter Expert, reviews the recommendations of the report.

#### Management and Workforce Engagement

Improvements have been put into place (and in procedure) regarding AOP-015 event reporting. This new reporting process for AOP-015 event details was put to the test when an AOP-015 event occurred on Thursday, March 30. From the reporting of the event, the confirmation of the event, and the dissemination of information to the workforce the accuracy and the information flow improved greatly. The information flow was so timely, before the confirmation inquiry occurred, the Central Shift Office had already verified and confirmed the event information. These actions in turn allowed accurate and timely information to be provided to the workforce. While an AOP-015 event requires immediate action, accurate and timely information the flow of information is key to keeping the workforce informed.

#### Hanford Vapors Website Updates

The Hanford Vapors Website has expanded its [Reference Materials](#) section with a new [Independent Assessments](#). The CTEH report, *Critical Assessment of the Technical Basis and Implementation of the WRPS Hanford Site Waste Tank Farm Industrial Hygiene Program* is one of five independent assessments available. Additional postings to the website include:

[Vapors Weekly Update – March 30](#)  
[Odors reported near Hanford's SX Farm](#)  
[Update: Odors reported near SX Farm](#)  
[Vapors Weekly Update – April 3](#)  
[Vapors Weekly Update – April 6](#)  
[Letter from HAMTC President, Dave Molnaa](#)

## PHOENIX

Tank Vapors Data Access and Visualization (DAV) Phase 1: Requirements and Proof of Concept - Due March 2nd (COMPLETE)

Data Explorer: In early March, the project finished Phase I which was to demonstrate and deploy a data explorer with site data. A demonstration was provided to the steering committee and to management and comments are being incorporated

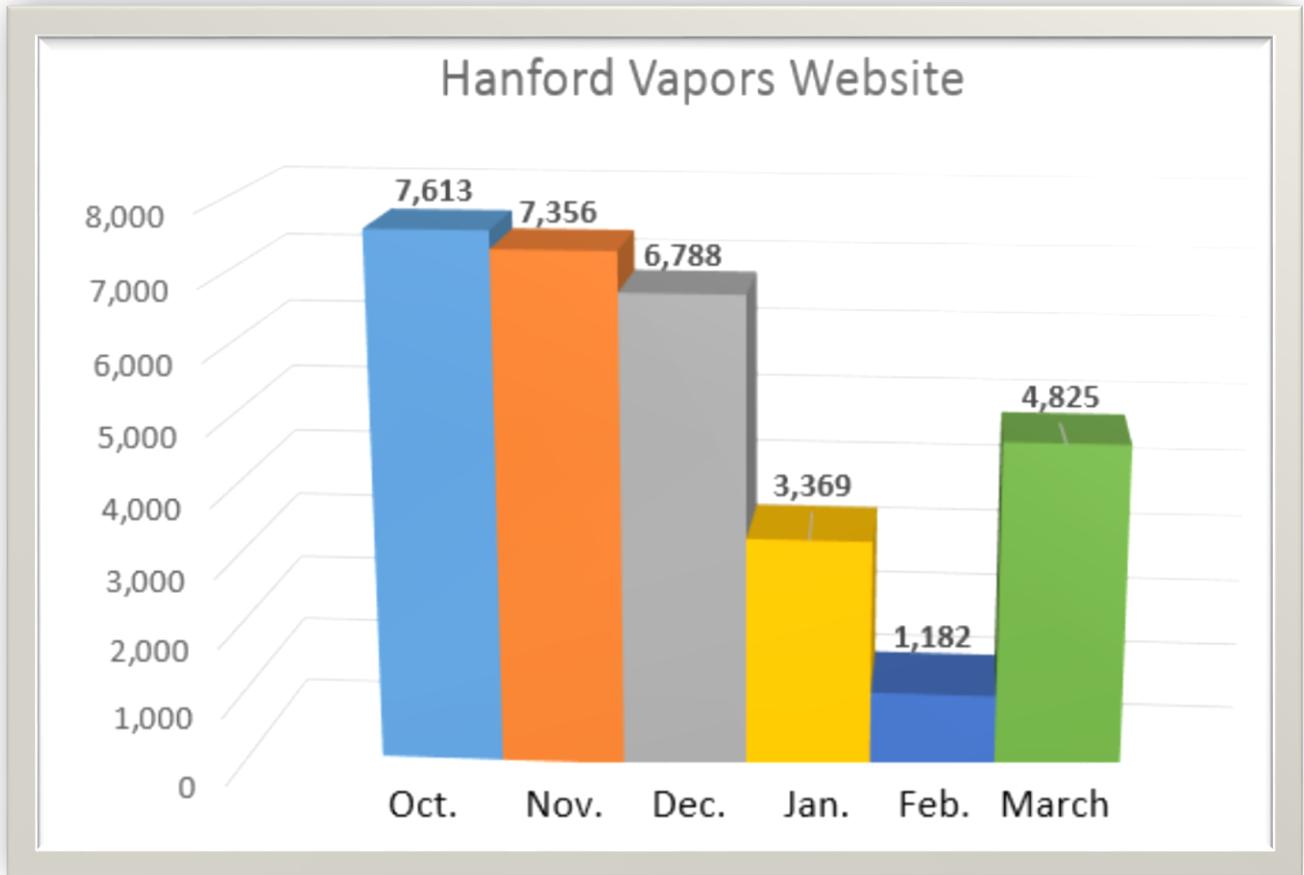
Tank Vapors Data Access and Visualization (DAV) Phase 2: Deliver an Operational Program for Full Scale Testing -

Data Explorer: Phase 2 will include updates to the Data Explorer to incorporate a better and more user friendly flow to exploring data. The team will incorporate updated charts to reflect the feedback and discussions we've heard in the monthly steering committee meetings. Specifically, this means allowing for toggles non-detects and waste disturbing activities, and adding views for source and headspace data. The team will incorporate views for single and multiple chemical searches and allow for easier data exploring at a higher level (all data for one chemical, or multiple chemicals in one farm, etc.). The team will incorporate a landing page that introduces the user to the site, and allows them to select whether they would like to educate themselves on background information at Hanford or go directly to exploring data. If they would like to learn background information they will be taken to a [Tank Vapors 101](#) page where they can access some educational and background information. Phase 2 for the Data Explorer will conclude with a tool 90% complete that is fully functional and ready to be processed for reviews within WRPS and ORP in preparation for release to the public. The team is calling this 90% complete, because there may be polish or minor adjustments to be completed in Phase 3 as a result of these reviews and approval processes.

VMDS Automated Reporting: During Phase 2 the team will proceed with developing a simulation of an interactive and automated VMDS weekly reports, incorporating the one week's worth of data we have received. The team will also pursue a more permanent solution to data access for the VMDS data. The goal for the end of Phase 2 will be to have a simulated automated report based on the weeks' worth of data and developed to our existing mock-ups, and a long term solution to data connectivity for further development of this feature.

PTR-MS Data: During Phase 2, the team will assess system level architecture requirements for data volume and velocity related to PTR-MS. Based on initial assessments, the team will write a short description of requirements for both a local server and cloud based solution for near-real time assimilation of data. The team will also assess the feasibility and the value of capturing a small subset of data for proof of concept. The team will work to understand what the need is in this area so we can define a path forward for future work.

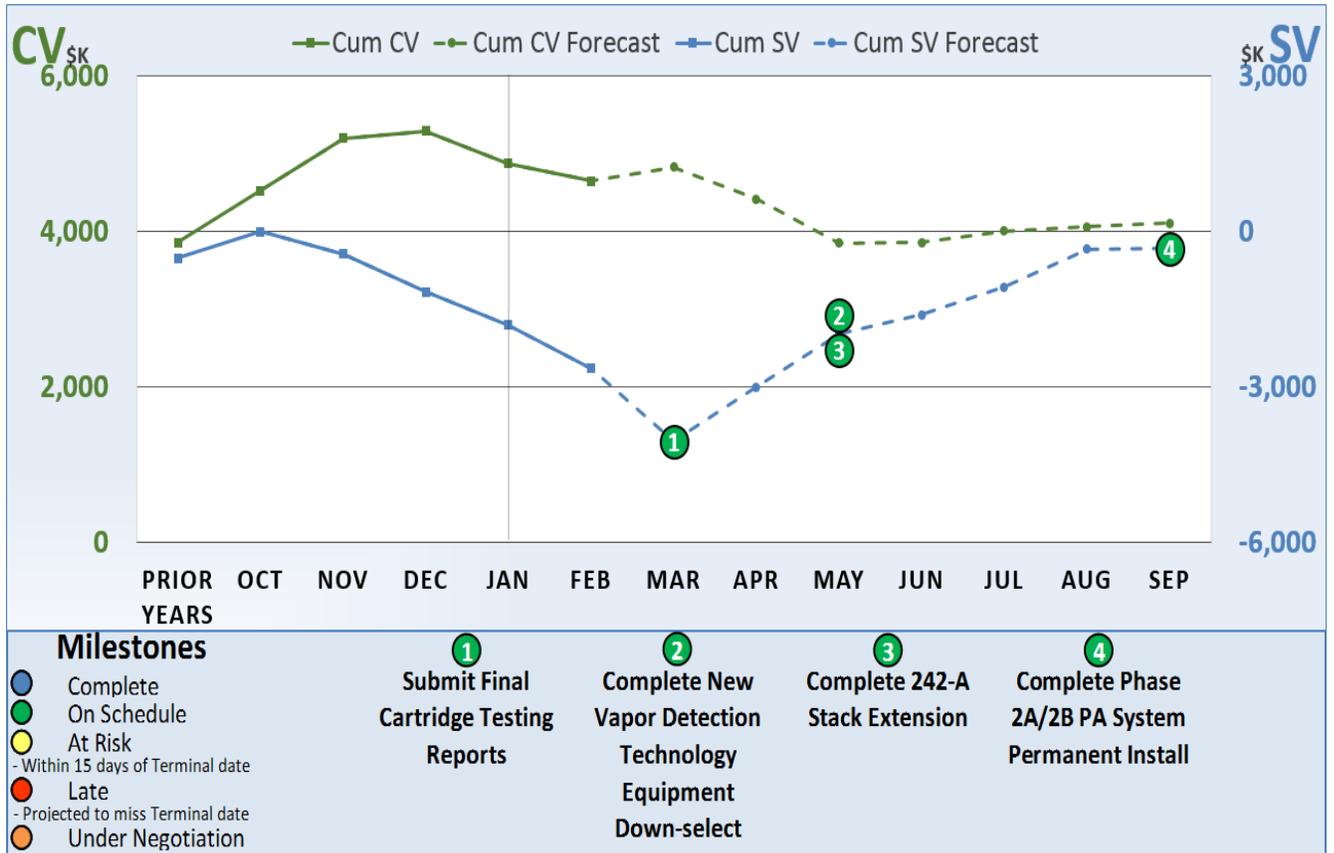
+ CPPO Oversight and Tracking  
Website Statistics and Use

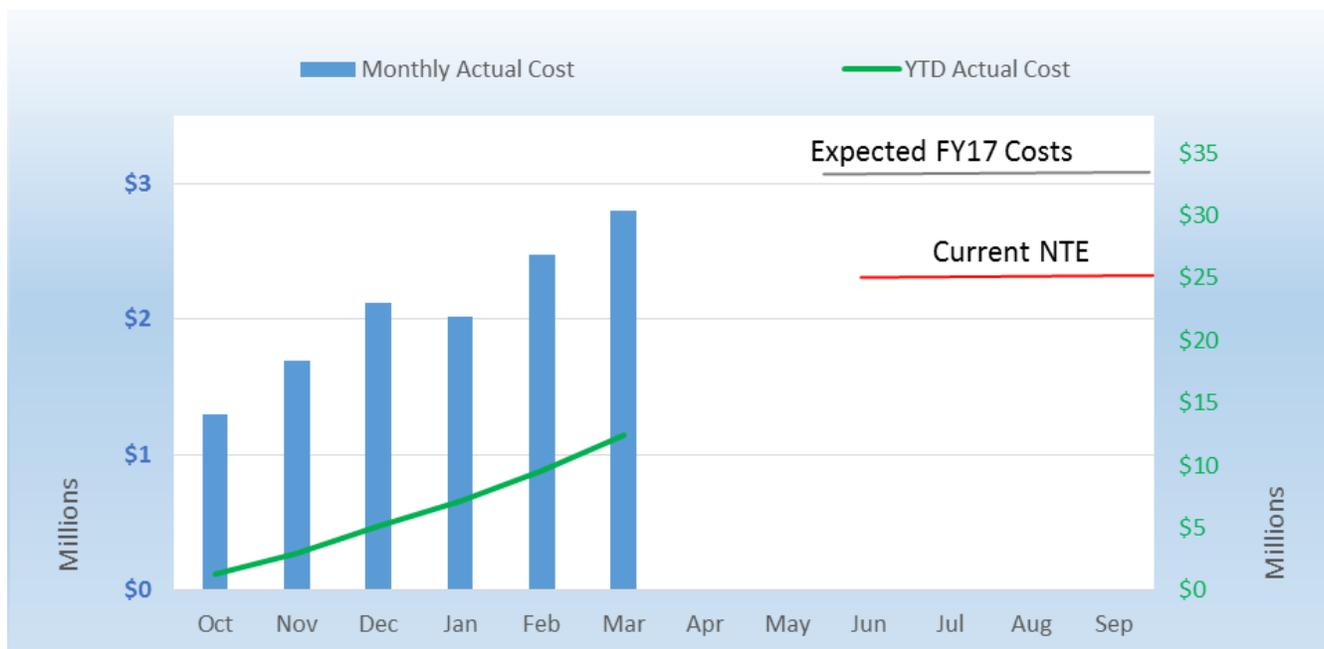


**Figure 1. Hanford Vapors Website Hits**

The website analytics for the month of March indicate a rise in viewership over the past few months, but a decline overall since the all-time high experienced during the website's launch in October 2016. During the month of March, there were two peak days (visitors exceeding 400 each day) that are visibly related to the distribution of the Hanford Vapors Update Website Newsletter. On Thursday, March 2 at 6:02pm, the website newsletter was distributed prompting higher readership to the website the following Monday.

Several projects supporting the CVAP KPPs are currently underway. Delayed procurements are now in place and vendors are ramping up to support a tight schedule. Year-to-date, \$12.4M (50%) of our revised NTE value of \$25M has been spent. Monthly costs are expected to rise and stabilize just shy of \$4M per month for the remainder of the year. At this rate, it is anticipated spending for the fiscal year will meet our target of \$33.7M.





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

#### ✚ Develop New or Revised COPCs/OELs

**Quarterly Summary:** TerraGraphics/Dade Moeller was awarded a contract to revise and update RPP-22491, *Industrial Hygiene Chemical Vapor Technical Basis* and the related COPC list. Their workscope includes developing a centralized IH Program Manual which focuses on Chemical Vapor Program aspects, as well as revising existing standards and implementation procedures. Recommendations from the *Critical Assessment of the Technical Basis and Implementation of the WRPS Hanford site Waste Tank Farm Industrial Hygiene Program* report are helping drive improvements in the WRPS IH program. A kickoff meeting was held on April 4, 2017, and the path forward, schedule, and personnel was determined.

**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

**Update:** PNNL Health Study Roadmap: A schedule for FY2017 has been developed for the Health Process Project. Accomplishments:

- Task 1: Schedule
- Task 2: Establish Tank Operations Assessment Team.
  - An interim TOC Assessment Committee has been identified. A charter for the Assessment Committee is developed and in review.
- Task 3: Establish an External Peer Review Health Panel.
  - Submitted the Draft External Review Recommendations. A meeting with Sr. management to finalize the membership in the Assessment Committee was held on March 14th. WRPS reviewed PNNL's assessment team recommendations, and drafted a charter for membership and function. PNNL is in the process of reviewing and providing additional comments.
- Task 4: Implement Routine Analysis and Screening Process for Updating COPCs.
  - PNNL is working to interpret sample data presented from SWIHD so that results from sorbent tubes taken in series are summed to determine correct maxima values.
- Task 5: Establish Acute/Transient and Chronic Exposure Action Levels.
  - Assessment of low priority chemicals is now getting underway.
- Task 6: Evaluate Computational Approaches for Predicting Exposure and Delivered Dose.
  - The kickoff meeting beginning this effort was held on 29 March.
- Task 7: Database Implementation and Management.
  - Updating recommendations FY16 data to match final reports (halfway done) (Task 7005)
  - Created and tested OEL proposal approval and rejection abilities (Task 7005)
  - Updated and tested the prod site (Task 7000)
  - Tested auto-fill fields on the FY17 forms, hidden fields on the FY17 forms, and buttons added to data view descriptions (Task 7005)
  - Deploying new code changes to the prod site (OEL work flow, Changed links on dataviews to buttons, Document to form linking) (Task 7005)
  - Met with Lenna Mahoney to find out more about importing her spreadsheet and it sounds like the situation is probably more complicated than just a simple spreadsheet import. Seeking guidance as to how to proceed (Task 7005)
  - Adding the ability for FY16 recommendations forms to be viewed and queried (Task 7005)

### 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 FY 2018.

#### Database Implementation and Management

**Quarterly Summary:** In FY 2016, PNNL developed a database to review and update the COPC list and associated OELs. This database contains information such as vapor concentrations in tank headspaces, IH measurements, current exposure guidelines, chemical and physical properties, toxicology summaries, as well as the reports and publications supporting the data. In FY 2017-18, PNNL will continue to update and maintain this database to support the annual review and update of COPCs/OELs/STELs.

#### Leading Indicators

**Quarterly Summary:** In October 2016, PNNL published PNNL-25533, 68529-RPT-001 Rev0.0, *Leading Indicator Process Development Report*. The report findings have informed the VMDS project and Leading Indicator Process.

#### Parity Implementation with Established Programs

**Quarterly Summary:** The successes in implementing parity with established programs are as follows:

- Enhanced CHAT was launched in early February.
- Tanks Farms Training developed an IHT Training and Qualification Plan.
- Training hired three technical training specialists dedicated to Industrial Hygiene and Industrial Safety.
- Tank Farms Training is collaborating with HAMMER on three courses: Fundamentals of Industrial Hygiene, Site Wide Industrial Hygiene Database (SWIHD), and Continuing Training
- IHT Continuing Training is launching on April 18.
- Chemical Worker Tier One is in the Design Phase.

### **KPP 4. Engineering Controls**

#### Exhausters

**Quarterly Summary:** Although the current stack heights are sufficient for protecting workers, a defense-in-depth evaluation to provide additional protection using dispersion modeling revealed 242-A, AP & AW Farm Stacks were the largest contributors to odor events (RPP-RPT-58955, Rev. 00, *Atmospheric Dispersion Modeling of 200 East Area Tank Farm Stacks*). Preliminary design evaluations for the 242-A stack indicate the stack height can be increased by about 50 ft with minimal structural modifications. Dispersion modeling demonstrated up to a 95% reduction in near field ground concentration. On 10/06/2016, it was reported that 30%

#### **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.

design review had been completed. Now, at the end of Q2, the vessel vent extension is being fabricated, and construction should be complete by the end of May 2017.

#### Strobic Air Dilution Fan

**Quarterly Summary:** An investigation into abatement technologies began in earnest in the first quarter of FY17 and included Strobic Air Dilution Fan technology. Tank Farm Projects lead the design and installation of the ventilation upgrade for the AW stack. A project schedule was developed, and contracting is in process. At the end of Q2, the SOW for the Strobic Air contract was approved in Asset Suite.

#### NUCON Thermal Oxidation Proof-of-Concept Test

- **Quarterly Summary:** An investigation into abatement technologies began in earnest in the first quarter of FY17 and included NUCON International Thermal Oxidation System. NUCON developed a novel thermal oxidation process that is based on the internal combustion engine. By the end of Q2, NUCON had submitted a project schedule. They resolved the issues identified in early testing and acquired the instrumentation needed to complete the Proof of Concept test, which has been scheduled for 26-27 April.

### **KPP 5. Administrative Controls and Monitoring**

#### Permanent Installation of VMDS Equipment in A and AP Farms

**Last Update 3/23/2017:** This week, the CPPO, CTO, IH, and engineering met to discuss the design strategy for future improvements to the VMDS and dispersion modeling systems being evaluated for installation in the farms. The focus this week was on the setting of Vapor Control Zones, Unrestricted Boundaries, and OEL control levels. These discussions serve to educate everyone on the requirements within which each group must work.

#### **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

**Quarterly Summary:** In December 2016, CPPO reported that “a baseline change request (BCR) was initiated to upgrade the ammonia monitor on the 242-A stack and kick off meeting was scheduled to start the upgrade.” At the end of March, a contract was established with Cerex to develop the software.

#### ✦ Establishing Safe Unrestricted Boundaries

**Quarterly Summary:** PNNL published *Atmospheric Dispersion Modeling Tools for Hanford Tank Farms Applications*, PNNL-25654, in October 2016. To aid in establishing safe unrestricted boundaries in FY2017, PNNL's software, Air Pollutant Graphical Environmental Monitoring System (APGEMS) requires an upgrade. APGEMS will be upgraded to increase the model wind field resolution for tank farm applications and model plumes from multiple sources simultaneously. This work will resolve an identified gap in the FY 2016 air dispersion modelling assessment. The contract to continue this upgrade was awarded on March 27, 2017.

#### ✦ Public Address System

**Quarterly Summary:** On October 20, 2016, "[t]esting of an enhanced tank farms PA speaker system was completed in AP Tank Farm," CPPO reported. The latest update on the Notification Public Address (PA) system in AP farm is that its newly engineered package concept will be installed by June of this year.



### **KPP 6. Tank Operations Stewardship**

#### ✦ Pilot SST Stewardship Program

**This section will be updated the first Weekly Report of each month.** The scope of KPP-6 is to apply defense-in-depth safety controls to ensure worker protection. The SST Stewardship Program will identify and evaluate procedures requiring entry into SSTs and determine whether those requirements can be eliminated or reduced. The first step towards establishing the Tank Farm of the Future for SSTs is to use remote monitoring in lieu of farm entry to obtain tank waste levels and temperatures. WRPS will initiate design of the first remote monitored SST in July 2017, with equipment installation occurring in FY 2018.

In response to a NIOSH recommendation, WRPS is establishing guidelines to determine appropriate work locations for personnel in the tank farm areas. These guidelines consider International Society of Automation (ISA)-84 risk modeling, air dispersion modeling, hazard reduction determinations, and other appropriate inputs. **Last Update 3/23/2017:** Tank Farm personnel will begin training in the new central control room in April. Training focuses on the alarm panel, including the Double Shell Tank (DST) leak detection and temperature monitoring sensors. The training materials are being assembled. Production Operators are the first candidates for training.

#### **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

- **Quarterly Summary:** At the beginning of Q1, the TVAT team had completed sampling at eight different locations (AP exhauster, SY-102, BY-108, A-101, AZ-702 stack, AX-101, AW stack, and AN stack), verifying protection capabilities of two air purifying cartridges: SCOTTS 7422-SC1 and 7422-SD1. PNNL completed the lab analysis report from the AP exhauster location and the bulk of their findings were published by the end of Q2. WRPS began using the full-face Air Purifying Respirators (FFAPR) on Tuesday, March 14, 2017.

#### 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

**Quarterly Summary:** During AY-102 Retrieval The mobile laboratory has captured observations and photographs during monitoring of the AP Farm stack emission profile during foggy weather conditions (see Figure 1). The cold weather conditions were favorable to see the condensate formation as the warm gas flowed out the stack. The flow velocity appeared fairly low with the flow rising to nearly three times the stack height with considerable lateral dispersion. The end of Q2 found RJ Lee Group completing the test plan for source apportionment and fugitive emission searches. The test plan was approved, and sampling the AP Stack is scheduled to begin in April. However, AP stack sampling will be interrupted to support the AN tank transfer currently scheduled for the second week of April.



### + Personal Vapor Monitor

**Quarterly Update:** C<sub>2</sub>Sense, Inc. presented a proposal to finish developing the personal ammonia monitor. C<sub>2</sub>Sense, Inc. is developing a personal ammonia sensor under funding from DOE-EM. WRPS is coordinating between C<sub>2</sub>Sense, Inc. and RJ Lee Group to support prototype testing. The contract for RJ Lee Group has been placed. The Contracts group continues to work with C<sub>2</sub>Sense, Inc.

#### Key Performance Parameter 8

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

## KPP 8. Medical Support

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

## 4. VAPORS MITIGATION PROGRAM PLAN - TOP RISKS

### CPPO Risk Weekly Update

The subset of the Vapors Mitigation Risk Register this week is shown in **Table 1**.

**Table 1.** Vapors Mitigation Risk Register

| CVAP ID Number  | Current Status  | Handling Actions   | Current Risk Level |
|---|---|--|--------------------|
| 004<br>Integration with other key projects more complex than expected.  | Integration of field execution for VMDS in SY farm and AW stack monitoring, Coordination of turnover to farm operations for Tank Farm PA system project, Completing of 242-A Stack Extension prior to EC-06, are at risk for schedule delays due to integration issues.   | 1. Identify key program interfaces early.<br>2. Engage with program/project managers early.  | Medium             |
| 009<br>Resources not Available when Required.   | RJ Lee Group Resources are unavailable to complete reporting. Head Space Sampling may be delayed by beryllium testing.  | 1. Identify key technical resources up front and secure availability.  | Medium             |
| 026<br>3rd Party Evaluation and/or Subcontractor Testing Cause Delays   | Chemical Cartridge Testing – Receipt of 3 <sup>rd</sup> Party Reviews are inconsistent. Communication between stakeholders and WRPS need to be clarified by upper management.   | 1. Engage 3 <sup>rd</sup> Party and/or Subcontractor leadership in communicating status.   | Medium             |
| 030<br>Infrastructure (hardware) to handle data processing, storage, interrogation, and reporting is found to be insufficient for the quantity of collected data. | The projects under the CVAP program will collect huge amounts of data from many pieces of equipment in the field. Real time monitoring during AY102 retrieval in phase 1 has collected over 9 million data points, it is projected to increase to more than a billion data points in upcoming scope. This amount of data may prove to be unmanageable with current hardware and software infrastructure, a risk exists that additional infrastructure improvement must occur to effectively manage the data stream. | 1. Engage with CTO Technology Management and Field Solutions to develop data handling and interrogation infrastructure.<br><br>Proposed New Risk | High               |