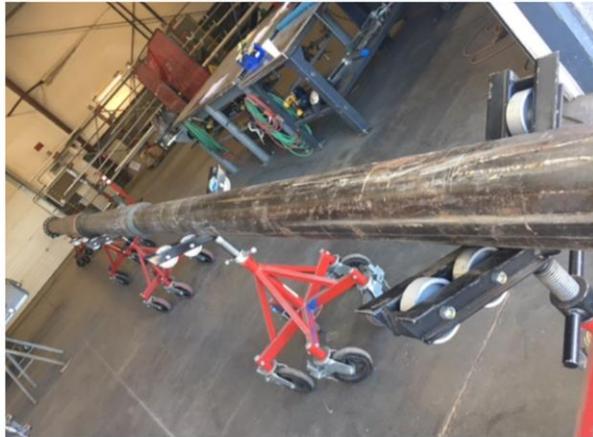
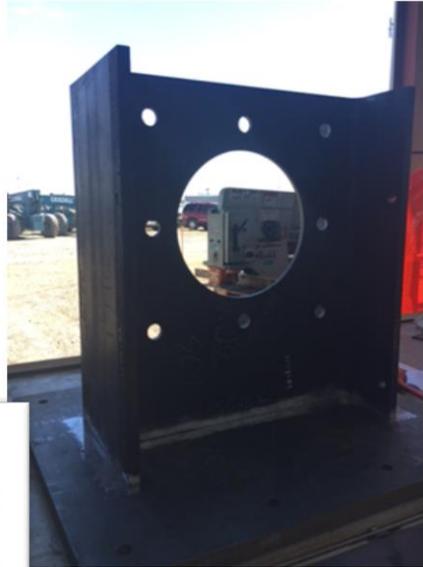




washington **river**
protection solutions



242-A Stack Extension Components

Tank Operations Contract
Chemical **Protection Program Office Weekly Report**
May 4, 2017

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

Dr. John Kind, Director of Toxicology for the Center of Toxicology and Environment (CTEH), was onsite during the week of April 23, 2017. The primary focus of Dr. Kind's visit was to gather information from the Industrial Hygiene Technician (IHT) staff regarding the need for additional information in the areas of toxicology, industrial hygiene, safety and health, and communication. To this end, Dr. Kind conducted four onsite meetings with groups of IHTs during the week, and he is currently compiling the information gained from these meetings to develop educational materials that can be distributed during future visits to the site. Dr. Kind also met with Industrial Hygiene (IH) professionals and managers to gather similar feedback.



The CPPO team helped re-establish the internal Comprehensive Vapor Action Plan (CVAP) integration meetings. Coordinating the integration of the necessary KPP actions was discussed, as well as preparing the draft *Comprehensive Vapor Action Plan Proposal*, plans for delivering the IH tech basis, engineering controls (status of Strobic air, NUCON, and 242-A Exhauster Stack Extension), and unrestricted work boundaries were discussed. It was also noted that IH planning for tank headspace sampling for FY18 needs to be underway now. Also discussed were the data management requirements for the Vapor Data Management System (VDMS).

The May 27 Weekly Notebook is titled *Department of Energy Office of Enterprise Assessments (EA-32), Report Summary*. To date, 14 recipients of the notebook indicated they would be presenting it to their staff.

In addition to holding meetings with IH staff, Dr. Kind completed a five-part educational series on how individuals experience odors. The series will be delivered through the CPPO notebook in the upcoming months. Upon completion of the notebook, Dr. Kind will give the full presentation to the Chemical Vapors Strategy Team (CVST).

This week, the CPPO began developing an industrial hygiene data tool that is designed to analyze the IH data contained within the Site Wide Industrial Hygiene Database (SWIHD). Additionally, it will perform basic and descriptive statistical analysis on the data. The tool allows the user to specify which farm(s) and similar exposure groups (SEGs) to be analyzed. The resulting view within the tool will then allow for the analysis on a compound-by-compound basis and includes a basic sample result count, average detection level, sample results standard deviation, and the variance between all sample results for that compound. The tool also analyzes these compounds on the type of sample that was taken such as a time-weighted average (TWA), short-term exposure limit (STEL), excursion, or ceiling sample. The

tool is being evaluated for wider use throughout the IH department, and as a new tool that will allow workers to analyze the data contained in SWIHD as an educational tool.

This week the CPPO hosted a meeting with IT data management and infrastructure developers to evaluate a path forward on the storage, recall, and housing of data being collected throughout the tank farm complex. Due to the exponential increase in the amount of data being collected, a new system for keeping and analyzing the data is being discussed as a means to future-proof the system from reaching any perceived hardware limitation. This first meeting was introductory in nature; future meetings are being planned in order to plan for any system and infrastructure improvements that may be needed.

This week, the CPPO provided multiple months of data reports from the Vapor Management Data System (VMDS) system, the RJ Lee Mobile Lab, and the latest SWIHD database results.

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. The survey summary is in its final week of review.

CPPO and C&PR, 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.

Hanford Vapors Website Updates

The following AOP-015 Event Summary Reports were uploaded to the website:

- EIR-2015-24
- EIR-2015-35
- EIR-2015-46
- EIR-2016-23
- EIR-2016-24
- EIR-2016-25
- EIR-2016-28
- EIR-2016-34
- EIR-2017-01
- EIR-2017-02

Key Performance Parameter 1

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

Two CPPO Weekly Reports were posted:

- April 27, 2017
- April 20, 2017

The Rounds & Routines from April 2016 to March 2017 were posted to the website. April 27, 2017, Vapors Weekly Update was posted to the website.

On April 26, an all-employee email apprised 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 successfully completed.

On April 27, an all-employee email apprised employees of the vapor control strategies put in place in preparation for future AY-102 visual inspections. To prepare for future video examinations of the AY-102 primary tank, one of the extended-reach sluicers, previously used for waste retrieval, was operated on April 27. Ensuring the area targeted for inspection remained clear of residual solids, high-pressure water was sprayed on the tank floor. The vapor control strategy for this operation included:

- Backshift and weekend operations only
- Readerboards placed as “Information Only” indicating a waste disturbing activity in progress
- Supplemental AreaRAEs were deployed during the operation

After the residual solids were cleared, a video of the tank bottom was completed.

PHOENIX

Update: Currently managed by CPPO, the Data Explorer Phoenix team continues to work 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 uptick in viewership is typically explained by the posting of the Weekly Vapors Update. The spike sometimes occurs the same day those reports are posted (see April 20). However, the spike often happens the next business day if the email push occurs after work hours (April 3 & 4). If the update is posted on a Thursday, the spike happens the following Monday (April 13 & 17). This is a phenomenon we have seen over the past six months.

However, April data provides a bit of an anomaly in viewership. ORP was conducting its review the week of April 10, and we see associated spikes in page views. The report was given to WRPS on April 13, and the following week WRPS began updating the page. Increased traffic is also reflected the weeks of April 17 and April 24.

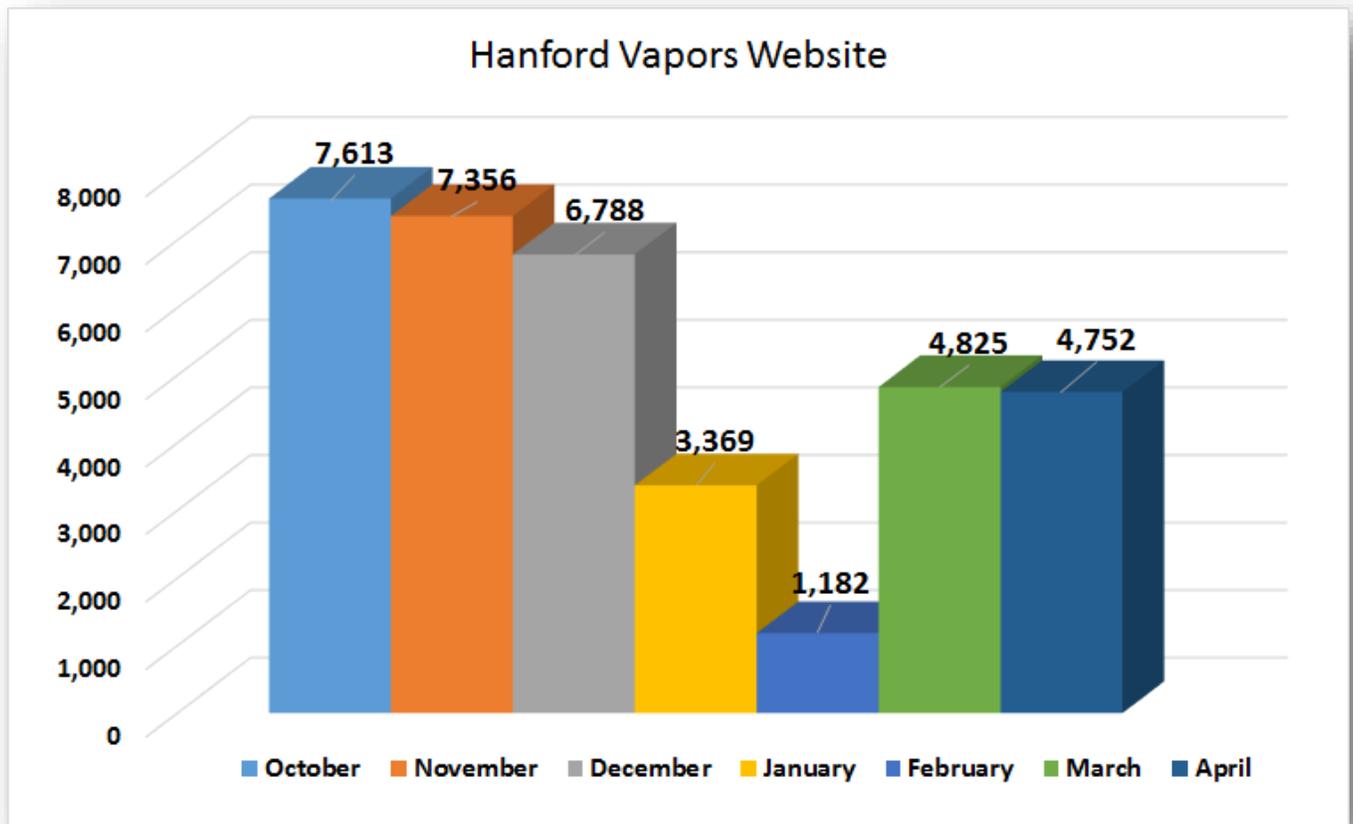


Figure 1. Hanford Vapors Website

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

Develop New or Revised COPCs/OELs

Update: 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. The work scope is being refined, and the IH Tech Basis and the COPC is being revised. An independent assessment of the acceptable occupational exposure levels (AOELs) developed in the IH Tech Basis was started this week. Process engineering supplied references and a brief explanation to the subcontractor on the AOEL process used in 2006. Currently, the subcontractor is completing the requirement and document reviews and are in process of beginning the GAP analysis for the revised Technical Basis.

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.

Institutionalizing the Vapors Program with the IH Program Requirements

Update: 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 making progress, having created an outline for the new manual, and begun documenting the relevant procedures to perform a GAP analysis.

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 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.**
 - Submitted nitrosamine and furan high priority OEL documentation to PNNL management for communications with WRPS.
- **Task 6: Evaluate Computational Approaches for Predicting Exposure and Delivered Dose.**
 - Computational approaches were evaluated for predicting exposure and delivered dose
- **Task 7: Database Implementation and Management.**
 - Tweaked the OEL approval buttons
 - Adjusted the recommendations page so that it automatically populated chemical families
 - Completed styling on the chemical metadata page
 - Worked on the citation scraper

Database Implementation and Management

Update: In FY 2016, PNNL developed a database to review and update the COPC list and associated OELs. See Task 7, Health Process Plan for the latest update.

Leading Indicators

Update: Accomplishments for the week of 4/30 are shown below:

- Continued review of analysis code
- Continued investigation of the effect of series or parallel sampling in available data

Parity Implementation with Established Programs

Update: The successes in implementing parity with established programs are as follows:

- Enhanced CHAT continues to be well received.
- Training is hiring an additional 2 subcontractors to help complete required training documentation for the IHT Training Program.
- HAMMER has kicked off it's Team to develop the Fundamentals of Industrial Hygiene course.
- IHT Continuing Training has held 4 sessions (2 each week) with great response to the hands on training for Physiological Monitoring Instruments and Theory on PID operation.

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.

- Chemical Worker Tier One is in the Design Phase; comments are being incorporated from key stakeholders and a draft storyline is being prepared.
- Chemical Worker Tier Two and Three are being developed.

KPP 4. Engineering Controls

✚ 242-A Evaporator Stack Extension

Update: The 242-A Evaporator vessel vent extension design and critical lift plans are complete. Fabrication of the vessel vent stack is underway and construction forces are expected to mobilize for field installation. Lightning protection has been finalized and will be installed in parallel with the vessel vent stack.



Figure 2. The anchor plate for the 242-A Stack Extension.

✚ 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. A kickoff meeting was held with TerraGraphics on May 1. A preliminary project plan, including schedule and project goals, was discussed. TerraGraphics will be supporting the NUCON proof of concept test.

KPP 5. Administrative Controls and Monitoring

✚ Permanent Installation of VMDS Equipment in A and AP Farms

Update: The focus this week was on the VMDS pilot scale demonstration and necessary modifications, and modifying the UV-FTIR by installing a pump bypass valve. A first draft of the 241-A Tank Farm Quantitative Risk Analysis (QRA) was

provided by Kenexis this week. Four chemicals (ammonia, nitrous oxide, furans, and nitrosamines) in A Farm had the potential to exceed 50% of their OEL. The QRA estimates the location and frequency that 50% of the OEL might be reached so that permanent monitoring can be installed in these locations. The QRA, when coupled with sensor location, is used to demonstrate the effectiveness of a given VMDS concept.

Stack and Boundary Monitors

Last Update 4/13/2017: In December 2016, the project team 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.

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.

Establishing Safe Unrestricted Boundaries

Update : 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. The subcontract to continue this upgrade was awarded on March 27, 2017. The kickoff meeting was held 4/26. Following are this week’s accomplishments:

- Met with PNNL software QA SME to discuss APGEMS QA planning
- Requested “intended use” statement from WRPS to help guide QA needs
- Held a team meeting to discuss scope items
- Began review of IH Mod Near- and Mid-Field model and NIST FDS model

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

Update: The SST-Stewardship activities are still in planning package status and as such have not received a CACN. No work has been executed officially other than simple planning and execution strategies for TY-Farm.

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.

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

Update: The Mobile Lab was deployed on April 28 to support the AN-101 to AN-106 tank transfer. Area monitoring sampling and analysis was done in support of this transfer. The Mobile Lab was attached to the A-103 Passive Breather Filter from April 25-27, however, a technical problem precluded ammonia sampling. Further, a control module on the PTR-MS failed on May 1. The Mobile Lab will be out of service until May 5.

Personal Vapor Monitor

Last update 4/27/2017: 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 kickoff meeting was held April 25. Initial prototype testing was completed April 27; preliminary results look very good. The device's sensitivity was on the order of 250 ppbv in laboratory conditions. When tested in a vapor sample collected from the AP Stack, sensitivity was less than 1 ppmv. A draft of the prototype test report is expected from C₂Sense by May 5.

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

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