



An Industrial Hygiene Professional presents recommendations on how to improve vapors related communications to the workforce as part of the LEAN Management Event – May 16-18

**Tank Operations Contract
Chemical Protection Program Office Weekly Report
May 25, 2017**

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

The CPPO hosted a three day LEAN Management Event aimed at proposing effective ways to deliver vapors-related information to field workers. The LEAN team consisted of nine staff representing Industrial Hygiene, Radiological Controls, Maintenance, and four staff from the CPPO. The LEAN team evaluated the WRPS communication avenues, ultimately focusing on person-to-person communication by subject matter experts (SMEs). Additionally, the team evaluated WRPS's feedback loops in order to measure the effectiveness of the recommended approaches. Actionable recommendations emerged from the event, including improving vapors-related communications in the following areas:

- Training
- Work planning
- Utilizing existing vapor communication avenues such as the Chemical Vapor Solution Team (CVST)
- Adopting the CPPO Notebook more widely
- Increasing the presence of Industrial Hygiene (IH) professionals and other subject matter experts in the field

With the endorsement of these efforts by management, the team will begin the process of implementing the recommendations over the next several weeks. The CPPO will continue to monitor the effectiveness of vapor-related communications, and the successful implementation of the endorsed recommendations of the LEAN team.

CPPO continues internal reviews to finalize the external assessments recommendations table. The table compiles the over 320 recommendations generated by the following external assessments: 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), Center for Toxicology and Environmental Health (CTEH), as well as the recommendations contained in the reports generated from the TVAT FY14-15 activities.

CPPO is developing metrics to support a Comprehensive Vapors Action Plan (CVAP) monitoring dashboard. Multiple metrics are in various stages of development and review.

CPPO is migrating the vapors library items into IDMS to ensure they are preserved as formal records.

2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

KPP 1. Communications

Chemical Protection Communication

The CPPO Notebook published on May 18, 2017, is titled *Workforce – Vapors communications survey results*. To date, 12 recipients of the notebook indicated their intention to present the material to their staff. This week's CPPO Notebook is titled *Update on testing for the Vapor, Monitoring and Detection System (VMDS)*.

Hanford Vapors Website Updates

The Hanford Vapors Website posted one item last week:

- Vapors weekly update – May 18

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

Data Analysis and Visualization Tool (PHOENIX)

Update: Currently managed by CPPO, the PHOENIX team is finalizing the comments and functions of the Data Analysis and Visualization (DAV) Tool. The DAV tool now has a section called Vapors 101 which assists the user in understanding the data, and how the data relates to everyday activities. In early June, several WRPS organizations will test (Phase 3) the DAV Tool for functionality, opportunity, ease of viewing, and integrity. Discussions about database space and single source database are ongoing. Ultimately, the DAV Tool will be on the Hanford Vapors website.

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.

Figure 1, below, depicts how WRPS is ahead of the June deadline to complete the first 66 actions; however, to meet the deadline, 28 of those actions still need to be completed in the next 30 days.

Vapor Corrective Action Tracking

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

Trending Fiscal Year 2017
Month Ending May 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).

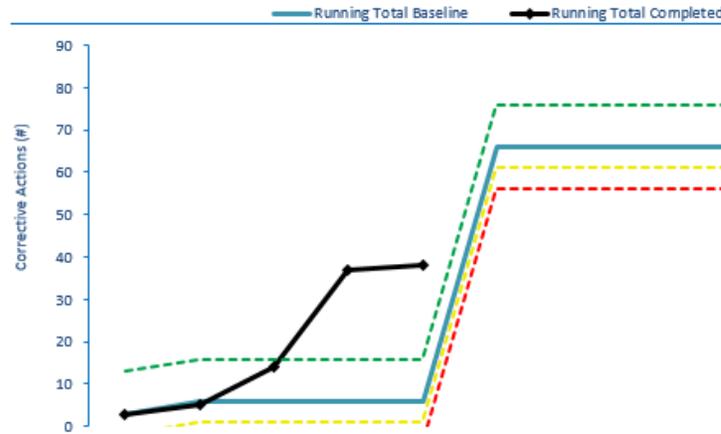
The Baseline (BL) date is documented in E-Stars. Many actions (66) were assigned due dates in June 2017 to ensure coordination and validation of closure documentation.

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	1							
Running Total Baseline	3	6	6	6	6	66	66	66	66	67	67	67
Running Total Completed	3	5	14	37	38							
Schedule Performance (#)	0	-1	8	31	32							



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.

There are 28 actions due in the month of June (16 due 6/22; 12 due 6/26). Of these, 14 are awaiting PER Owner review, 4 are awaiting S&H review and 3 are awaiting CPPO review. 7 actions are with the assigned actionee.

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
Vapor Technology Solutions	7	9	16	0
ESH&Q	13		13	0
Organic Studies	0	2	2	0
Tank Farm Projects	1		1	0
TFP Project Management	4	4	8	0
CPPO	5	8	13	0
Chief Technology Office	7	1	8	0
Industrial Hygiene	45	14	59	0
Totals	82	38	120	0

Figure 1. Vapor Corrective Action Tracking

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

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

Update: Updates to RPP-22491, *Industrial Hygiene Chemical Vapor Technical Basis*, are underway. An outline of the revisions has been developed, and a list of the changes was submitted for IH management review. The template for RPP-22491 revisions is being created. The GAP analysis for RPP-22491 is ongoing.

Institutionalizing the Vapors Program with the IH Program Requirements

Update: The IH Manual draft is taking shape; its structure and contents compiled into an Excel spreadsheet. The spreadsheet maps out the requirement matrix, and is a tool in the GAP analysis. The focus of the IH Program Manual is on Chemical Vapor Program aspects, and it revises existing standards and procedures. The IH management is reviewing the spreadsheet for completeness and accuracy.

Health Process Plan

Update: PNNL Health Study Roadmap: A schedule for FY17 has been developed for the Health Process Project. Accomplishments:

- Task 1: Schedule
- Task 2: Establish Tank Operations Assessment Team.
 - An interim Tank Operations 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.
 - A draft of the sampling and analytical recommendation report is in internal review.
 - The COPC report update is underway.

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.

- Task 5: Establish Acute/Transient and Chronic Exposure Action Levels.
 - Submitted draft 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.
- Task 7: Database Implementation and Management.
 - Updated the data forms module.
 - Manually tested the updated data forms to find bugs.
 - Manually tested the Chemical Dashboard, COPC Proposals form, and the filtered drop downs in tables.
 - Examined the chemical mixture methodology (CMM) to prepare for the Risk Assessment task.
 - Began drafting two Risk Assessment workflow – one for analysis and one for visualization.
 - Worked on the citation management capability.

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: For the next few months the Leading Indicators team will be focused on supporting the integrated vapors data collection data quality objective (DQO) process. This DQO will drive data collection that will be used as the basis to validate and update the Leading Indicator Process. Accomplishments for the week ending 5/21 are shown below:

- Continued review of analysis code, ideas for any potential revision needs
- Continued investigation of the effect of series or parallel sampling in available data
- Continued investigation of existing data sources (content, format, etc.) and how to best incorporate into analysis

Parity Implementation with Established Programs

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

- Enhanced CHAT continues to be well received. As of 5/18/2017, 8 CHAT Initial and 12 CHAT refresher classes have been held.
- Training has hired an additional two subcontractors to help complete required training documentation for the Industrial Hygiene Technician (IHT) Training Program.
- 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 Photoionization Detector (PID) operation. Training continues until June 7th. Make-up sessions may be offered.

- Chemical Worker Tier One is in the Design Phase; comments are being incorporated from key stakeholders and a draft storyline is being prepared. Draft slides are scheduled to be released for review on 5/24; the comment period is scheduled to end by 6/7/2017.
- Chemical Worker Tier Two and Three are being developed. However, the focus is on completing and implementing Chemical Worker Tier One.

On May 18, 2017, WRPS, CHPRC, HAMMER, and Labor held an IHT Training Program kickoff meeting, the goal of which is to “[d]esign, develop and implement an IHT fundamentals and continuing training program that will educate and develop independently competent and highly effective IHTs who are trusted and respected by the workforce.” Expected to be launched in September 2017, the Industrial Hygiene Fundamentals course curriculum may include:

- Laws and Standards
- Math unit conversions and statistics
- Chemistry
- Physiology, anatomy, and toxicology
- Respiratory protection and PPE
- Industrial hygiene documentation
- Personal and area monitoring
- Using an industrial hygiene database

KPP 4. Engineering Controls

✚ 242-A Evaporator Stack Extension

Update: Fabrication of the vessel vent stack is complete, and construction forces are expected to mobilize for field installation the week of 6/1/2017. Additional modifications to the design are being captured to ensure the wall is level before beginning the installation. Lightning protection design is final, and will be installed in parallel with the vessel vent stack.

✚ 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.

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

Strobic Air Dilution Fan

Update: The Strobic Air subcontractor is on-site this week to meet with site personnel and discuss design and technical requirements.

NUCON Thermal Oxidation Proof-of-Concept Test

Update: Last week, it was decided that an integrated project team be established to prepare for delivery of the system, and manage additional prototype testing needed to resolve limitations identified in the recently completed proof-of-concept testing. Meetings were held to develop a path forward. As a result, an integrated project team is being established and project plans are being developed to prepare for the delivery and further testing of the prototype.

KPP 5. Administrative Controls and Monitoring

Permanent Installation of VMDS Equipment in A and AP Farms

Update: The electrical outage in AP Farm ended on 5/16/2017, allowing the Vapor Monitoring and Detection System (VMDS) pilot-scale testing to re-start. Efforts are on-going to review the viability of VMDS equipment and determine their path forward.

Stack and Boundary Monitors

Update: A design contract is being initiated to install the AW/AX Stack monitors. The boundary monitors will become focal in FY18, after the individual stack monitoring activities are complete.

Establishing Safe Unrestricted Boundaries

Update: Upgrades to the Air Pollutant Graphical Environmental Monitoring System (APGEMS) continue, with the following being accomplished this week:

- Held a meeting with PNNL Quality Assurance (QA) and management to discuss software QA approach, where additional information on Class D description was provided by the WRPS QA staff.
- Acquired (through an interlibrary loan) reference documents concerning the IH Mod Near and Mid-Field Plume model to conduct further review of the model, and acquired a recent draft of the Kenexis quantitative risk assessment document for review.

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.

Public Address System

Update: The Notification Public Address (PA) system installation is scheduled to begin in June. By the end of FY17 the PA systems for AW, AP, A/AX, AY, AZ, AN, and C Farms are scheduled to be complete. FE&C was awarded a construction contract to support the installation effort.

KPP 6. Tank Operations Stewardship

Pilot SST Stewardship Program

Last update 5/4/2017: The SST-Stewardship activities are still in planning package status and as such have not received a cost account charge number (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

Update: Due to technical difficulties, cartridge testing scheduled for May 18 – 23 at SX Farm was cancelled. Two Scott air purifying respirator (APR) filters and one MSA Safety Inc. powered air purifying respirator (PAPR) cartridge are rescheduled for testing on June 2-4 during non-waste disturbing activities at SX Farm.

Mobile Laboratory

Update: Preparations to repeat sampling and analysis of the A-103 passive breather filter (PBF) using the mobile lab were completed. Once the A-103 PBF sampling is complete (planned for week of May 23 to May 25) the manifold will be moved and installed on the AW Stack. Work continues to support the AW Farm airlift circulator test which has been postponed until June 16. Stack sampling hooks have been fabricated at Hi-Line and are expected to be delivered on May 30.

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

Update: C₂Sense, Inc. continues developing a personal ammonia sensor with funding from the Department of Energy – Office of Environmental Management (DOE-EM). Last week, C₂Sense provided a rough schedule of their development activities for FY17.

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
004 Integration with other key projects more complex than expected.	Integration of field execution for VMDS in KPP 5 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
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. This amount of data may prove to be unmanageable with current hardware and software infrastructure, a risk exists that additional infrastructure improvement must occur to effectively manage the data stream.	1. Engage with CTO Technology Management and Field Solutions to develop data handling and interrogation infrastructure.	High
032 Litigation prevents communication with workforce.	Ongoing litigation is preventing the communication of planned vapors program activities to be released. Currently the risk is realized and ongoing.	1. Continue to prepare communication documents and releases in anticipation of legal release. 2. Coordinate and communicate with WRPS legal team early and often. 3. Communicate all allowable data and information to the workforce in lieu of vapors program plans.	High