



washington **river**
protection solutions



Acting EM-1 Director Sue Cange – WRPS VMDS Tour

Tank Operations Contract
Chemical Protection Program Office Weekly Report
April 27, 2017

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

The CPPO team continues to create, review, redact, summarize, edit, polish, and provide vapors communications to the workforce. CPPO was largely responsible for the 94 vapors communications published to the Hanford Vapors website last week. This week, the team made all 41 AOP-015 event investigations available on the website (names redacted). Twenty issues of the CPPO Weekly Report were uploaded to the website, and will be a regularly available post.

As reported last week, the CPPO Team welcomes Julian Laurenz. Julian has worked for WRPS Retrieval Process Engineering for two years. For 28 years Mr. Laurenz has been supporting the Hanford Mission. For CPPO, Julian will perform a variety of functions, including joining our team of subject matter experts.

The April 20 Weekly Notebook is titled *Respiratory Cartridge Testing Update*. To date, 13 recipients of the notebook indicated they would be presenting it to their staff. This week's Weekly Notebook is titled *Department of Energy Office of Enterprise Assessments (EA-32), Report Summary*.

2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

KPP 1. Communications

Chemical Protection Communication

In March 2017, the CPPO performed a Vapors Communication Workforce Survey. Of the eighty-six surveys that were returned to CPPO, the majority reported that they prefer to receive their vapors communications via an all-employee email or direct manager-to-worker exchanges. The survey summary is in its final week of review; expect its release the first week in May.

CPPO, pursuant to the KPP 1 mandate to “[e]stablish a comprehensive vapor management communication plan...” has initiated a revision to the WRPS Management Communication Plan.

A Department of Energy (DOE) critique of the Hanford Vapors website fueled the energetic website activity last week. In its review, DOE noted the need for improved resources on the Employee Resources tab, and the need to represent new activities and updated vapors data and reports. The critique also noted the appearance of a decline in vapors activities as evidenced by the Weekly Vapors publication's focus on overall tank farm accomplishments and completion of engineering and construction upgrades. WRPS responded to the critique promptly by uploading to the website CPPO's at-the-ready communications on

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

vapors, including redacted AOP-015 event investigations, Weekly Reports, weekly VMDS reports, RJ Lee Group Mobile Lab weekly reports, and AOP-015 table summaries. The Comprehensive Vapors Solution Team (CVST) was quick to respond to the call for website improvements by making immediately available its charter, meeting agendas, and meeting minutes.

Hanford Vapors Website Updates

April 19, 2017, saw 94 data reports uploaded to the vapors website. Updated (as of January 2017) were the following 45 headspace/source and non-personnel sampling data reports:

Non-personal headspace sampling data 1993 to 2005

A Farm headspace	AY Farm headspace	C Farm headspace	T Farm headspace
AN Farm headspace	AZ Farm headspace	S Farm headspace	TX Farm headspace
AP Farm headspace	B Farm headspace	SX Farm headspace	TY Farm headspace
AW Farm headspace	BX Farm headspace	SY Farm headspace	U Farm headspace
AX Farm headspace	BY Farm headspace		

Non-personal headspace/source sampling data 2005 to 2017

A Farm headspace	AY Farm source	C Farm headspace	T Farm headspace
A Farm source	AZ Farm source	C Farm source	T Farm source
AN Farm source	B Farm source	S Farm source	TX Farm headspace
AP Farm source	BX Farm headspace	SX Farm source	TX Farm source
AW Farm source	BX Farm source	SX Farm headspace	TY Farm source
AX Farm headspace	BY Farm headspace	SY Farm headspace	U Farm source
AX Farm source	BY Farm source	SY Farm source	

The following Weekly VMDS (Pilot-scale) reports for December and January were uploaded:

- 7 DRI Weekly Reports, December 2016 thru January 18, 2017
- 7 UV-DOAS Weekly Reports, December 2016 thru January 18, 2017
- 7 OP-FTIR Weekly Reports, December 2016 thru January 18, 2017

The following RJ Lee Group Mobile Lab Weekly Reports, a total of 13 reports, were uploaded:

- Mobile Lab Weekly Report 4.3
- Mobile Lab Weekly Report 4.2
- Mobile Lab Weekly Report 4.1
- Mobile Lab Weekly Report 3.4
- Mobile Lab Weekly Report 3.3
- Mobile Lab Weekly Report 3.2

- Mobile Lab Weekly Report 3.1
- Mobile Lab Weekly Report 2.1
- Mobile Lab Weekly Report 1.5
- Mobile Lab Weekly Report 1.4
- Mobile Lab Weekly Report 1.3
- Mobile Lab Weekly Report 1.2
- Mobile Lab Weekly Report 1.1

The following 7 AOP-015 table summary data reports were uploaded:

- Jan. 26, 2017 702-AZ
- Jan. 25, 2017 AP
- Dec. 1, 2016 2715AW
- Nov. 30, 2016 AX
- Aug. 3, 2016 AY
- July 12, 2016 AP
- June 10, 2016 702AZ

The following 7 AOP-015 Event Summary Reports were uploaded:

- EIR-2016-11
- EIR-2016-15
- EIR-2016-17
- EIR-2016-19
- EIR-2016-20
- EIR-2016-21
- EIR-2016-22

Additional postings to the website include:

[Vapors Weekly Update – April 20, 2017](#)

Two new option buttons, one linking to the Chemical Vapors Solutions Team (CVST) and the second linking to the Chemical Protection Program Office (CPPPO) page, have been added to the Hanford Vapors Employee Resources page. The CVST page includes the following information:

- The CVST Charter
- Meeting Agendas for the following:
 - April 12, 2017
 - March 22, 2017
 - March 8, 2017
 - February 22, 2017

- January 25, 2017
- January 11, 2017
- November 21, 2016
- November 9, 2016
- October 26, 2016
- The Meeting Minutes for the following:
 - January 11, 2017
 - November 21, 2016
 - November 9, 2016
 - October 26, 2016

The CPPO page makes available it's previously issued 20 CPPO Weekly Reports.

On April 19th, an all-employee email apprised all employees of the vapor control strategies put in place in preparation for the weekend supernatant waste transfer between two double-shell tanks, AN-101 and AN-106. Reviewed by the Chemical Vapor Solutions Team (CVST) and HAMTC leadership, the following controls were utilized:

- Backshift and weekend operations
- Readerboards placed as "Information Only" indicating a DST to DST transfer in progress
- Supplemental AreaRAEs, enhanced IH monitoring/sampling and RJ Lee Group mobile laboratory monitoring deployed during the transfer

The transfer was again postponed, but is planned for this weekend.

Sue Cange, acting EM-1 Director, toured the AP Tank Farm on April 19, 2017, to view WRPS's pilot-scale testing of the Vapors Monitoring & Detection System (VMDS) and associated technologies. During the tour, Kevin Smith, ORP Manager, gave an overview of chemical vapors. Rob Gregory, WRPS Chemical Protection Integration Manager, briefed the tour participants on the Comprehensive Vapor Action Plan (CVAP). WRPS One System Manager, Karthik Subramanian, led a poster session discussing the following:

- Tank integrity/chemistry control
- Head space ventilation
- Chemicals of Potential Concern (COPC)
- Pilot-scale testing of VMDS technologies
- The RJ Lee Group mobile laboratory
- Automation and Technology goals of WRP

PHOENIX

Update: Currently managed by CPPO, the Data Explorer Phoenix team is working on Phase 2 tasks around user experience, visuals, chart creation, and landing screen and welcome pages. These updates are currently live on the test server, and are being prepared for inclusion into the final build. Additionally, data from the VMDS system has been provided to PNNL which is working to assimilate the data into the explorer. The CPPO also worked with the Data Explorer's project managers to provide a translation document for the VMDS's data sources through the OSipi data historian so that PNNL can more quickly evaluate the data as it is provided to them. The CPPO also vetted the current definitions being used by the Data Explorer for the list of COPCs to make sure that they are accurate and concise

CPPO Oversight and Tracking

Website Statistics and Use

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; 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 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.

Figure 1, below, depicts how WRPS is ahead of the June deadline to complete the first 66 actions with over half of the PERs already complete, and several others are in the final review process.

Vapor Corrective Action Tracking

(Only Includes WRPS-PER-2014-0602 and OIG Actions)

Trending Fiscal Year 2017
Month Ending April 2017

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).

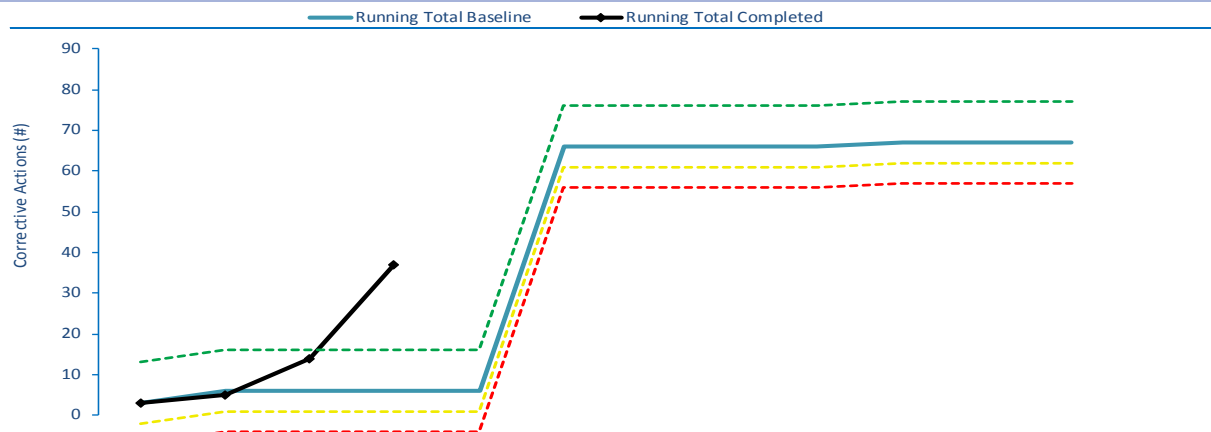
The Baseline (BL) date is documented in E-Stars. Many actions (66) were assigned due dates in June 2017 to ensure coordination and validation of closure documentation.

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	1	0	0
Number of Completed (month)	3	2	9	23								
Running Total Baseline	3	6	6	6	6	66	66	66	66	67	67	67
Running Total Completed	3	5	14	37								
Schedule Performance (#)	0	-1	8	31								



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: PER/ESTARS

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.

Approximately 20% of the Open Actions have been completed by the Assignee and are now going through final review and validation by CPPO and ESH&Q.

Action

Continue to push completed actions through the final review and validation process which will allow closure in E-Stars.

Additional Info: None

Action Status Summary by Assignee

Department	Open	Closed	Total	Overdue
ESH&Q	13		13	0
Tank Farm Projects	5	6	11	0
CPPO	5	8	13	0
Chief Technology Office	14	10	24	0
Industrial Hygiene	46	13	59	0
Totals	83	37	120	0

Figure 1. Vapor Corrective Action Tracking

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

Develop New or Revised COPCs/OELs

Last update 4/13/2017: TerraGraphics, teamed with Dade Moeller, was awarded a subcontract to revise and update RPP-22491, *Industrial Hygiene Chemical Vapor Technical Basis* and the related COPC list. A kickoff meeting was held with the subcontractor team, and the work scope is progressing on schedule with revising the document, as well as the COPC list, by the end of the fiscal year.

Institutionalizing the Vapors Program with the IH Program Requirements

Last update 4/13/2017: WRPS also subcontracted the TerraGraphics/Dade Moeller team to develop an IH Program Manual focusing 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 by the CTEH are helping drive improvements in the WRPS IH program. The subcontractor is collecting information for this work scope in order to understand the requirements basis for the program. TerraGraphics/Dade Moeller are investigating best management practices (BMPs) implemented within the vapor program to date. The subcontractor is reviewing BMPs from other ESHQ programs, including the radiological protection program, in order to model the desired level of technical rigor and discipline in the vapor program. The work is progressing on schedule; fully reviewed and approved manual and procedures for the vapors aspects of the IH program will be completed by the end of FY 2017.

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

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.

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 Site Wide Industrial Hygiene Database (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.
 - Revising draft final reports for COPCs with regulatory guidelines and high priority COPCs, based upon comments that have been received for the Assessment Team.
- **Task 6: Evaluate Computational Approaches for Predicting Exposure and Delivered Dose.**
 - Evaluating the chemical mixture methodology using several case studies. Based on the results, efforts will focus on refining the CMM approach to specifically address chronic and acute mixture exposures.
- **Task 7: Database Implementation and Management.**
 - Started working on scraping reference data from journal sites that the HPP team uses (7020)
 - Determined databases that host the popular journal sites (7020)
 - Made the recommendations tracking form auto-populate chemical names and families (7005)
 - Added chemical groups to the recommendations tracking form (7005)
 - Added a table that saves user name and timestamp when a HTFOEL FY17 Report is generated (7005)

Database Implementation and Management

Last Update 4/13/2017: 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.

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.

Leading Indicators

Update: Accomplishments for the week of 4/17 are shown below:

- Continued support of Vapor Sampling DQO process

- Kicked off the project last week and scheduled weekly project meetings
- Initiated review of the code used for last year's analysis to familiarize new project staff
- Initiated review of new available data sources to determine how to implement use within the process

Parity Implementation with Established Programs

Last update 4/13/2017: The successes in implementing parity with established programs are as follows:

- Enhanced CHAT continues to be well received.
- 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, SWIHD, and Continuing Training.
- IHT Continuing Training was launched on April 18. An update will be in next week's CPPO Weekly Report.
- Chemical Worker Tier One is in the Design Phase; comments are being collected from key stakeholders.
- Chemical Worker Tier Two and Three are being developed.

KPP 4. Engineering Controls

Exhausters

Last update 4/20/2017: New exhausters for A-Farm have been designed and are under construction. The design includes increased stack heights. Anticipated delivery date is September 2017.

Strobic Air Dilution Fan

Last Update 4/13/2017: 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 subcontracting is in process. At the end of Q2, the SOW for the Strobic Air contract was approved in Asset Suite.

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.

NUCON Thermal Oxidation Proof-of-Concept Test

Update: TerraGraphics has been contracted to support a NUCON technology demonstration in FY18. TerraGraphics will support selecting the site, developing the Functions and Requirement Document, and developing the conceptual design for installing the demonstration apparatus. The proof of concept test will be conducted at NUCON's Columbus, OH facility from 3-4 May.

KPP 5. Administrative Controls and Monitoring

Permanent Installation of VMDS Equipment in A and AP Farms

Update: VMDS testing continued last week. The focus next week will continue to be the VMDS pilot scale demonstration and necessary modifications, and modifying the UV-FTIR by installing a pump bypass valve.

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 4/13/2017: 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 subcontract was established with Cerex to upgrade the software.

Establishing Safe Unrestricted Boundaries

Last Update 4/13/2017: 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

Last Update 4/13/2017: 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. Last Update 3/23/2017

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.

Key Performance Parameter 6

Institutionalize a tank operations stewardship program that minimizes required tank farm personnel entries; and establishes parameters for locating ancillary personnel and offices.

KPP 7. Hierarchy of Controls

Cartridge Testing and SCBA Alternatives

Last update 4/20/2017: In March of 2017, the team tested the cartridges at AZ-702 during a waste disturbing event. The samples are currently being analyzed at the 222-S laboratory. PNNL will perform the data analysis and develop the final report indicating whether the cartridges are protective of the workers during certain waste disturbing events.

Mobile Laboratory

Update: The Mobile Lab was staged to support monitoring during the AN-101 transfer, but the transfer start was delayed until the weekend of 4/28. Utilized Mobile Lab to collect samples for C2Sense analysis at CBAL.

Key Performance Parameter 7

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

Personal Vapor Monitor

Last Update 4/13/2017: C₂Sense, Inc. presented a proposal to finish developing the personal ammonia monitor. C₂Sense, Inc. is developing a personal ammonia sensor under funding from DOE-EM. WRPS is coordinating between C₂Sense, 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 C₂Sense, Inc.

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 Risk Weekly Update

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 Integration with other key projects more complex than expected.	Integration of field execution for VMDS in KPP5 continues to refine the schedule, execution conflict concerns in SY Farm, A Farm, and AW stack monitoring/Strobic Air. Extension prior to EC-06 are at risk or schedule delays due to integration issues.	1. Identify key program interfaces early. 2. Engage with program/project managers early.	Medium
009 Resources not Available when Required.	Head Space Sampling may not occur this year due to lack of resources.	1. Identify key technical resources up front and secure availability.	Medium
026 3rd Party Evaluation and/or Subcontractor Testing Cause Delays	Chemical Cartridge Testing – Receipt of 3 rd Party Reviews are inconsistent. Communication between stakeholders and WRPS need to be clarified by upper management.	1. Engage 3 rd Party and/or Subcontractor leadership in communicating status.	Medium
030 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.	1. Engage with CTO Technology Management and Field Solutions to develop data handling and interrogation infrastructure.	High
016 Stakeholder approvals not received when needed.	VMDS Project needs clarification on authorization past pilot scale testing.	1. Identify key stakeholders and necessary approvals/concurrences.	Medium