



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



March 14, 2017 - AP Farm Full Face-Air-Purifying Respirator

Tank Operations Contract  
Chemical **Protection** Program Office Weekly Report  
March 16, 2017

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

In keeping with WRPS's action to track implementation of the activities described in the Comprehensive Vapor Management Plan, CPPO has retooled its weekly report. No longer are TVAT recommendations the focus of updates. Instead, Key Performance Parameters are the defining categories to which the weekly report speaks. Each KPP and its criteria are noted, and updates to those criteria are articulated. Our contributors are reorganizing the way in which they document and report their progress. This is week one, and more refinements can be expected.

CPPO introduced its contributors to the new Weekly Report format in our Monday solicitation for updates. No feedback was received on its structure, but we are still amenable to suggestions.

Last week's Weekly Notebook was on *Leading Indicators*. This week's Weekly Notebook is *CPPO Vapors Communications Effectiveness Survey*.

CPPO has begun a series of workshops on technical writing skills improvement. Several employees are participating in the workshops where best writing practices are discussed.

## 2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

### KPP 1. Communications

#### Chemical Protection Communication

CPPO was asked to provide an audio option for the CPPO Notebook. This week's CPPO Notebook included not only the one sheet topic and the more in-depth presentation, but the presentation was also converted into an audio voice-over by the SME. We encourage managers to choose the format that works best for their forum.

The CPPO Communications Survey was sent to a random sample of WRPS employees this week. This survey is designed to measure the effectiveness of the vapors communications efforts within WRPS and to determine if the workforce is interested in the information that is being provided.

#### Key Performance Parameter 1

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

## Management and Workforce Engagement

This week's CVST meeting focused on the AP cartridge rollout and questions from the workforce, including how WRPS came to its conclusions and the process involved with the evaluations. The concerns raised by the workforce regarding beryllium and the steps being taken to assess the issue at Hanford was also discussed. Finally, the schedule for retrieval operations was discussed.

The CPPO Communications Survey was sent to a random sample of WRPS employees this week. This survey is designed to measure the effectiveness of the vapors communications efforts by the CPPO team and if the workforce is interested in the information we are providing.

## PHOENIX

This week, the Phoenix Data Explorer completed its phase project milestone and is moving into phase two. Part of this process will be determining how the Phoenix software will receive the multiple data streams with which it was designed to work, including SWIHD data, VMDS data, and the RJ Lee PTR-MS mobile lab data. Additional meetings will be held in the upcoming weeks to discuss and design the processes that will allow the system to reach its goal.

## CPPO Oversight and Tracking

### Website Statistics and Use

The HanfordVapors.com website communicates issues and topics involving chemical vapors at Hanford, and is a major conduit of information for the workers and community. As shown in **Figure 1** below, data shows that website visits spike shortly after increased activity at the tank farms. On Wednesday, February 1, 2017, there was a spike in website traffic, perhaps driven by the previous weekend's two odors reports. February 27 & 28 saw spikes in traffic to the website, perhaps caused by AY-102 retrieval coming to completion.

Figure 1. Hanford Vapors Website Hits



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

### Develop New or Revised COPCs/OELs

Discussions with the project team from WRPS and PNNL working on the Health Process Planning project continued this week. The team focuses on developing recommendations for new acute and chronic OELs for COPCs, as well as an evaluation of the screening process used to evaluate the COPC list. The purpose of the subgroups is to allow the team to focus on groups of compounds of the highest concern first before moving on to those with less hazardous characteristics. The team expects their research to be completed in the next week followed by a first draft of their recommendations by mid-March.

### Health Process Plan

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 meeting with Sr. management to finalize the membership in the Assessment Committee is scheduled for 3/14.A
- 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 is scheduled for 3/14.
- Task 4: Rich Lucke attended PitCon Analytical Chemistry Conference to evaluate the latest instrumentation for analysis of tank vapor samples.
- Task 5: Establish Acute/Transient and Chronic Exposure Action Levels. Both the OEL (acute) and OEL (chronic values) draft documents should be completed this week.
- PNNL has completed the initial review of acute/chronic and high priority chemicals. These are in various stages of review/edits and will be available for submission to WRPS shortly.
- Task 6: Evaluate Computational Approaches for Predicting Exposure and Delivered Dose.
- Task 7: Database Implementation and Management.
- Continued to make progress on the report generating feature.

#### 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.

#### 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

**No change in status.** In FY 2016, PNNL also 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 that support all of this 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

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

#### Air Dispersion Modeling

**No update.**

#### Parity Implementation with Established Programs

Enhanced Chemical Hazards Awareness Training (CHAT) training has begun and good feedback has been received from the initial classes.

Chemical worker tier training:

- Chemical Worker Tier 1: General Employee Chemical Training
- Chemical Worker Tier 2: Facility Specific Chemical Training
- Chemical Worker Tier 3: Chemical Worker Training

IHT training, qualification, and requalification

IH Professional Development and Communications Training.

### KPP 4. Engineering Controls

#### Exhausters

**No update.**

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

**Update:** A statement of work (SOW) is being developed to engage Therographics for a pilot scale test of the NUCON system in FY18. NUCON is currently developing a project schedule. It has resolved the issues identified in early testing, but are having difficulty finding some instrumentation to support the proof of concept test. The Proof of Concept tests will be pushed out to mid-April due to instrumentation availability issues.

#### 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

#### Stack and Boundary Monitors

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

#### Establishing Safe Unrestricted Boundaries

Dispersion Model Review: No change in status. The SOW has been submitted to Asset Suite for approval. In FY 2017, 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.

Vapor Control Zones/Vapor Reduction Zones (VCZs/VRZs): No change in status. The final review was completed on the revised procedure TFC-ESHQ-S\_C-48, Managing Tank Chemical Vapors, in support of VCZ/VRZ review.

#### Public Address System

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

### 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

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. The first step towards establishing the Tank Farm of the Future for SSTs is to use remote monitoring in lieu of farm entry to obtain tank waste levels and temperatures. WRPS will initiate design of the first remote monitored SST in July 2017, with equipment installation occurring in FY 2018.

In response to a NIOSH recommendation, WRPS is establishing guidelines to determine appropriate work locations for personnel in the tank farm areas. These guidelines consider International Society of Automation (ISA)-84 risk modelling, air dispersion modeling, hazard reduction determinations, and other appropriate inputs.

### 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

WRPS began using the full-face Air Purifying Respirators (FFAPR) on Tuesday, March 14, 2017. Workers in the AP tank farm outside of a Vapor Control Zone (VCZ) have the option of wearing an FFAPR equipped with the Scott 7422-SC1 (Chemical - multipurpose) or the Scott 7422-SD1 (Chemical - multipurpose/P100) cartridge instead of SCBA while non-waste-disturbing and non-tank-intrusive activities are taking place. As always, workers will continue to have the option to use SCBA or other available supplied-air systems if they choose, so long as the equipment does not produce additional safety hazards. There was positive feedback from workers who used the FFAPRs. Some workers expressed the hope that implementation will be rolled out more quickly in the coming weeks and FFAPR use will be available to all workers entering AP tank farm outside of VCZ areas.

### Key Performance Parameter 7

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

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

**SCBA Equipment Evaluation – No change in status.** The results of the Phase 2 evaluation are being presented to the Hanford Site Respiratory Committee this week. Pursuant to Phase 3 testing, an order for the Scott NXG7 SCBA cartridge is being processed for approval.

#### Mobile Laboratory

The mobile lab has been pulled from field operations to install an ammonia cavity ring down spectrometer and complete the test plan for source apportionment and fugitive emission searches. The Lab will be off-line for 1 more week. Work continues on the test plan. Installation of the CRDS ammonia instrument is now complete. Tests to resolve mass measurement anomalies identified in the first monthly report are continuing.

**No change in status.** The CPPO continues to review new data from the RJ Lee Group mobile lab in support of website communications. This week, discussions were centered on the data summaries that are delivered to WRPS. The next steps for the mobile lab will be to hook the Proton Transfer Reaction Mass Spectrometer (PTRMS) up to the stack during retrieval operations. This will allow for comparison of Vapor Monitoring and Detection System (VMDS), IH, and mobile lab data coming from the same source at the same time.

#### Personal Vapor Monitor

C2Sense is developing a personal ammonia sensor under funding from DOE-EM. Under this contract, DOE requested that WRPS support testing of this device. WRPS is coordinating between C2Sense and RJ Lee to support prototype testing. A contract to support C2Sense prototype testing has been placed. We are coordinating with C2Sense and RJ Lee to begin testing ASAP. The SOW to continue developing this device to the point of commercial production was submitted and approved.

## 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.

### 3. OTHER VAPOR ACTIVITIES

**Chemical Vapor Data Quality Objectives (DQO)** – CPPO SMEs are participating members of the Integrated Sampling Strategy Project Team. The Integrated Sampling Strategy Project Team formed nine Data Quality Objective (DQO) sub teams. This week's updates are:

 **Technology Maturation**

Presented their step 3 (data needs) findings to the integrated sampling strategy project team for review.

 **Technical Basis**

Has now moved on to the next steps which will further describe the limitations and constraints on the data requirements that will allow the team to determine how to collect the data required for the IH Tech Basis revision.

 **Fugitive Emissions**

No update

 **Leading Indicators**

For the next few months, the Leading Indicators team will be focused on supporting the integrated vapors data collection DQO process. This DQO drives data collection that will be used as the basis to validate and update the Leading Indicator Process.

 **Aerosols**

Presented their step three (data needs) findings to the integrated sampling strategy project team for review.

 **Abatement Design Study**

Presented their step three (data needs) findings to the integrated sampling strategy project team for review.

 **Environmental Compliance**

No update.

 **ISA84**

No update.

 **Vapor Plume Modeling**

No update.

## 4. VAPORS MITIGATION PROGRAM PLAN - TOP RISKS

### CPPO Risk Weekly Update

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

**Table 1.** Vapors Mitigation Risk Register

CVAP ID Number	Current Status	Handling Actions	Current Risk Level
004 Integration with Other Key Projects More Complex than Expected.	242-A Stack Extension work must be complete before VMDS can install UV-FTIR. Integration issues between Stack Extension project and VMDS transition to operations exist.	1. Identify key program interfaces. 2. Engage with program/project managers early.	Medium
024 Equipment design and Current Requirements are Incompatible with Tank Farm Infrastructure	Software (Kinexsys) and hardware communication issues are causing delays in VMDS schedule. Tank Farm communication infrastructure may not be able to support expansion of vapor monitoring bandwidth.	1. Identify vapors monitoring infrastructure requires within the tank farms. 2. Start upgrades and equipment installs in order to support vapors monitoring activities.	Medium
009 Resources not Available when Required.	RJ Lee Group Resources are unavailable to complete reporting. Head Space Sampling may be delayed by beryllium testing.	1. Identify key technical resources up front and secure availability.	Medium
026 3rd Party Evaluation and/or Subcontractor Testing Cause Delays	Chemical Cartridge Testing 3 <sup>rd</sup> Party Reviews by CWPR may be delayed.	1. Engage 3 <sup>rd</sup> Party and/or Subcontractor leadership in communicating status.	Medium
022 Procurement process is less than adequate	Procurements of 242-A Stack extension materials were delayed due to unacceptable delivery method upon receipt.	1. Identify and track project designated high priority procurements for equipment and services.	Medium