



washington **river**
protection solutions



Energy Secretary Rick Perry and Sen. Maria Cantwell D-Washington observe a respirator demonstration at HAMMER on August 15, 2017 (Tri-City Herald/Bob Brawdy used with permission).

**Tank Operations Contract
Chemical Protection Program Office Weekly Report**

August 24, 2017

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

The CPPO continues to focus on the completion of the Recommendations Table (Table), coordinating the mentoring and engagement activities of the CPPO team members from Center for Toxicology and Environmental Health (CTEH), developing a Comprehensive Vapors Actions status dashboard and metrics process, and launching a vapors related Questions & Answers tracking system.

The Table is the compiled list of actions and deliverables in response to the recommendations from the National Institute for Occupational Safety and Health (NIOSH), Tank Vapor Assessment Team (TVAT), Office of Inspector General (OIG), Office of Enterprise Assessments (EA-32), and CTEH. The Table provides the draft Comprehensive Vapors Action Plan (CVAP) Key Performance Parameter (KPP) associated with each action being implemented in response to the recommendations. Internal review and concurrence is complete; review with the Department of Energy Office of River Protection (DOE ORP) has begun. The actions associated with the deliverables will be entered into the Problem Evaluation Request (PER) system.

The CPPO has developed a variety of metrics in anticipation of the draft CVAP monitoring dashboard, reflecting the progress made in implementing the CVAP. The metrics are designed to monitor the progress of the draft CVAP KPPs 1 thru 7. The metrics inform the graphs, charts, and analysis which populate the draft CVAP KPP Dashboard. The dashboard and metrics update processes have been determined. July 2017 data launched the first test of the processes. The team is reviewing and refining the final product.

The CPPO has drafted the CVAP Roles, Responsibilities, Accountabilities, and Authorities (R2/A2) matrix. The matrix has been reviewed internally and comments are being incorporated.

CPPO Oversight and Tracking

- The CPPO office tracks all vapor related problem evaluation requests (PERs), and is tasked with communicating PER resolutions. The 117 TVAT actions are captured in WRPS-PER-2014-0602. The 3 OIG actions are captured in WRPS-PER-2016-2433 thru 2435. Sixty-one TVAT actions were completed during Phase I (FY16); their completions are documented in the ESTARS system. It is the project's intention to add the remaining recommendations from NIOSH, EA-32, CTEH, and the Vapor Management Expert Panel (VMEP) to the PER system as soon as they are developed and time-phased for closure. The metric in **Figure 1** shows the difference between the number of TVAT and

OIG corrective actions that have been completed and the corrective actions that are due. The remaining 54 actions are due at the end of FY 2018.

Objective

To monitor corrective action completion based on their assigned due date.

Measure

The difference between the total number of corrective actions completed compared to the total number of corrective actions due or baseline (BL).

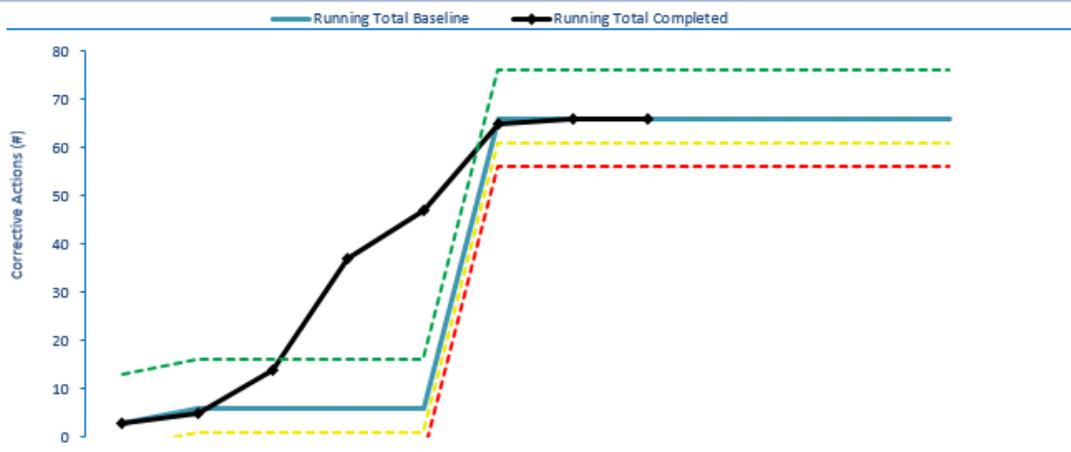
The Baseline (BL) date is documented in E-Stars. Many actions (66) were assigned due dates in June 2017 to ensure coordination and validation of closure documentation.

Performance Thresholds

Adverse	≤ BL-10
Declining	> BL-10 and ≤ BL-5
Meets	> BL-5 and ≤ BL+10
Exceeds	> BL+10

Performance Data

	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17
Baseline Due (month)	3	3	0	0	0	60	0	0	0	0	0	0
Number of Completed (month)	3	2	9	23	10	18	1	0				
Running Total Baseline	3	6	6	6	6	66	66	66	66	66	66	66
Running Total Completed	3	5	14	37	47	65	66	66				
Schedule Performance (#)	0	-1	8	31	41	-1	0	0				



Specific Goal to Achieve

To complete all corrective actions on-time or before their due date.

Leading Indicator Description

This is a lagging indicator relative to completed actions. However, this is a leading indicator for WRPS focus and attention relative to overall vapors management.

Performance Indicator Information

PI Owner: Rebecca Sams

Data Analyst: Greg Hanson

Data Source: PERIESTARS

Analysis

Currently, this metric includes only the actions associated with WRPS-PER-2014-0602 (TVAT) and WRPS-PER-2016-2433 thru 2435 (OIG). In the future, additional corrective actions will be added.

All actions that were due in the month of June 2017 have been completed (Note: Action WRPS-PER-2014-0602.111 was completed/validated in June but not closed in PER system until July). The remaining 54 actions are due at the end of FY 2018.

Action

Continue to status actions on a monthly basis. Once actions are complete, push them through the final review and validation process.

Additional Info: None

Action Status Summary by Assignee

Department	Open	Closed	Total	Overdue
Vapor Technology Solutions	3	13	16	0
ESH&Q	10	3	13	0
Organic Studies	0	2	2	0
Tank Farm Projects	0	1	1	0
TFP Project Management	3	5	8	0
CPPD	1	12	13	0
Chief Technology Office	7	1	8	0
Industrial Hygiene	30	29	59	0
Totals	54	66	120	0

Figure 1. WRPS met the June 2017 deadline to complete the first 66 actions. Fifty-four actions are due FY18.

2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

KPP 1. Engagement and Effective Measurement

Chemical Protection Engagement

The CPPO engagement and mentoring initiatives featuring the team from CTEH continues. Comprised of toxicologists and industrial hygienists, the CTEH team attends onsite staff meetings, select pre-job meetings, and activities with the Industrial Hygiene Professionals (IHP) and Industrial Hygiene Technicians (IHT). The CTEH team is knowledgeable on CVAP actions, general toxicology, and are trained emergency responders. The CTEH professionals also practice Covello high risk communications techniques.

Chemical Protection Engagement Communications

Last update 8/17/2017: There are currently two vapors related communication plans in development. The *Comprehensive Vapor Management Communication Plan* is a requirement of KPP 1. The *CVAP Communication Plan* is a focused plan for communicating the content of the CVAP when it is completed and issued. Both plans are in draft. The *Comprehensive Vapor Management Communication Plan* is being included in the *WRPS Hanford Communication Plan*. The plan has begun the requisite internal review.

Last week's CPPO Notebook is titled *CPPO LEAN Update*. This week's CPPO Notebook is titled *Third party independent review recommendation: Full face respirator use at the Hanford tank farms*.

One of the recommendations from the CPPO sponsored LEAN Management Event was to establish an e-form with which to submit vapors related questions, as well as track the question/answer to completion. An e-form has been created and is now in testing.

Solutions, Issue 404, published August 14, 2017, reported, "Doug Greenwell, WRPS Retrievals manager, updated the [Hanford Advisory Board's Tank Waste] committee on single-shell tank C-105. He discussed the tank's waste characteristics and retrieval history, as well as the retrieval and respiratory protection strategies for removing the remaining waste from the tank." A second *Solution's* article reviewed the vapor control strategies in use for the duration of the C-105 retrieval.

Key Performance Parameter 1

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

The August 14, 2017, all employee *Message from Mark* congratulated the C-105 project team “for successfully restarting waste removal over the weekend. Waste retrieval from tank C-105 resumed last weekend and about 13, 4000 gallons of waste was removed from the single-shell tank. No odors were reported by workers throughout sluicing operations, and no chemical vapors were detected by our AreaRAE air monitors. Monitoring exhausters in C Farm and in AN Farm where the waste is being transferred indicated minor increases in ammonia and volatile organic compounds during the first 24 hours of retrieval. The readings then decreased to non-retrieval levels.” This was also published on August 17, 2017, in the *Vapors Weekly Update*.

The WRPS Retrieval manager sent an all employees email on August 15, 2017, outlining the vapor control strategy for the C-105 waste retrieval activities scheduled to resume that evening.

Hanford Vapors Website Updates

Hanford Vapors Website posts the week of August 14, 2017, are:

- [Vapors Weekly Update – August 17, 2017](#)
- [Stoneturn Consultants preliminary report on air-purifying respirator cartridge testing and use](#)
- [CPPO Weekly Report: August. 17, 2017](#)

CVST Agendas:

- [July 26, 2017](#)

CVST Minutes:

- [July 26, 2017](#)
- [July 12, 2017](#)
- [June 28, 2017](#)

✚ Chemical Protection Engagement: Data Analysis and Visualization Tool (PHOENIX)

Last update 8/10/2017: For the past four weeks, people from various organizations in WRPS have been testing the DAV tool and providing feedback. The team is in the process of sifting through the feedback from this pool of software testers. The response thus far has been positive with a lot of interactive ideas. The system remains on schedule to go live at the end of September.

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

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

Last 8/10/2017: WRPS, TerraGraphics and Dade Moller continue their review of RPP-22491, *Industrial Hygiene Chemical Technical Basis* incorporating updates as appropriate from the work produced for the Health Process Plan. The Health Process Plan team studies scientific information and provides recommendation updates on Chemicals of Potential Concern (COPC), Occupational Exposure Limits (OEL) and Transient Affect Concentrations (TAC). Several reports have been received from PNNL for WRPS's review, and reviews are ongoing. Additionally, Charter 71, which provides the internal and external review panel process for the HPP review, has been published. The internal panel has met and is in the process of reviewing and completing the evaluation for one of the HPP studies that addresses Chronic Regulatory OELs. The updated COPC list will be finalized this fiscal year.

Institutionalizing the Vapors Program with the IH Program Requirements

The Tech Basis and COPC update are expected to be finalized by the end of FY17.

Health Process Plan

Update: A schedule for FY17 has been developed for the Health Process Plan. The project is broken down into seven tasks:

- Task 1: Schedule: Complete.
- Task 2: Establish Tank Operations Assessment Team.
- Task 3: Establish an External Peer Review Health Panel.
- Task 4: Implement Routine Analysis and Screening Process for Updating COPCs.
 - 2017 COPC updates are progressing.
- Task 5: Establish Acute/Transient and Chronic Exposure Action Levels.
 - The Chronic OELs based on regulatory guidance report has been revised according to external WRPS comments. It is awaiting final internal review before submission of the revised report.
 - For furan and nitrosamine reports, comments have been addressed but need to be reviewed prior to transmittal. Staff is unavailable week of August 21; expect transmittal week of September 1, 2017.
 - Acute Regulatory Report is undergoing internal review next week and is expected to be submitted to WRPS by September 5, 2017.

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.

- The team met to complete deliberations on the mixtures dosimetry and modeling reports. A timeline and next steps were agreed upon.
- The team met to finalize the approach for Transient Effect Concentrations (TEC) derivations, assign responsibilities, establish a timeline, and set up a review meeting.
- **Task 6: Evaluate Computational Approaches for Predicting Exposure and Delivered Dose.**
 - Chemical mixtures and methods in vitro portion completed. Adjustments to standard operating procedure, search string and prioritization for TEC development underway. September 7, 2017, submission is target date, with possible earlier submission
- **Task 7: Database Implementation and Management.**
 - Create forms that will populate the Risk Assessment Tool with data.

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

In FY16, PNNL developed a database to review and update the COPC list and associated OELs. See the Health Process Plan, Task 7 for updates.

Leading Indicators

Update: The data quality objective (DQO) process drives data collection that is used as the basis to validate and update the Leading Indicators. The accomplishments as of August 17 are:

- Discussed flow charts from prior report and a focus on the R-code that will answer the important question of “is this a good indicating pair.”
- Implemented test cases, including Proton Transfer Reaction Mass Spectrometry (PT-RMS) and Picarro (ammonia) paired data along-side of historic data.
- Pulled new data from cartridge testing done in 2016 and 2017, including direct read ammonia instrument and field notes; data is now available.
- Initiated the conversation of comparing data from different averaging schemes (i.e. 2 min vs 2 hour, etc.).
- Continued an investigation of the efforts needed to compile existing and new data sources (content, format, assumptions, etc.) for incorporation into analysis; including initiating an effective sample size survey to determine how best to incorporate PTR-MS time-series data.

- Continued a discussion on designating different data sources with error bars, representing data by location, and appropriate time averaging for R-code.

Parity Implementation with Established Programs

Last update 8/10/2017: Chemical Worker Tier 1 and 2 training is in the coding process for computer based training (CBT). Coding is slated to be complete by the end of August-beginning of September. Final review of the CBT will follow.

The Tier 3 Chemical Worker Training is being developed. Tier 3 training is slated for completion by the end of FY17. The rollout of a Tier 3 pilot class is anticipated by end of FY17.

KPP 4. Engineering Controls

242-A Evaporator Stack Extension

Update: The installation is complete, and the new stack is functional and operational. The final step in the stack extension was re-torquing the lower section of the extension piece. This was completed and the work package is being closed.

Exhausters

Last update 8/17/2017: SY-Farm: Efforts to design the exhauster system is on-going, with the target for completing the design by the end of FY17. The design is currently focused on the cathodic protection system. Site mobilization activities continue to be on-hold pending the results from the third party review of vapor controls. **A-Farm:** Acceptance testing began August 1 and is scheduled to be completed by August 16. The Request-for-Quote to procure engineering support for design on the exhauster pad re-location is ongoing.

AX-Farm: The evaluation of the AX exhauster demister capabilities are on-going.

Strobic Air Dilution Fan

Last update 8/17/2017: The specification for factory acceptance testing (FAT) of the Strobic unit is in SmartPlant for review, while a draft statement-of-work for Strobic to support the FAT is being prepared.

NUCON Thermal Oxidation Vapor Abatement Unit (VAU)

Update: The following activities occurred last week:

TerraGraphics:

- An overview of the *Functions and Requirements* (F&R) was presented to the Integrated Project Team on August 15.

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

- Work on the bench-scale test design continued; however, due to changes in the site selection some previous work will need to be updated. A full-scale effort on this design cannot be made until the site has been selected. The design is currently scheduled to be completed by mid-September.

WRPS:

- The NUCON contract was issued last week.
- TerraGraphics continued preparing the *Demonstration Site Selection Report*.

KPP 5. Administrative Controls and Monitoring

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

Last update 8/17/2017: The events of last week include the following:

- Viability assessments, scheduled to be completed by mid-August, are on-going for the ultraviolet Fourier transform infrared spectrometer (UV-FTIR) and open path Fourier transform infrared spectroscopy (OP-FTIR).
- Efforts continue on the Pilot-Scale Phase 2 Report, which is currently scheduled to be completed by the end of August.
- Phase II testing procedures for VMDS equipment startup testing are being created.
- The purchase order for the 13 Ultraviolet Differential Absorption Spectrometer (UV-DOAS) is moving forward. WRPS has received a preliminary proposal and is resolving questions with the vendor.

Key Performance Parameter 5

Define unrestricted work boundaries and implement monitoring on active stack ventilation and unrestricted work boundaries in the A farms to provide defense-in-depth.

Stack and Boundary Monitors

Last update 8/17/2017: The design packages for the AN, AW, and 702AZ stack monitors are being prepared. The main focus was finding locations for verification bottle racks at both AW and AN Farms, which need to be placed outside the farms for easy access.

Establishing Safe Unrestricted Boundaries

Update: Quantitative Risk Assessments for A, AP, and AW-Farms are in review. Comment resolution is in its very early stages.

Public Address System

Update: Poles and speakers have been installed in AN, AW, AY, and AZ Farms. A and AX Farms are scheduled to be complete by the end of September.

KPP 6. Tank Operations Stewardship

Pilot SST Stewardship Program

Last update 8/17/2017: Remote Monitoring Equipment: Remote monitoring equipment is still in the design phase. Procuring the equipment needed to support level and temperature mock-up testing continues. Mock-up testing is being performed to ensure the new equipment will interface with existing tank farms systems.

FY15 LEAN Report/Work Location Evaluations: A draft statement-of-work has been prepared to procure the engineering services needed to prepare the *Project Execution Plan*.

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

Update: On August 9, 2017, an out briefing with Stoneturn Consultants was held regarding the use of Full Face Air Purifying Respirators (FFAPR). Representatives from WRPS management and HAMTC were present for the out-brief. STC announced that they agree with the use of FFAPRS for SEG1 activities at six of the farms where cartridge testing was conducted, as long as FFAPR use is supported by a comprehensive hazard assessment and a comprehensive respiratory protection program. STC will be sending tier final report soon. The full STC out brief presentation can be found on HanfordVapors.com.

Cartridge testing is set to resume this weekend at AX farm. The additional test is necessary to be able to use other types of FFAPRS and cartridges in ventilated tank farms.

Mobile Laboratory

Update: Background sampling was performed at sites 2A, 3A, 4A, 5A, 1B, 2B, 3B, 4B and 5B. The background analysis is being done to better understand what the normal background for Furan and Nitrosamines are across the central Washington plateau, and how the Hanford Tank Farms impact these normal background levels. The scope includes a 6 week study encompassing 10 locations with repeated visits to each location throughout the test period. Sampling is done for 24 hours at each location. Site 1A represents a remote location positioned at what is historically upwind of 200W and 200E for the months of July and August. Sites 2A and 2B are locations in 200W at both the SY and T-Farms. Sites 3A and 3B are located in 200E, near the corner of 4th and Buffalo and on the north side of BY Farm. Site 4B is located approximately ½ mile east of the Waste Treatment Plant. Site 5B is located

in Kennewick to evaluate background levels in residential and more urban areas. The mobile lab submitted three weeks of background sampling reports and the C-105 Quick Turn report.

Personal Vapor Monitor

Update: The C₂Sense Personal Ammonia Monitoring System continues to evolve at a lively pace. As of August 17, the following has been accomplished:

- The monitor's enclosure has been enlarged to accommodate the larger printed circuit board (PCB) needed to house the sensing electronics.
- The top part of the housing has been modified to accept push-in ball plungers. This will simplify the design and allow for more robust operation.
- The sensing electronics PCB design is complete; the layout will be done in the next few days. It will then be reviewed and sent off for production.
- Testing showed that patterns with as few as four holes are more than adequate for the sensor cartridge to perform its sensing function. Files are being reviewed by the manufacturer.

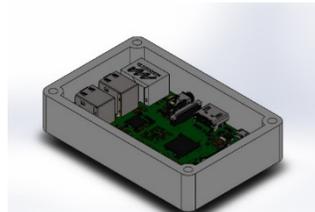


Figure 2. Reader designs for the Personal Ammonia Monitoring System

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.

4. Vapors Mitigation Program Plan - Top Risks -CPPO 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
023 Internal Reviews take longer than anticipated.	Internal reviews are due Sept 17, leaving no float for delays and large amount of work for reviewers.	1. Assign expediter to the project to speed process - complete	High
009 Resources not available when required.	Lack of design and engineering resources are causing delays in VMDS System Integration, 242-A Stack Extension.	1. Identify key technical resources up front and secure availability. 2. Utilize resource loaded schedule where appropriate. 3. Coordinate work planning to streamline resource utilization.	Medium
004 Integration with other key projects more complex than expected.	Integration of field work for VMDS implementation and associated execution concerns for SY, A-Farm, and AW stack upgrades. Installation and turnover of PA system to tank farm operations.	1. Identify key program interfaces early. (Ongoing) 2. Engage with program/project managers early. (ongoing) 3. Maintain weekly communication and IPT meetings. 4. Incorporate instrumentation (stack monitor) installation into future design of equipment.	Medium