



washington **river**
protection solutions



Full Face Air Purifying Respirator

Tank Operations Contract
Chemical **Protection Program Office Weekly Report**
March 9, 2017

Department of Energy Contract NTE 16-TF-0089

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

With the issuance of the Chemical Vapor Action Plan (CVAP), the CPPO weekly report will be restructured to reflect the comprehensive vapors mitigation approach as envisioned in the CVAP.

CPPO has begun to identify the size of the focus group and is randomly choosing a workforce group for the vapors communications effectiveness survey. The survey will be mailed (using plant mail) to the selected individuals at the end of March. CPPO is teaming with the Contractor Assurance group to perform a combined vapors communications and Safety Culture Work Environment (SCWE) assessment. This is projected to occur this summer.

This week, the CPPO and PNNL conducted a dry run of the new Phoenix data explorer with ORP. The Phoenix explorer is now running in a near complete state, and changes to the software's code are being made to make the system easier to use and provide a greater level of detail to the user.

2. CPPO COMMUNICATIONS

After months of research, report analysis, and several conversations, a consensus has been reached between all of the stakeholders including the workforce, HAMTC leadership, WRPS, and DOE to permit the use of air-purifying respirators (APRs) in AP farm. After considering engineering controls, administrative controls, properly fitted respiratory protection, and a conservative cartridge change-out schedule, Center for Construction Research and Training (CPWR) concurred with WRPS's proposal to use APRs in AP Farm as an alternative to SCBA under certain conditions. Workers in the AP tank farm outside of a Vapor Control Zone will have the option of wearing a Scott full-face APR (FF-APR) equipped with either the [Scott 7422-SC1 \(Chemical - multipurpose\)](#) or the [Scott 7422-SD1 \(Chemical - multipurpose/P100\) cartridges](#) instead of SCBA while non-waste-disturbing and non-tank-intrusive activities are taking place. As always, workers can use SCBA if they choose. There were several communications regarding FF-APR use in AP farms. The initial communications within the IH department including plans, orders and implementation of execution, CVST meeting briefings, All Manager's briefing, the announcement was posted to the internal Safety and Health SharePoint site linking to the fill third party report, and an all-employee email announcement occurred on Thursday, March 9th, with implementation beginning Tuesday, March 14th.

The [PNNL-25533 Leading Indicators Process Development](#) report summary and frequently asked questions has been posted to the Hanford Vapors website. The report indicates tank farm vapors are a mix of gases, and some gases in the mix are more easily detected than others. The more easily detected gases can be monitored by Industrial Hygiene technicians in real-time using handheld instruments. Monitoring for one or two chemicals ("leading indicators" or "limiting chemicals") can indicate the presence of other chemicals that cannot be monitored in real-time. It is possible to protect against potentially harmful tank vapors by monitoring for leading indicators. A recent study, (PNNL-25533), concluded that two tank farm gases, ammonia and nitrous oxide, were the best candidates to use as leading indicators. The analysis will be updated next year after more data is collected.

Communications with the Workforce

The CPPO Notebook presentation for the week of March 20, 2017 was on the Proton Transfer Reaction Mass Spectrometer (PTR-MS) mobile lab for vapor monitoring. The real-time measurements taken by the Mobile Lab instruments are indicators and provide primarily qualitative data not quantitative measurements.

The CVST meeting held on March 8, 2017 included information provided by Environmental, Safety, Health and Quality (ESH&Q) Manager Rob Cantwell regarding the FF-APR roll out in AP farms. The CVST meeting presentation is available on the [CVST Portal](#) under [Presentations](#).

The CVST Chemical Cartridge Testing subcommittee was held on Tuesday, March 7th from 2 to 3 p.m. at 2704HV/D212. Topics included the roll out of the limited use of full face mask air purifying respirators. Identified as a potential for improvement was opportunities to prevent disconnects between the original announcement information of the potential FF-APR rollout on March 6th and the lack of information regarding why there seemed to be a delayed roll out. The CPPO team is looking at opportunities to facilitate information updates.

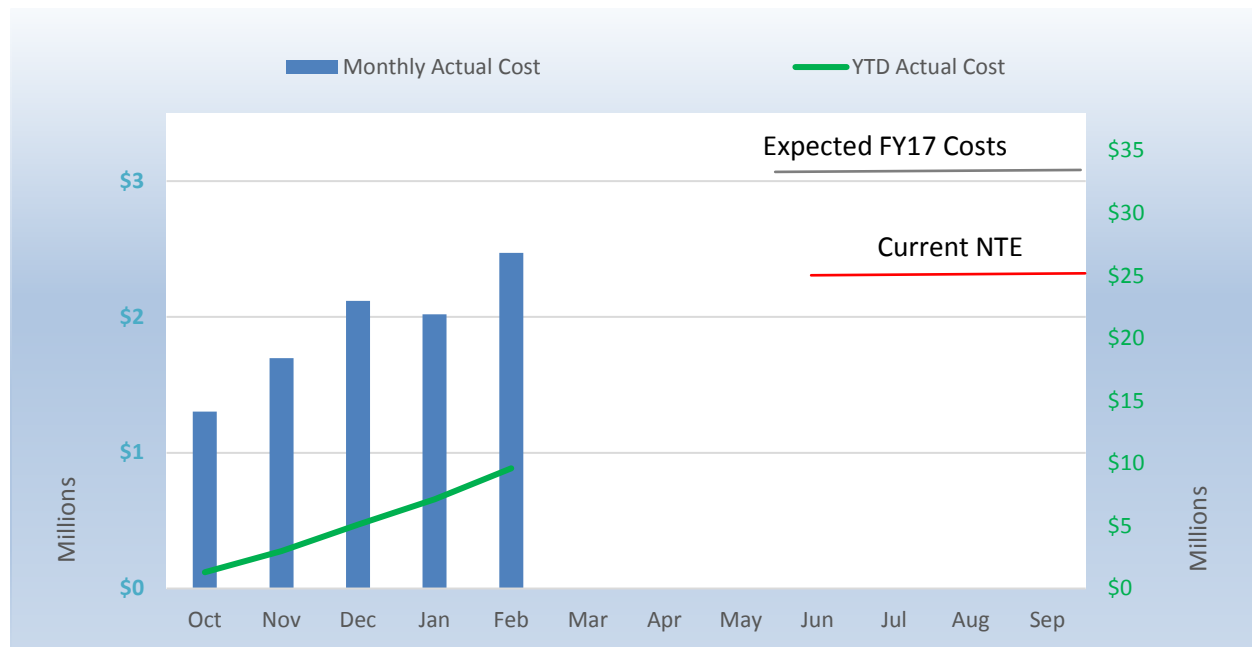
The CVST Communications subcommittee will meet Monday, March 6 from 3 to 4 p.m. at 2704HV/B226. Topics will include the potential of video recording of CVST meetings for all employee access to the meetings, an AY-102 retrieval summary presentation update including data from beginning to end, and the planning of C-105 retrieval and communication information. The C-105 retrieval will mark an important milestone for tank farms, as it will be the final retrieval of C farm.

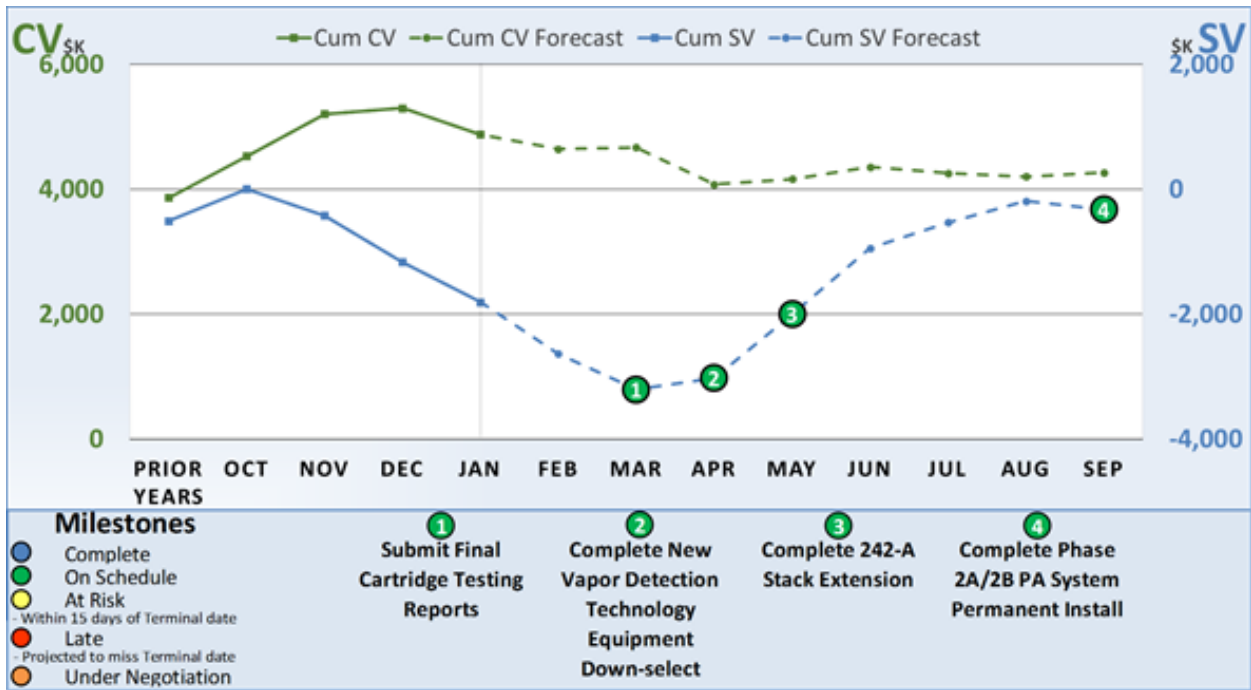
HanfordVapors.com Posts
[Vapors Weekly Update – March 2](#)

3. PERFORMANCE TRACKING

Cost and Schedule Performance

WRPS continues to follow the chemical vapors recommendations from expert groups. In spite of first quarter procurement delays, we are getting back on schedule. We are working with the vendors to find ways to recover schedule loss. To-date, we have spent \$9.6M (38%) of our revised NTE value of \$25M. With the release of critical procurements, a much more vigorous workload is possible with expected spending for the fiscal year of \$33.7M.





4. TVAT PHASE 1 and PHASE 2 DETAILED STATUS

The **Comprehensive Vapor Action Plan**, has defined eight Key Performance Parameters with which to define work and measure progress on vapors issues. Beginning next week, the weekly report will document the progress on tank farm deliverables using CVAP KPPs 1-8. TVAT recommendation numbers will no longer be used. The KPP number under which the existing TVAT recommendation will be followed, has been added parenthetically.

TVAT Recommendations 1 and 9; Headspace Sampling: **No change in status.** A BY-112 tank has been chosen for the cartridge test jig comparison, and will begin in late February or early March. (KPP 2)

TVAT Recommendations 2, 7, 16; Chemical Plating (Aerosol Study): **No change in status.** The Aerosol Study was pushed to FY19 for budgetary reasons. (KPPs 2 and 4)

TVAT Recommendations 3-5; IH Instruments: **TVAT closed.**

TVAT Recommendation 6; IH Personnel Monitor Equipment: **No change in status.** C₂Sense is developing a personal ammonia sensor under funding from DOE-EM. Under this contract, DOE requested that WRPS support testing of this device. The SOW to continue developing the device to the point of commercial production has been submitted to Asset Suite to be approved. RJ Lee Group submitted their proposal to support C₂Sense prototype testing, but the proposal was rejected due to cost issues. A new proposal is expected this week. (KPP 7)

TVAT Recommendation 8; Dispersion Model Review: **No change in status.** The SOW has been submitted to Asset Suite for approval. (KPP 2)

TVAT Recommendation 10; Review/Update Chemical of Potential Concern (COPC) Listing: Discussions with the project team from WRPS and PNNL working on the Health Process Planning project continued this week. The team continues to focus on the developing recommendations for new acute and chronic OELs for COPCs, as well as an evaluation of the screening process used during COPC list evaluations. Additionally, discussions on the COPC list and its subgroups (e.g. carcinogens, high priority and low priority). The purpose of the subgroups is to allow the team to focus on groups of compounds of the highest concern first before moving on to those with less hazardous characteristics. The team expects their research to be completed in the next week followed by a first draft of their recommendations by mid-March. (KPP 2)

TVAT Recommendations 11-13, 15, 17-18; PNNL Health Study Roadmap: A schedule for FY2017 has been developed for the Health Process Project. The project is broken down into seven tasks: 1) Schedule; 2) Establish Tank Operations contractor assessment team; 3) Establish an External Peer Review Health Panel; 4) Implement Routine Analysis and Screening Process for Updating COPCs; 5) Establish Acute/Transient and Chronic Exposure Action Levels; 6) Evaluate Computational Approaches for Predicting Exposure and Delivered Dose; and 7) Database Implementation and Management. (KPP 2)

Weekly Accomplishments:

- Task 2: An interim TOC Assessment Committee has been identified. At the next committee meeting, the group will discuss the progress that has been made on Task 5.
- Task 3: **No change in status.** Submitted the External Review Recommendations draft.
- Task 4: **No change in status.** Continued to work on the draft report for the recommended SAP improvements for priority COPCs.
- Task 5: Both the OEL (acute) and OEL (chronic values) draft documents should be completed this week.
 - Completed are the internal reviews of assessments for OEL values and high priority chemicals. Different reviews are in different stages of review/edits; the group's goal is to submit the reviews to WRPS soon.
 - The internal review of the OEL assessments for acute and chronic values is complete.
 - The high priority chemicals are still being assessed.
- Task 7: The database test site made significant progress on the report generating feature. A functioning tool should be available this week. Still in progress are the following:
 - Modifying the recommendations tool to match the new draft OEL report
 - Populating the database with the data from the new draft OEL report
 - Modifying the report output to match the format of the new draft OEL report

TVAT Recommendations 14; Evaluate Medical Surveillance Program: **No change in status.** ORP Action. (KPP 8)

TVAT Recommendations 19, 20; Toxicology Studies: **No change in status.** ORP Action. (KPP 2)

TVAT Recommendation 21; Rounds and Routines: The new procedures for IH Rounds and Routines are in workflow for approval. TFC-ESHQ-S_IH-C-62, *IH Rounds and Routines Procedure*, and TF-OPS-IHT-027, *Perform IH Routines*, should be finalized by 3/31/2017. (KPP 3)

TVAT Recommendation 22; Acute Bolus Assessment (RJ Lee Group Mobile Lab): **No change in status.** The mobile lab has been pulled from field operations to install an ammonia cavity ring down spectrometer and complete the test plan for source apportionment and fugitive emission searches. The Lab will be off-line for the next 2 weeks. (KPP 2)

TVAT Recommendation 28; Chemical Vapor Guidance Manual: The *Chemical Vapor Guidance Manual* has found new life, and a subcontract has been placed for its development. (KPP 3)

TVAT Recommendations 29, 30; Enhanced Training: Enhanced Chemical Hazards Awareness Training (CHAT) training has begun and good feedback has been received from the initial classes. Chemical Worker Tier Training is developing on time, and is scheduled to be implemented this summer (FY2017). (KPP 3)

TVAT Recommendations 32, 36; Bolus Assessment/Medical Stakeholders: **No change in status.** ORP Action. (KPP 2)

TVAT Recommendation 33; Vapor Monitoring Detection System (VMDS): VMDS Design and Chemical Vapor Quantitative Risk Assessment (Design Agent: Kenexis) –WRPS hosted engineers from Kenexis (January 24-25) who 1) participated in a WRPS cross sectional working group for developing inputs and assumptions aimed at refining the Quantitative Risk Analysis (QRA) of the chemical vapors and sensor placement analysis, 2) presented to management a discussion on the philosophy and process for the QRA and sensor placement analysis. The QRA, when coupled with sensor location, is used to demonstrate the effectiveness of a given VMDS concept. The sensor location(s) are manipulated until the desired VMDS performance is achieved.

Latest update: *Design Practice and Philosophy for Chemical Vapor Detection and Alarming*, was reviewed by Engineering, Industrial Hygiene, Tank Farm Operations, and Projects this week. This document provides the philosophy and design basis (e.g., modeling inputs, vapor detector selection, and detector placement) for the Vapor Monitoring and Detection System (VMDS). Tank headspace and/or ventilation stack data maxima are used to produce a conservative analysis. Because ongoing operations (e.g., waste transfers) can effect average and maxima vapor concentrations, the analysis will need to be updated every 3 to 5 years. Vapor concentration input data are being vetted by Process Engineering and reviewed by Industrial Hygiene. (KPP 5)

TVAT Recommendation 34; Vapor Control Zones/Vapor Reduction Zones (VCZs/VRZs): The final review was completed on the revised procedure TFC-ESHQ-S_C-48, *Managing Tank Chemical Vapors*. The procedure was put into workflow process for approval. (KPP 2)

TVAT Recommendation 35; Cartridge Testing: **No change in status.** A liquid waste transfer between two double-shell tanks (DSTs), AP-103 and AY-101, was completed on February 11, 2017. Chemical cartridge filter testing was performed during the transfer at the receiving tank exhaust stack (702-AZ) in the continuing effort to obtain data on the effectiveness of the cartridges during waste disturbing activities. Upon completion, the collected data will be analyzed and assessed, and a report will be made available. (KPP 7)

Cartridge testing summaries are being prepared for release.

TVAT Recommendation 37; IH Improvements Tracking: **TVAT 37 is closed.**

TVAT Recommendations 38-39, 41; Management Commitment: **TVAT 39 is closed. No update.**

TVAT Recommendation 40; Improve EJTA: **TVAT 40 is closed.**

TVAT Recommendation 42; Revise Exposure Letter: **TVAT 42 is closed.**

TVAT Recommendation 43; IH Covello Training: **No change in status.** In FY 2016, scheduled multiple risk communication sessions with a nationally recognized risk communication expert, Dr. Vincent Covello. Covello's research on the topic of risk communication was specifically cited in the TVAT report. (According to preliminary

discussions with Paul Gagnon) WRPS is planning another round of training and strategy sessions for select WRPS managers, employees and Industrial Hygiene Technicians and front-line supervisors in FY 2017. Communications & Public Relations has contacted Dr. Covello directly to discuss FY17 Q2 availability. Options were provided to Industrial Hygiene to coordinate scheduling. Available dates have expired and we will reinitiate contact with Dr. Covello to determine new dates. (KPP 3)

TVAT Recommendation 44; Public Address (PA) System: **No change in status.** The Event Notification Public Address (PA) system in AP farm was scheduled to be permanently installed by the end of February. However, after extensive design review, it has been determined this is better approached as a package concept. The new completion date for the permanent Event Notification PA system is scheduled for June of this year. (KPP 5)

TVAT Recommendation 45; Lab Support/Determination & Development of Similar Exposure Groups (SEGs): **No change in status.** (KPP 3)

TVAT Recommendations 46, 47; Communications: **TVATs 46 and 47 are closed.**

5. OTHER VAPOR ACTIVITIES

242-A Ammonia Analyzer Upgrade – **No change in status.** Phase 1 of the Ammonia Analyzer has been initiated, and a contract is being established with Cerex to develop the software.

242-A Stack Extension – **No change in status.**

Leading Indicators – **No change in status.** For the next few months, the Leading Indicators team will be focused on supporting the integrated vapors data collection DQO process. This DQO drives data collection that will be used as the basis to validate and update the Leading Indicator Process.

Abatement Technologies – **No change in status.** As reported last week, an integrated project team was established to study the feasibility of installing a Ventilator Dilution Fan (Strobic Air) on the AW stack. The study was reviewed by ORP whose comments were answered. Minor modification to the feasibility study were made and document continues to move through the approval process. Two abatement technology projects were funded in FY17; they are the Ventilator Dilution Fan (Strobic Air) installation on the AW Stack, and continued development of the NUCON thermal oxidation technology.

- **Ventilator Dilution Fan (Strobic Air Stack Ventilation System):** **No change in status.** Tank Farm Projects is leading the design and installation of the ventilation upgrade for the AW stack. A project schedule has been developed and contracting is in process.
- **NUCON International Thermal Oxidation System:** **No change in status.**
- **SCBA Equipment Evaluation** – **No change in status.** The results of the Phase 2 evaluation are being presented to the Hanford Site Respiratory Committee this week. Pursuant to Phase 3 testing, an order for the Scott NXG7 SCBA cartridge is being processed for approval.

Chemical Vapor Data Quality Objectives (DQO) – CPPO SMEs are participating members of the Integrated Sampling Strategy Project Team. This week, members of the CPPO team completed step three of the Industrial Hygiene Tech Basis Revision Data Quality Objectives (DQO) document, and presented it to the Integrated

Sampling Strategy Project Team for review. The team moved on to the next step which is to describe the limitations and constraints on the data requirements. This information allows the team to determine how to collect the data required for the IH Tech Basis revision.

6. VAPORS MITIGATION PROGRAM PLAN - TOP RISKS

CPPO Risk Weekly Update

The subset of the Vapors Mitigation Risk Register that is getting the most attention this week is shown below in Table 1.

Table 1. Comprehensive Vapor Action Plans Risks

CVAP RISK Number	Current Status	Handling Actions	Current Risk Level
004 Integration with Other Key Projects More Complex than Expected.	242-A Stack Extension Critical Lifts will be performed around exterior of building and require integration with daily routines.	1. Identify key program interfaces. 2. Engage with program/project managers early.	Medium
024 Equipment design and Current Requirements are Incompatible with Tank Farm Infrastructure	Software (Kinexsys) and hardware communication issues are causing delays in VMDS schedule. Tank Farm communication infrastructure may not be able to support expansion of vapor monitoring bandwidth.	1. Identify vapors monitoring infrastructure requirements within the tank farms. 2. Start upgrades and equipment installs in order to support vapors monitoring activities.	Medium
009 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 3rd Party Evaluation and/or Subcontractor Testing Cause Delays	Chemical Cartridge Testing 3 rd Party Reviews by CPWR may be delayed.	1. Engage 3 rd Party and/or Subcontractor leadership in communicating status.	Medium