



washington **river**
protection solutions



The Hanford Fire Department Respiratory Maintenance Shop is located at the 600 Area Hanford Fire Station. Scott Safety and Health certified SCBA equipment, including regulators, pressure gauges, Vibralert alarm systems, racks, hoses, shoulder straps, and harnesses are regularly inspected, tested, and repaired by Hanford Firefighters, who are also Scott Safety and Health certified. (Picture courtesy M. Ellis, Hanford Fire Department)

**Tank Operations Contract
Chemical Protection Program Office Weekly Report
November 30, 2017**

1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

Neither the CPPO Weekly nor the CPPO Notebook was published last week in light of the Thanksgiving Holiday.

The draft Comprehensive Vapors Actions status dashboard reflecting FY2018 scope was updated with the data from October. Designed to monitor the progress of the draft Comprehensive Vapors Action Plan (CVAP) Key Performance Parameters (KPP) 1 thru 7, the dashboard is updated monthly. The available scoring criteria are: Exceeds, Meets, Declining, and Adverse. Overall, progress on the draft CVAP actions were scored as “Meets.” The projects continue to make good progress with performances within KPP 1, Engagement & Effectiveness, and KPP 6, SST Stewardship, the strongest overall.

The Department of Energy Office of Enterprise Assessment (EA-32) returned for a final week of assessment. The team hosted focus groups, facilitated individual interviews, and reviewed a myriad of documents the week of November 13. EA-32 offered an out-briefing which was reviewed at the November 29 CVST meeting, and is forthcoming in a CPPO Notebook.

CPPO has begun tracking and documenting WRPS’s efforts to solicit worker (end user) feedback on work in progress within vapors activities. The findings will be reported in the CPPO Weekly and Quarterly Reports.

CPPO Oversight and Tracking

Vapors Corrective Action Status

The CPPO office tracks the status of all vapor-related problem evaluation requests (PERs), with the goal of communicating PER resolution status. The 117 Tank Vapor Assessment Team (TVAT) actions are captured in WRPS-PER-2014-0602. The 3 Office of Inspector General (OIG) actions are captured in WRPS-PER-2016-2433 thru 2435. Sixty-three TVAT actions were completed during Phase I (FY2016) and the OIG actions were completed in FY2017; their completions are documented in the Electronic Suspense Tracking and Routing System (ESTARS). The remaining TVAT actions have been rolled into the draft CVAP. The remaining recommendations from National Institute of Occupational Safety and Health (NIOSH), EA-32, Center for Toxicology and Environmental Health (CTEH), and the Vapor Management Expert Panel (VMEP) have either been added, or are in the process of being added, to the PER system. The PERs shown as “not launched” in the bullet list below are in the final development and concurrence cycle for their respective corrective actions. The status of the PERs and associated corrective actions (CA), by draft CVAP KPP, are as follows:

- KPP 1 – Engagement and Effective Measurement
 - WRPS-PER-2017-2151 – PER issued and CAs launched.
- KPP 2 and 3 – IH Technical Basis and IH Program
 - WRPS-PER-2017-0610 – PER issued and CAs not launched.
 - WRPS-PER-2017-0718 – PER issued and CAs not launched.
 - WRPS-PER-2017-0720 – PER issued and CAs not launched.
 - WRPS-PER-2017-0721 – PER issued and CAs not launched.
 - WRPS-PER-2017-0722 – PER issued and CAs not launched.
 - WRPS-PER-2017-0723 – PER issued and CAs not launched.
- KPP 4 – Engineering Controls
 - WRPS-PER-2017-2152 (4A) – PER issued and CAs not launched.
 - WRPS-PER-2017-2153 (4B) – PER issued and CAs launched.
- KPP 5 – Administrative Controls and Monitoring
 - WRPS-PER-2017-2154 (5A) – PER issued and CAs not launched.
 - WRPS-PER-2017-2155 (5B) – PER issued and CAs launched.
- KPP 6 – Tank Operations Stewardship
 - WRPS-PER-2017-2156 – PER issued and CAs launched.
- KPP 7 – Hierarchy of Controls
 - WRPS-PER-2017-2157 (7A) – PER issued and CAs not launched.
 - WRPS-PER-2017-2158 (7B) – PER issued and CAs launched.
- KPP 8 – Medical Support
 - WRPS-PER-2017-1707 – PER issued and CAs not launched.

2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

KPP 1. Engagement and Effective Measurement

Chemical Protection Engagement: Center for Toxicology and Environmental Health (CTEH)

The CTEH team was on holiday last week. Its members developed CPPO Notebook presentations on chemicals, including dimethyl mercury, nitrous oxide, and ammonia, as well as on topics including the process of OEL development and IH program fundamentals in November.

Chemical Protection Engagement: Communications

No Chemical Vapors Solution Team (CVST) Sub-committee meetings were held last week.

Key Performance Parameter 1

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



This week's CPPO Notebook contains two topics. One is titled *Washington River Protection Solutions 2017 Safety Culture Survey Result: Vapor Snapshot*. The second offering is a video tour of WRPS's vapors related websites.

✚ Chemical Protection Engagement: Hanford Vapors Website Updates

- Vapors weekly update November, 16, 2017
- Updated list of COPCs
- VMDS Weekly Report (April 5 - April 12, 2017)
- CPPO Weekly Report - November 16, 2017

✚ Chemical Protection Engagement: Effectiveness Measures

CPPO is developing the next Vapors Communications Effectiveness Survey. The survey is in draft.

✦ Chemical Protection Engagement: Data Access and Visualization Tool (DAV)

Interesting and useful Google Analytics data has been collected at the Cloud Site implemented on October 8th, 2017. In summary, data from October 1st through October 31st:

- Basic site statistics:
 - Total number of page views: **657 hits**
 - Most visited page: **www.tankvaporsexplorer.com**
 - Most used non-landing page: **Data Explorer**
www.tankvaporsexplorer.com/explorer
 - ✓ *Users spent the longest amount of time using the **Data Explorer** with an average of ~4 min*
- Site use activity:
 - Most active time of day: 8 am
 - Most active day of the week: Monday
- Feature most used in the *Data Explorer*:
 - Most popular feature: **Chemical Selection**
 - ✓ *What chart type is being used the most: **Single Chemical***
 - ✓ *What chemical specifically: **Ammonia (7664-41-7)***
 - ✓ *Second most popular feature: **Explorer-Set-Filter***
 - ✓ *Explorer-set-filter is where the user is actively filtering on COPC chemicals or all chemicals*
- Most views regionally:
 - Most popular region: **Washington State**
 - Where else has DAV been accessed:
 - ✓ *Illinois*
 - ✓ *California*
 - ✓ *Massachusetts*
 - ✓ *Texas*
 - ✓ *Arkansas*
 - ✓ *North Carolina*
 - ✓ *Virginia*
- Devices, browsers, and resolutions most used:
 - Most used device: **Windows Desktop (82%)**
 - ✓ *Second: **iOS (8%)***
 - Most used browser: **Internet Explorer (46%)**
 - ✓ *Second: **Chrome (35%)***
 - Most common resolution: **1920x1080**
 - ✓ *Second: **1536x864***
- **49%** of session hits are through referral links:
 - **90%** of referred traffic is coming from: **hanfordvapors.com**
 - Other referrals are toc.wrps.rl.gov (9%); phoenix.pnnl.gov (1%)

- New users vs. returning users:
 - 64% of sessions were from **new users**
 - 36% were returning users

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

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

Last update 11/16/2017: The IH Manual (with specific focus given to institutionalizing the Chemical Vapors elements), and the 17 revised/new implementing documents and procedures, are routing for approval through the work review flow and approval (WRAP) process. These changes will be fully implemented in FY2018.

✦ Health Process Plan

Last update 11/9/2017: The following PNNL prepared draft reports were provided to WRPS during FY2017, completing the Health Process Plan deliverables:

- *Proposed HTFOELs for Chronic Exposures – COPCs with Regulatory Guidelines*
- *Proposed Occupational Exposure Limits for Furans*
- *Proposed Risk-Based Approach for Nitrosamine Chemical of Potential Concern*
- *Proposed Acute Exposure Concentration Limits for COPCs with Regulatory Guidelines*
- *Proposed HTFOELs for Chronic Exposures - Nitrile Class COPCs and 2,4-Dimethylpyridine*
- *Assessing the Potential for Chronic or Acute Health Effects from Exposure to COPC Mixtures*
- *Recommendations for Sampling and Analysis of Hanford Waste Tank Vapors*
- *Hanford Tank Vapors FY 2017 Chemicals of Potential Concern Update*

The draft reports will be evaluated using the process established in TFC-CHARTER-71, *WRPS Internal Review Panel, and External Review Panel Process for Review of Health Process Plan Recommendations*, which is as follows:

- Understand the feasibility of implementation based on technology implications and operational impacts.
- Resolve any technical questions with the authors through assistance of the external expert panel.
- Provide final recommendations to DOE-ORP for changes to the IH Chemical Vapor 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.

The draft reports will be evaluated in FY2018. Following resolution of the Internal and External Review Panel's comments and evaluation, PNNL will reconcile any changes necessary in the particular reports and issue the reports as final.

Parity Implementation with Established Programs

Last update 11/16/2017: WRPS made strides in improving parity with other well established programs such as the radiological controls program. WRPS Industrial Hygiene Programs implemented the Enhanced Chemical Hazard Awareness Training (CHAT) developed in 2016, and completed a training evaluation report to capture recommendations from students on improvement. Chemical Worker Tier 1 training is complete. As planned, it is now part of the Tank Operations Contractor Hanford General Education Training program, and available to take immediately. Chemical Worker Tier 2 was coded for the computer use by Mission Support Alliance (MSA), which will roll out the product at the beginning of the second FY2018 quarter. Chemical Worker Tier 3 training was successfully piloted October 4, 2017. Comments from the pilot class have been incorporated in the lesson plan for final approval. The plan is to discontinue enhanced CHAT once the Tier 3 training is in service. Ongoing parity activities in FY2018 include enhancing IH involvement in the work planning process by the following:

- Develop and implement an IH work permit process.
- Increase IH participation in the work planning process.
- IH field presence gain through increased IH department staffing in FY2017.

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 FY2018.

Central Residence for Industrial Hygiene Technicians (IHT)

Last update 11/2/2017: Introduction: Retrieval Industrial Hygiene Technicians (IHT) and their first line supervisors will be relocated to a centralized mobile office (MO) building in February/March of FY2018. The MO is slated to house approximately 100 workers. According to retrieval field support, this new space will be large enough to house all retrieval IHTs and their first line supervisors. Plans are to install the MO in 200 East area near the vicinity of Baltimore Avenue and 4th street. The installed and occupied MO will satisfy KPP 3 for retrieval IHTs. KPP 3 advocates a central location for IHTs that is commensurate with other technician level employees.

KPP 4. Engineering Controls

A Farm Exhausters

Last update 11/9/2017: A Farm: WRPS issued a request for a proposal from American Electric to isolate A-Farm vent ducting. Isolation is necessary to establish enough vacuum for tank ventilation. The proposal from American Electric is due this week.

AW Stack Extension

Last update 11/9/2017: The 60% design package is nearing completion and reviews are expected to start the week of 11/6.

Strobic Air Dilution Fan

Last update 11/9/2017: Strobic submitted its proposal for the factory acceptance test to WRPS for evaluation and potential award.

NUCON Thermal Oxidation Vapor Abatement Unit (VAU)

Last update 11/9/2017: Development of the bench-scale testing continued, with the following being accomplished last week:

- WRPS:
 - Issued contract revisions to PNNL and TerraGraphics for FY18 scope and funding. The PNNL and TerraGraphics contracts allow for continued support of bench-scale activities.
 - Completed all paperwork and approvals for NUCON contract for support of the propane-to-diesel conversion design. The NUCON contract allows for support of the propane-to-diesel conversion design.
 - Continued preparation of the technology maturation plan for the NUCON VAU.
- TerraGraphics:
 - Continued revising Work Plan that will detail scope, schedule, and resources needed to support bench-scale testing in FY2018.

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 Vapor Monitoring and Detection System (VMDS) Equipment in A and AP Farms

Update: Numerous activities were performed throughout the week, including the following:

- Continued resolving comments on the Phase 2 Pilot-Scale Report.
- Efforts continued on the modification of the Autosampler. In support of developing test gas standards, samples were collected during a recent waste disturbing activity at AP-Farm. The samples will be analyzed by both the 222-S Lab and an off-site vendor in order to confirm the sample adequately supports integrated testing. Additional samples will be collected from the same area at AP Farm to determine the quiescent, meaning inactive or dormant, conditions. Other activities include the preparation of the test plan and procurement of the equipment (probes, pumps, UV-DOAS) needed to support integrated testing of the Autosampler. In parallel with these activities, design drawings for the test bed manifold and Hanford E-Skid are being prepared, and a draft functions and requirements (F&R) specification is being written to allow for the fabrication of additional Autosamplers.
- The Ultra-Violet Fourier transform infrared spectroscopy (UV-FTIR), currently installed at AP Farm, is going to be turned over to operations. A draft F&R is being prepared that will capture the results of equipment set point discussions. This is a key document that will provide direction for much of this project moving forward. In addition to the F&R, efforts are on-going by ARES to prepare a calculation that refines the set point for ammonia.

Stack and Boundary Monitors

Update: Stack monitor activities included:

- Procurement of the 13 Ultra Violet- Differential Optical Absorption Spectrometer (UV-DOAS) fence-line units continue to be delayed pending implementation of a WRPS Quality Assurance program.
- WRPS design group is awaiting the final Cerex design reports for the UV-DOAS stack monitors before initiating design revisions.

Establishing Safe Unrestricted Boundaries

Update: The updates for Establishing Safe Unrestricted Boundaries is being reworked for future publications, the first of which is December 7, 2017.

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: Excavation work at both C and AP Farms was delayed as a result of weather and resource issues; functional testing was delayed as well. After system and functional tests have been completed, the construction acceptance testing (CAT) will be performed.

KPP 6. Tank Operations Stewardship

Pilot SST Stewardship Program

Update: Remote Monitoring Equipment: An engineering contract for the TY Farm automation design was awarded the week of 11/6, and work was immediately started with a kick-off meeting the week of 11/13. A draft schedule was prepared outlining all design activities to be performed by the engineering contractor. Concurrent with these activities, the briefly delayed level and temperature bench-scale tests were re-started; the tests continue to collect the data needed to support equipment design and procurement. **Update: FY LEAN 2015: Report/Work Location Evaluations:** A draft of the SST Stewardship Execution Strategy Document was started on the week of 11/13 and is currently scheduled to be completed by February 2018.

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 11/2/2017: Prior to June 30, 2017 cartridge testing was conducted at the AP Stack, A-101, 702-AZ, AN Exhauster, AW Stack, BY-108, AX-101, SX-101 and SX-104 tank farm locations. PNNL reports are complete for all of the above except for SX Farm. Copies of the completed reports are available [HERE](#). In August, cartridge testing was performed at the AX Stack. The PNNL reports for the SX Farm and the AX Stack are currently being written. More information on these cartridge tests will be made available as the reports go final. PNNL has developed a summary report rolling up the information contained in the cartridge testing reports issued to date. This summary report is currently being reviewed by WRPS management. The final summary report is expected soon.

Key Performance Parameter 7

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

Cartridge testing for FY-2017 was completed at the end of August. Cartridge testing for FY2018 is slated to begin in January/February of 2018.

The third party (STC) review has indicated that use of full face air purifying respirators (FFAPR) equipped with the Scott 7422-SC or the Scott 7422-SD1 cartridge is acceptable when it is supported by hazard assessment conducted on a farm by farm basis at the following locations:

AP Farm	AZ Farm	A-101	AW Farm
241-AY	SY-102	AN Farm	

To date, the use of FFAPR is limited to SEG-1 activities.

Mobile Laboratory

No Update.

Personal Vapor Monitor

Last update 11/9/2017: Approximately 80 liters of material was collected from the AP Farm stack to support the upcoming C₂Sense laboratory test at RJ Lee. The test, which is scheduled for the week of 11/6, will be used to prepare the monitor for future field testing and deployment. Laboratory testing continued on the prototype sensor chip. Testing focused on exposing the sensor to humidity and ammonia, which allows for development of the algorithm needed to convert a raw signal to concentration.

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.