



washington **river**
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AZ-102 Stack during air stagnation advisory (temperature inversion).

Tank Operations Contract
Chemical Protection Program Office Weekly Report
January 26, 2017

Department of Energy Contract NTE 16-TF-0089

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

WRPS is finalizing the draft of the Comprehensive Vapors Action Plan this week in preparation for reviews from management and DOE, along with communication about the plan to the workforce. The review and comment incorporation to the action plan will continue thru mid-February with expected Delivery to DOE in February. WRPS will also be finalizing and providing to ORP in February the Implementation Plan for Hanford Tank Vapor Assessment Report Recommendations Summary of Phase 1 Results and the WRPS Hanford Vapors Integrated Safety Management Strategy.

CPPO has developed a recommendations tracking database that includes actions, SMART deliverables and organizational responsibilities. This, along with the PERs, will be used to track and document recommendations that have been addressed and those recommendations that have not been addressed. This will be provided to ORP separate from the Comprehensive Vapors Action Plan.

CPPO staff has been assessing the selection of Vapor Monitoring and Detection System (VMDS) equipment and potential conceptual design of a monitoring system for single shell tank farms. Discussions are ongoing with the VMDS project team, as the decisions are being finalized.

CPPO staff met with the RJ Lee Group mobile lab team to discuss monitoring efforts. Additionally, the CPPO participated in the Health Planning Process (HPP) meetings to address recommendations made by PNNL and other third-party evaluators in 2016.

This week's discussions with RJ Lee Group focused on the following:

- ❖ Issues with line mobile lab contamination found coincidentally with the presence of aerosols during monitoring (i.e. snow, rain, slush, etc.) were discussed. It was decided that until the weather improves, future monitoring will only be done while on site in order to prevent line contamination while en route from Pasco to Hanford. The sampling acquired during the time in which the line may have been contaminated is being evaluated for data quality. Improvements made to the sampling interval of the four instruments fixes the time-synchronization and will be applied to the mobile lab data going forward.
- ❖ The mobile lab will no longer be sampling from A-train to avoid interferences due to the condensation formed in the absence of heat tracing. To avoid issues with drastic pressure changes affecting the measurement line during stack sampling, the mobile lab is looking at coordinating its zero-calibration efforts during the period in which RADCON conducts filter change-outs.
- ❖ The team discussed the pictures provided by the mobile lab crew from 1/13/17 and 1/15/17. The pictures revealed the flow dynamics of the stack emissions during normal conditions and under stagnant air advisory conditions, some of which were taken during AY-102 retrieval. Examination of the horizontal flow during inversion/stagnant air, as shown in the January 15th picture, indicates that while the ascension of emissions is very slow, there does not appear to be any settling of exhaust near the farms. In this case, the flow still continued to rise over the farm. Additionally, the presence of aerosols in the emission stream indicates that under similar conditions (e.g. cold and humid) aerosols are being generated by the stack.

- ❖ The team discussed the potential need for a server to house the mobile lab data as the year goes on. Eventually, the number of data points may hit a critical mass in which excel spreadsheets and local computer resources may be overwhelmed by the volume of the data.

The Health Planning Process meetings included discussions on the scope and purpose of the program going forward into 2017. The team's primary focus at this time is evaluating the current COPCs to determine if new OELs have been published by regulatory or science-based agencies, including The American Conference of Governmental Industrial Hygienists (ACGIH), The American Industrial Hygiene Association (AIHA), The National Institute for Occupational Safety and Health (NIOSH), The Occupational Safety and Health Administration (OSHA), etc. Additionally, the HPP will be involved in the development of acute and chronic OELs for the COPC list.

2. CPPO COMMUNICATIONS with the Workforce

The second installment of "Bring the CVST to the Workforce" initiative, was held Wednesday January 25th with the 616/WS Staff meeting. The Chemical Protection Integration Manager, Rob Gregory, ESH&Q Manager, Rob Cantwell, and the CPPO Manager, Rebecca Sams, attended the staff meeting and discussed vapors related information with the area team. Topics discussed included cartridge testing, AY-102 sampling, litigation, vapors scope planning for FY17 & FY18 and medical monitoring information. The discussion was well received.

The next CPPO Notebook details the AY-102 – AP-102 Retrieval Operations Summary, and was presented to the CVST on January 25, 2017. The CVST meeting held on the 25th included information presented by Dr. Sandy Rock from HPMC Occupational Medical Services (OMS) titled "Exposure Evaluation Process for Tank Farm Workers." The presentation detailed tank farm vapor exposures and the [medical evaluation](#) carried out by healthcare professionals following HPMC Protocols and Procedures found in HPMC OMS documents and best medical practices. Dr. Rock also elaborated on medical clinical judgment. The entire presentation is available on the [CVST Portal](#) under [Presentations](#).

The [hanfordvapors.com](#) website now has an SSL certificate. The SSL certificate confirms the authenticity of the website, and provides an additional level of security for users. Users can securely transmit sensitive material such as email addresses. The SSL certificate strengthens the site against potential hackers.

A new section, devoted to AP Farm Cartridge Testing, is located on the [Tank Vapors Assessment Team \(TVAT\) page](#). The cartridge testing for the AP Tank Farm is complete and the results are documented in the [PNNL-25860 Analysis of Respirator Cartridge Performance Testing on a Hanford AP Tank Farm Primary Exhauster Slipstream](#) report, and the [Third Party Qualified Independent Review: Hanford Tank Farm Respirator Cartridge Testing](#) assessment report, now available in full to the reader.

[hanfordvapors.com Posts](#)

[AP Cartridge Test Report \(PNNL-25860\)](#)

[Summary of AP Cartridge Test Report](#)

[Third Party Qualified Independent Review team report](#)

An AOP-015 event occurred the morning of January 25, 2017. The first All Employee email was distributed that morning at 10:50AM, with follow-up information distributed via an All Employee email at 3:58PM. The follow-up information provided additional details included below.

Nine Hanford workers declined medical evaluation this morning after reporting odors about 7:30 a.m. near the wet grout facility, an area approximately 200 yards east of the AP Tank Farm fence line. None of the workers reported symptoms. Samples collected in the area have been analyzed and the results are at or below background levels. Access to the area has been restored.

The employees were in pre-job briefings at the time odors were reported and were not in an area that requires use of a supplied-air respirator. Workers described the odors as rotten egg-like, sulfur-like and onion-like.

Workers were instructed to leave the area, and access to the area was restricted. Industrial hygiene technicians responded, and no elevated readings were identified.

For more information about chemical vapors and the steps Washington River Protection Solutions has taken to protect employees, visit hanfordvapors.com.

3. PERFORMANCE TRACKING

An AOP-015 is an abnormal operating procedure in response to reported odors or unexpected changes to vapor conditions. To get a look at the zones at which most of these occur, Figure 1 shows the frequency an event happens as measured from a tank farm fence line.

A summary of these metrics is as follows:

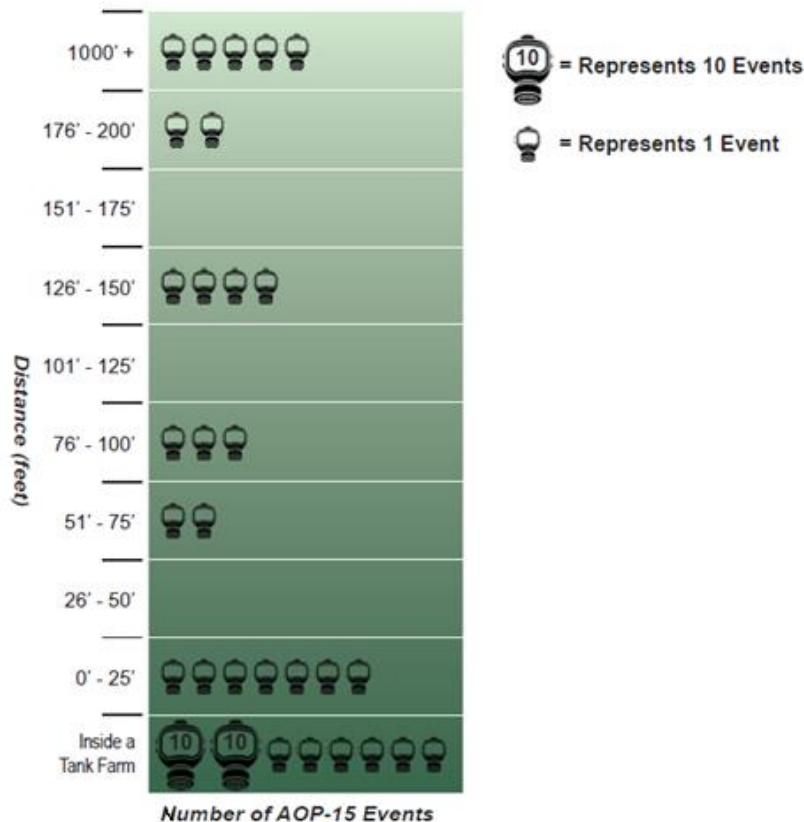


Figure 1. AOP-015 Events by distance from a fence line (2014 – 2017)

4. TVAT PHASE 1 and PHASE 2 DETAILED STATUS

TVAT Recommendations 1 and 9; Headspace Sampling: As reported last week, for FY 2017, headspace sampling is being re-planned after the impacts to the transfer schedule caused by the switch of AP-106 and AW-106. There are only five waste disturbing activities planned so it is critical headspace sampling occurs during these five activities. The IH sample plan has been finalized.

Stack sampling (AP) is currently ongoing during AY-102 retrieval.

TVAT Recommendations 2, 7, 16; Chemical Plating (Aerosol Study): The Aerosol Study was pushed to FY19 for budgetary reasons.

TVAT Recommendations 3-5; IH Instruments: No update.

TVAT Recommendation 6; IH Personnel Monitor Equipment: WRPS continues to coordinate between C₂Sense and RJ Lee Group to support prototype testing of the personal ammonia monitor under development at C₂Sense. The SOW to support prototype testing at RJ Lee Group's CBAL facility will be written and in review this week. The SOW to continue development of this device to the point of commercial production has been written and is in review.

TVAT Recommendation 8; Dispersion Model Review: As reported last week, a meeting was held on 12/8/16 to discuss plume modeling and what types of models are needed for near, intermediate, and far field predictions. This meeting identified IH Mod (a mathematical modeling software used for estimating occupational exposures) for near field, APGEMS (Air Pollutant Graphical Environmental Monitoring System) for mid field, and AERMOD (atmospheric dispersion modeling system) for far field modeling applications. The meeting identified two development issues that need to be addressed in FY17. First, the FY16 dispersion modeling report (PNNL-25654) needs to be updated to include an evaluation of the Kenexis Computational Fluid Dynamics (CFD) model and second, the APGEMS model needs to be upgraded to model plumes from multiple sources simultaneously. The dispersion modeling SOW has been written and is in review.

TVAT Recommendation 10; Review/Update Chemical of Potential Concern (COPC) Listing: PNNL has been subcontracted to review available headspace sampling data and available toxicological information to update the list of COPCs and develop acute and chronic occupational exposure limits (OELs) for all of the compounds. The OEL updates will be done in three phases: establishment of exposure limits for COPCs where regulatory guidelines exist, development of exposure limits for high priority COPCs, and development of exposure limits for low priority COPCs. PNNL expects to publish the OELs for COPCs where regulatory guidance exists by the end of February and High priority COPC OELs by the end of March. Further, PNNL will evaluate computational methods to evaluate vapor mixture effects.

The monthly management meeting was held 1/23/2017. Progress is continuing on schedule for the development of acute and chronic OELs for the first 42 of the 62 COPCs. For these compounds, the OELs are based on published regulatory guidance. Work is also continuing on schedule to provide acute and chronic OELs for high priority compounds where insufficient or no regulatory guidance is available. PNNL focused on evaluation of toxicology information for the nitrosamine compounds this week.

TVAT Recommendations 11-13, 15, 17-18; PNNL Health Study Roadmap: A schedule for FY2017 has been developed for the Health Process Project. The project is broken down into seven tasks: 1) Schedule; 2)

Establish Tank Operations contractor assessment team; 3) Establish an External Peer Review Health Panel; 4) Implement Routine Analysis and Screening Process for Updating COPCs; 5) Establish Acute/Transient and Chronic Exposure Action Levels; 6) Evaluate Computational Approaches for Predicting Exposure and Delivered Dose; and 7) Database Implementation and Management.

Weekly Accomplishments:

- Task 4: Continued sampling and analytical candidate methodologies literature review.
- Task 5: Efforts have focused on developing recommendations for both acute and chronic ORLs, specifically the assessment of nitrosamine compounds.
- Task 7: Continued transcribing data from PAC/AEGL images into data forms. Also began setting up a test site to accompany the HPP site.

TVAT Recommendations 14; Evaluate Medical Surveillance Program: ORP Action. No status.

TVAT Recommendations 19, 20; Toxicology Studies: ORP Action. No status.

TVAT Recommendation 21; Rounds and Routines: As reported last week, the draft procedure is currently in the final review cycle. Admin and Technical procedure to enter work-flow next week to be issued by 3/1/17.

TVAT Recommendation 22; Acute Bolus Assessment (RJ Lee Group Mobile Lab): The mobile lab continues to support the AY-102 retrieval. Data from the third and fourth weeks of sampling was submitted on 1/19/17.

TVAT Recommendation 28; Chemical Vapor Guidance Manual: No update; currently on hold.

TVAT Recommendations 29, 30; Enhanced Training: As reported last week, enhanced Chemical Hazards Awareness Training (CHAT) is on schedule for roll out next week. This training will be used as a supplement while the Chemical Worker training modules are developed and rolled out (anticipated summer 2017). Tank Farms training is working on scope and module development of the Chemical Worker training.

TVAT Recommendations 32, 36; Bolus Assessment/Medical Stakeholders: ORP Action. No status.

TVAT Recommendation 33; Vapor Monitoring Detection System (VMDS): As reported last week, the weekly VMDS reports are continually being updated and published on the website. The Phase 2 test plan is being modified to document testing objectives. Calibration of the UV-FTIR is being accelerated to support AY-102 retrieval. Down-select drafts are in the final stages for the SAFER system software and RAE system equipment. Further down-selects are scheduled after testing completes in mid-year 2017.

WRPS recently purchased a 900 MHz radio system (Digi International) for demonstration in VMDS equipment (Gastronics FIS and Lufft Met Station) that should resolve several ongoing communication issues. A small subset of the system (4 radios and gateway) will be tested and if the system is successful, additional radios will be procured and utilized in VMDS equipment.

Experts in Optical Gas Imaging will be traveling to Hanford 01/23/17 – 01/27/17 to assist WRPS in the configuration and setup of the automated Optical Gas Imager (OGI) and demonstrate the use of a portable OGI in conjunction with QPT100 to determine the efficacy of these units in identifying chemical plumes originating from tank sources. The OGI uses infrared cameras manufactured by FLIR. The week long analysis will concentrate on the analysis of 200 east tank farm exhausters, passive breather filters, and pits.

TVAT Recommendation 34; Vapor Control Zones/Vapor Reduction Zones (VCZs/VRZs): As reported last week, the task team completed the procedure view. Changes are being sent to workflow next week for issuance by 3/1/17.

TVAT Recommendation 35; Cartridge Testing: The report, PNNL-26180, *Analysis of Respirator Cartridge Performance Testing on Hanford Tank BY-108*, was issued. The report will be given to HAMTC to start the third party review.

As reported last week, the PNNL-26131 report, *Analysis of Respirator Cartridge Performance Testing on Hanford Tank A-101*, was issued and given to HAMTC to start the third party review of this report.

Fabrication of the new test jigs are underway to support FY 2017 testing of two different cartridges. The field sample plans have been finalized for the comparison testing between the two cartridge test jigs.

TVAT Recommendation 37; IH Improvements Tracking: As reported last week, all 47 TVAT recommendations (122 actions) were added to the PER system under WRPS-PER-2014-0602. The actions that were completed by the end of Phase 1 on 09/30/16, were assigned a due date of 01/31/2017. A meeting was held 01/12/17 with the actionees assigned actions in these ESTAR records. As a result of this meeting, the due dates for these Phase 1 completed actions were extended to 02/28/17.

TVAT Recommendations 38-39, 41; Management Commitment: A CVST meeting, held 01/11/17, discussed the new bottle change tent in AW Farm, Worker's comp claims/ Penser North America, Inc., and response to readily apparent or general purpose facility odors. The next CVST meeting is tentatively scheduled for 01/25/17.

TVAT Recommendation 40; Improve EJTA: No further actions required.

TVAT Recommendation 42; Revise Exposure Letter: No further actions required.

TVAT Recommendation 43; IH Covello Training: As reported last week, in FY 2016, scheduled multiple risk communication sessions with a nationally recognized risk communication expert, Dr. Vincent Covello. Dr. Covello's research on the topic of risk communication was specifically cited in the TVAT report. WRPS is planning another round of training and strategy sessions for select WRPS managers, employees and Industrial Hygiene Technicians and front-line supervisors in FY 2017. Communications & Public Relations has contacted Dr. Covello directly to discuss FY17 Q2 availability. Options will be provided to Industrial Hygiene to coordinate scheduling.

TVAT Recommendation 44; Public Address (PA) System: As reported last week, the three contracts are underway for support from Mission Support Alliance (MSA), ARES, and Safer. The conceptual design has been finished for location of the speakers and reader boards in all the farms. ARES is now moving on preliminary design for Phase 2A/2B, MSA continues design and install support for wireless access point, SAFER is expected to deliver the sound propagation study covering all Phase 2A-D Farms this week.

TVAT Recommendation 45; Lab Support/Determination & Development of Similar Exposure Groups (SEGs): No update; currently on hold.

TVAT Recommendations 46, 47; Communications: No update.

5. OTHER VAPOR ACTIVITIES

242-A Ammonia Analyzer Upgrade - Phase 1 of the Ammonia Analyzer has been initiated and a contract is being established with Cerex to develop the software.

242-A Stack Extension - 100% Design has been approved and issued. The Mechanical ECN is scheduled to be completed by 1/26/17 which will support the RFP to initiate the bidding process.

Leading Indicators - As reported last week, the leading indicator contract has been put in place to continue FY 2017 work. PNNL is developing a schedule and it is expected in January. However, further progress is dependent on availability of headspace, cartridge breakthrough, VMDS, and Mobile Lab data. Little progress is possible until this data becomes available.

Abatement Technologies - As reported last week, an integrated project team was established to develop a feasibility study for installation of a Strobic Air Tri-Stack ventilator on the AW stack. This study is complete and will be published by 1/26. Two abatement technology projects were funded in FY17. Installation of the Strobic Air Tri-Stack on the AW Stack and support for further development of the NUCON thermal oxidation technology. Tank Farm Projects will lead the design and installation of the ventilation upgrade for the AW stack with the CTO providing support to resolve technology maturation as needed. NUCON is funding the proof of concept testing of their thermal oxidizer. WRPS will witness these tests and make recommendations for conducting a pilot scale test on the Hanford site in FY18. Assuming a positive outcome of the proof of concept tests, WRPS will begin preparation for the FY18 pilot test.

SCBA Equipment Evaluation - Field testing of SCBAs during Phase 2 testing in a non-hazardous setting for approximately two weeks at the Volpentest HAMMER Federal Training Center was completed 12/07/16. The Phase 2 test report is currently drafted and is in the approval cycle. Release of the Phase 2 report in Smart Plant is scheduled for 1/31/17. Phase 3 for ordering the SCBA units and equipment chosen after Phase 2 testing was completed is about to be initiated.

Certification of existing air-line equipment was completed the week of December 19th. Field crews will begin using air-line during single-shell tank and double-shell tank annulus videos in late January/February. This activity will serve as a pilot for determining if other projects can effectively utilize air-line systems across tank farms.

VMDS Design and Chemical Vapor Quantitative Risk Assessment (Design Agent: Kenexis) –

The Kenexis contract has been awarded and the subcontractor are visiting this week. A team to conduct a quantitative risk assessment (QRA) of the chemical vapor hazard was assembled and is meeting with Kenexis this week to kick off the activities. This week's meeting will serve to educate the team and management of the QRA and VMDS design process. The team will also start the revision of the A and AP Tank Farm initial design. Finally, a WRPS plan and procedure is being drafted that will define the requirements and process for conducting the QRA process and VMDS design.

Chemical Vapor Data Quality Objectives (DQO) – As reported last week, WRPS is in the process of assembling a cross sectional team to develop Data Quality Objectives (DQO) to integrate many of the TVAT Phase 1 and 2 data collection activities. By developing DQO for the TVAT activities, the collection of data for each TVAT activity will have improved efficiency and the collection data can then be shared between activities, which will ultimately result in comprehensive data product.

Phase 2 Implementation Plan - Development of the Phase 2 implementation plan is ongoing. The draft is currently being compiled and is expected to be completed soon. A meeting is scheduled this week to discuss the current draft and ORP comments.

AY-102 Retrieval - AY-102 retrieval operations have not taken place since 1/16/17 due to a variety of causes (vent and balance activities with the 702-AZ ventilation system, Hanford site closures, etc.).

6. VAPORS MITIGATION PROGRAM PLAN - TOP RISKS

CPPO Risk Weekly Update:

A new risk register is being developed to characterize and document key risks to the chemical vapors protection program. The risks in the register will encompass the many project risk registers that make up the chemical vapors protection program. Future weekly risk input to the report will include emergent, realized, and forecasted risk items, discussing handling actions, and current status.