



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



*Headspace Sampling – HanfordVapors.com posts new Headspace Sampling Data*

**Tank Operations Contract**  
**Chemical Protection Program Office Weekly Report**  
**April 20, 2017**

## 1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

The CPPO team has been working steadily to create, review, redact, summarize, edit, and publish a variety of vapors related communications, most of which were posted to the HandordVapors.com website on April 19, 2017. Included in our efforts are:

- Updated (as of January 2017) headspace/source and non-personnel sampling data (45 reports)
- Weekly VMDS (Pilot-scale) reports for December and January
- Four months of RJ Lee Group Mobile Lab Weekly Reports (13 reports)
- AOP-015 Event Summary Reports (7)

Partnering with Contractor Assurance continues on the Safety Culture Work Environment (SCWE) survey. The SCWE survey, planned for this fiscal year, will include a component of questions related to vapors communications. The subcontract for the performance of the survey is in the process of being awarded.

The CPPO Team welcomes a new technical expert, Julian Laurenz, a retrieval processing engineer. The addition of a new technical expert to the team will enable CPPO to continue to produce transparent and timely products going forward.

The CPPO tracks the vapors related communications it is asked to produce and the communications it delivers. **Table 1** and **Table 2** (see below) represent the vapors-related information communications that the CPPO created, the products completed for the month of March, and the totals Fiscal Year-to-date. Respirator cartridge reports from PNNL and Stoneturn Consultants drove an increase in the request for articles, summaries and message maps in March. Overall, March's production of vapor-related information by the CPPO remained consistent with previous months, with the notable absence of data reports/monitoring data (from the VMDS, Table 2). CPPO provided focus on information that was requested by multiple organizations (Table 1) Requests primarily included Summary Articles, presentations development and the CPPO Weekly Report.

**Table 1. CPPO Vapors Information Products Completed**

CPPO Vapors Information Products Requested FY-17	January	February	March	FY-to-Date Total
Data Report (Monitoring Data)	0	0	0	43
Presentations (includes CPPO Notebook)	4	10	5	29
CPPO Reports and Weekly Report	3	4	5	20
Information Requests	0	0	0	15
Articles, Summaries, and Message Maps	2	9	11	51
Surveys and Focus Groups	0	0	1	2
Website Requests/Site Updates	1	0	0	16
Videos	0	0	0	4
<b>Monthly Totals of Requests</b>	<b>10</b>	<b>23</b>	<b>22</b>	<b>180</b>

**Table 2. CPPO Vapors Information Products Requested**

CPPO Vapors Information Products Requested FY-17	January	February	March	FY-to-Date Total
Data Report (Monitoring Data)	0	0	0	43
Presentations (includes CPPO Notebook)	4	10	5	29
CPPO Reports and Weekly Report	3	4	5	20
Information Requests	0	0	0	15
Articles, Summaries, and Message Maps	2	9	11	51
Surveys and Focus Groups	0	0	1	2
Website Requests/Site Updates	1	0	0	16
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## 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. A total of 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.

The April 13 Weekly Notebook featured the *AY-102 to AP-102 Retrievals Summary: 12/8/2016-2/8/2017* report. To date, 9 recipients of the notebook indicated they would be presenting it to their staff. This week's Weekly Notebook is titled *Respiratory Cartridge Testing Update*.

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

#### Hanford Vapors Website Updates

The Hanford Vapors Website has expanded its [Reference Materials](#) section by adding a new [Independent Assessments](#). The Center for Toxicology and Environmental Health, LLC (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 - April 13](#)

On April 12th, an 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

Although the transfer was postponed, necessary repairs were completed, and preparations resume for a transfer this week.

#### PHOENIX

**No Update since 4/13/2017:** In early March, the project finished Phase I which was to demonstrate and deploy a data explorer with site data. A demonstration

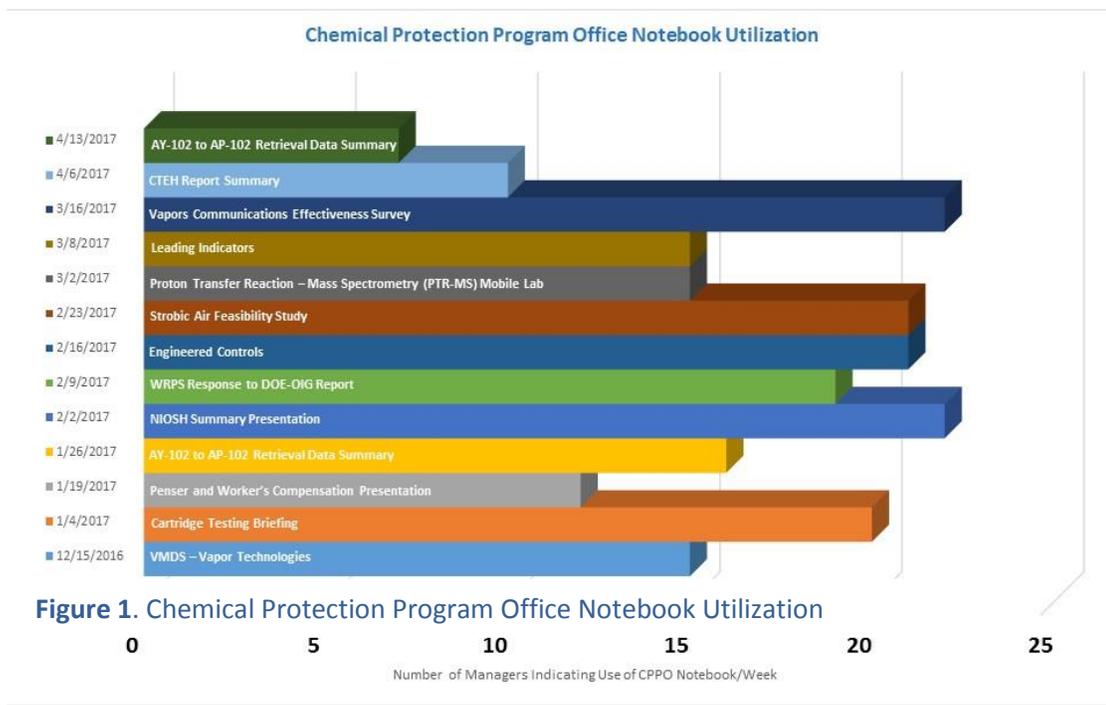
was provided to the steering committee and to management, and comments are being incorporated.

## CPPO Oversight and Tracking

### Website Statistics and Use

CPPO Notebook topics are utilized by management as shown in **Figure 1**. The Notebook is distributed on a weekly basis, aiding managers in communicating vapor-related information with their staff. Managers self-report their intention to utilize the Notebook through email. The Notebook is frequently used several weeks after distribution, so the utilization rate often changes over time.

Based on this self-reporting, the data-to-date show that an average of 17 managers per week make use of the CPPO Notebook. Since the beginning of the FY, the Notebooks have been used 215 times, and reach an audience of approximately 333 staff per week.



**Figure 1.** Chemical Protection Program Office Notebook Utilization

**Table 3. WRPS Vapors Information Distribution Avenue**

WRPS Vapors Information Distribution Avenue	January	February	March	FY-to-Date Total
All Employee Email/Meetings & ESHQ Comm.	7	6	2	35
CPPO Notebook**	44	74	67	214
CPPO Report and Weekly Report	2	4	4	20
Fact Sheet & Information	1	0	1	3
Meeting - CVST **	2	1	2	10
Meeting - CVST Sub-team meeting **	0	6	5	20
Meeting - Hanford Advisory Board Briefing **	0	0	1	2
Meeting/Briefing**	5	9	10	64
Meeting - POD/POW**	9	10	8	59
Presentation**	2	0	0	2
Safety Start	0	0	3	8
SOEN	1	0	0	9
Solution Article	5	2	4	24
Survey and Focus Group	0	0	1	2
Tours**	0	0	1	13
Website/Individual Inquiry	0	0	0	4
Vapors Weekly Update or Website Post*	11	4	3	43
Video	1	0	0	1
<b>Monthly Totals</b>	<b>90</b>	<b>116</b>	<b>112</b>	<b>533</b>

**Figure 2** illustrates the total number of documented WRPS vapors-related communications provided to the workforce on a monthly basis and FY-to-Date. This data includes all distribution avenues shown in Table 3. The trend suggests that at the current rate, WRPS is on track to deliver over 1,000 vapors-related communications, noted by the double asterisk in the table above, by the end of the fiscal year, primarily through briefings and face-to-face interactions with the workforce.

The data for March includes 117 vapors-related communication activities, largely driven by utilization of the CPPO Notebook, and is consistent with the previous month.

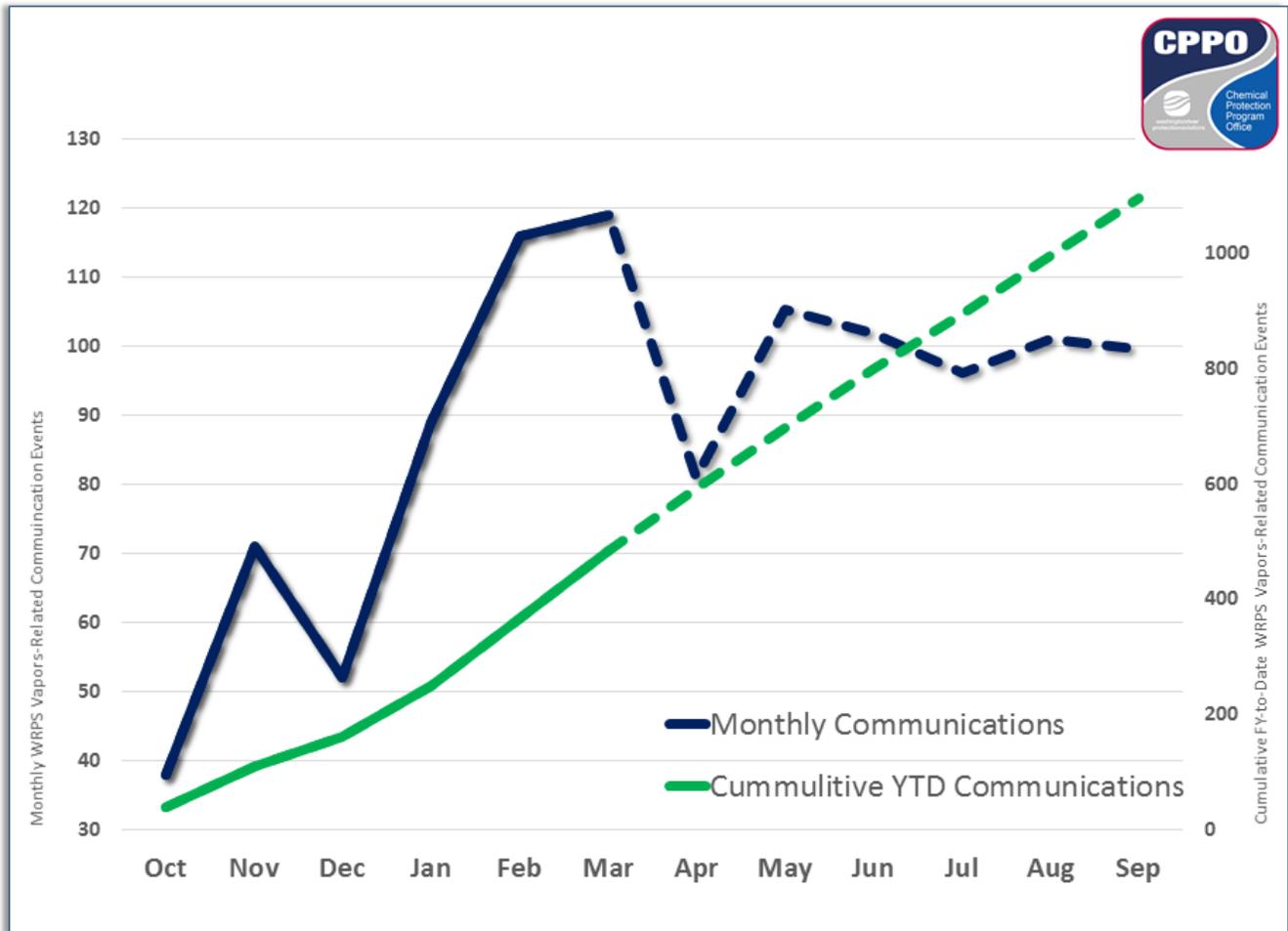


Figure 2. WRPS Monthly Communications

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

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

**Update:** TerraGraphics teamed with Dade Moeller; they were 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.

#### 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* by the CTEH report 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

**Last Update 4/13/2017:** 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.
  - Assessment of low priority chemicals is now getting underway.
  - Minor revisions to draft reports are in progress; definitions and key terms are being exercised.
- 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 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 data views 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

**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.

#### Leading Indicators

**Update:** The leading indicators team met on April 14 to collect available tank vapor concentration information. The team began analysis immediately. 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

**Update:** 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

**Update:** 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.

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

**Last Update 4/13/2017:** 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.

#### 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.

## 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.

### 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.

#### 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.

## 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

**Update:** 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 staged to support monitoring during the AN-101 transfer, but the transfer start was delayed until the weekend of 4/21.

### Personal Vapor Monitor

**Last Update 4/13/2017:** 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.

## 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

**No Change:** 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 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. 2. Engage with program/project managers early.	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 – 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 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