



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



Depicted is the new sign marking the boundary of a potential vapor emission source greater than or equal to 50% of the OEL. On September 5, 2018, Industrial Hygiene, in an all-employee email, notified the workforce of a major revision to TFC-ESHQ-IH-C-48, *Managing Tank Chemical Vapors*.

Tank Operations Contract  
**Chemical Protection Program Office**  
September 13, 2018

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

The CPPPO-led focus group report has been drafted. The final report, including observations and recommendations for improving the effectiveness of vapors information, is in technical editing.

### CPPPO Oversight and Tracking

#### **Hanford Vapors Website and Data Access Visualization (DAV) Tool**

##### **Hanford Vapors Website**

**Figure 1** shows that the Hanford Vapors website logged over 2460 views in August 2018, marking a thirty-three percent (33%) decrease from July. In August, the website experienced an average of 80 hits-per-day, which is slightly below the average for fiscal year (FY)2018-to-date. Website traffic was elevated on August 8 even though nothing new was posted that day. Communications and Public Relations (C&PR) reported posting the following 7 items to the site this month:

- [CPPPO Weekly Report – August 9, 2018](#)
- [CPPPO Weekly Report – August 16, 2018](#)
- [CPPPO Weekly Report – August 23, 2018](#)
- Event Investigation Report – EIR-2018-20
- [PNNL-26850 – Proposed Acute Exposure Concentration Limits for COPCs with Regulatory Guidelines, Rev. 0 Summary](#)
- Posted additions to the 222-S Laboratory webpage
- Strobic Job #11953 - Strobic<sup>®2</sup> Air Technologies Factory Acceptance Testing Report Hanford Site

##### **Data Access Visualization (DAV) Tool**

**Table 1** shows that the DAV Tool logged 355 views in August 2018. The statistics are provided by Google Analytics. CPPPO subcontracted with Pacific Northwest National Laboratory (PNNL) to build and launch the DAV Tool early in FY2018. The DAV Tool promotes transparency by providing access to historical and current tank vapor samples, monitoring results, and visual representations of relevant data and contextual information. This tool provides data to the user with little technical background, as well as allows the more technically sophisticated user to drill down to detailed content. The DAV Tool is on the HanfordVapors.com website.



**Figure 1. Hanford Vapors Website Statistics August 2018**

**Table 1. DAV Tool Use Statistics for August 2018: [www.TankVaporsExplorer.com](http://www.TankVaporsExplorer.com)**

2018	Total Page Views	Most Popular Feature	Second Most Popular Feature	Most Popular Region	Other Regions	New Users	Returning Users
July	355	Chemical Selection: Chart Type: Single Chemical Area Ammonia (7664-41-7)	Explorer-Set-Filter  Explorer-Set-Filter is where the user is actively filtering on COPC Chemicals or All Chemicals.	*Washington State	New York Arkansas Colorado Idaho Illinois Kansas Oregon Pennsylvania	50%	50%
		*July Washington State Breakdown: 1. Total Page Views: 328 (92%) Average Session Duration: ~2 min		2. Total Unique Users: 49 Region/Marketing: Yakima-Pasco-Richland-Kennewick: 47 Seattle-Tacoma: 2			
		3. Page views by Region Yakima-Pasco-Richland-Kennewick: 322 Seattle-Tacoma: 6		4. New vs Returning Users			
				Yakima-Pasco-Richland-Kennewick		Seattle-Tacoma	
				New Users: 36		New Users: 2	
				Returning Users: 11		Returning Users: 0	
				75% of referred traffic is coming from: <a href="http://hanfordvapors.com">hanfordvapors.com</a>			
August	355	Chemical Selection: Chart Type: Single Chemical Area Ammonia (7664-41-7)	Search Select Farm	**Washington State: <b>Breakdown will no longer be reported.</b>	New York Arkansas Oregon	50.5%	49.5%
		**August Washington State Breakdown: 1. Total Page Views: Not Reported 2. Average Session Duration: Not Reported		3. Total Unique Users: Not Reported Region/Marketing: Not Reported			

## 2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

### KPP 1. Engagement and Effective Measurement

#### CTEH

##### **Update:**

No CTEH toxicologists were onsite last week because of the Labor Day holiday. While offsite, however, they continued to develop the IH Technical Basis Re-Assessment report and conduct literature research into clinical biomarkers for tank vapor effects, in conjunction with HPMC staff.

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

#### Chemical Protection Engagement: Communications

##### **Update:**

Last week's CPPO Notebook is titled *Chemicals in the Tank Headspace – Part II: Tank Headspace Characterization*. This week's Notebook is titled *Chemicals in the Tank Headspace – Part III: The Future of Tank Headspace Characterization*.

An all-employee email dated September 4, 2018, described the analytical results of the respiratory protective equipment (RPE) testing in July. The results “indicated that there were no instances of chemical (anion) contamination on any of the RPE tested. Likewise, there were no instances of bacterial contamination on the RPE and surfaces that were evaluated.”

Industrial Hygiene communicated a major revision to TFC-ESHQ-IH-C-48, *Managing Tank Chemical Vapors*, intended to “simplify risk classification categories, align terminology with industry standards, and assist in the demarcation and communication of areas with greater potential of tank chemical hazards.” *Exclusion Zones* **replaces** *Vapor Control Zone* as the term used to demarcate “the boundary of potential vapor emission source greater than 50% of the OEL.” The cover of this Weekly Report depicts the **new** sign as described in the September 5, 2018, all-employee email.

WRPS is implementing the ToxiRAE<sup>1</sup> personal ammonia monitor. Details on the rollout and implementation phases were communicated to the workforce in an all-employee email, distributed by Industrial Hygiene, on September 6, 2018. “The monitors have been procured and received,” stated the email. Furthermore, “WRPS will rollout ToxiRAE use gradually.”

### **Chemical Protection Engagement: Chemical Vapors Solutions Team (CVST)**

#### **Last update 9/6/2018:**

The CVST Communications Sub-committee held a meeting on August 27, 2018. Communications, Management, Operations, HAMTC Safety Representatives, IH Program Representatives, Nuclear Chemical Operators (NCO) and CPPO were in attendance. The Communications lead provided status on litigation and settlement discussions, and the AN Farm FFAPR rollout. It was announced that the next meeting will be on Monday, September 24.

### **Chemical Protection Engagement: Hanford Vapors Website Updates**

#### **Update:**

The following documents were posted to [HanfordVapors.com](http://HanfordVapors.com) last week:

- [CVST Meeting Agenda 08082018](#)
- [CPPO Weekly Report 08302018](#)
- [PNNL-25791 Hanford Tank Farm Occupational Exposure and Risk Assessment Plan Report Summary](#)
- [EIR-2014-008](#)
- [Vapors Update 8/30/2018](#)

### **Chemical Protection Engagement: Workforce Engagement**

#### **New Updates begin October 1, 2018**

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

### **IH Manual and Technical Basis**

#### **Update:**

The TOC-IH-58435, *Industrial Hygiene Manual's* updated sections, including Section 5, *Reporting Occupational Exposure, and Medical Monitoring*, are all posted on the Industrial Hygiene webpage on the Intranet. Section 6, now titled *Work Control*, Section 7, *IH Program Administration*, and Section 8, *Documents and Records*, have successfully navigated an internal WRPS review, and are now available to DOE Office of River Protection (ORP) for its review.

Industrial Hygiene communicated a major revision to TFC-ESHQ-IH-C-48, *Managing Tank Chemical Vapors*, intended to “simplify risk classification categories, align terminology with industry standards, and assist in the demarcation and communication of areas with greater potential of tank chemical hazards.” *Exclusion Zones* **replaces** *Vapor Control Zone* as the term used to demarcate “the boundary of potential vapor emission source greater than 50% of the OEL.”

#### **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.

TFC-PLN-34, *Industrial Hygiene Exposure Assessment Strategy*, is WRPS's published guideline for developing exposure assessments. The AP Farm base line exposure assessment (EA) is complete and approved by DOE. IH Management will direct its release in a carefully timed and executed rollout. A Farm EA is complete and has been given to ORP for review/comments. AW Farm EA is in draft.

TFC-PLN-173, *Use of FFAPR in Actively Ventilated Tank Farms*, is posted on the website for implementation in SY and AP Farms. It is being edited to include AN Farm.

The Industrial Hygiene organization is reporting 100% of the IH workforce has been trained in *Risk Communication Techniques* and ~100% trained in *Crucial Conversations*.

### 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.

#### Health Process Plan (HPP)

##### **Last update 8/23/2018:**

The following HPP studies conducted by PNNL have been released as final versions under the TFC-Charter-71 process: *Proposed OELs for Chronic Exposures – COPCs with Regulatory Guidelines, Hanford Tank Vapors FY 2017 Chemicals of Potential Concern Update, and Proposed OELs for Chronic Exposures – Nitrile Class COPCs and 2,4-Dimethylpyridine, Proposed Acute Exposure Limits for COPCs with Regulatory Guidelines and Recommendations for Sampling and Analysis of Hanford Waste Tank Vapors. Sampling and Analysis Plan* is cleared for release to the public as of last week. The study *Proposed Risk-Based Approach for Nitrosamine Chemical-of-Potential Concern* is being considered further for evaluation of economic impact and technical feasibility. The study *Proposed Occupational Exposure Limits for Furans* will be further evaluated via the Charter-71 process in FY2019.

#### Air Dispersion Modeling

##### **Last update 8/2/2018:**

The Air Pollutant Graphical Environmental Monitoring System (APGEMS) modeling software (version 1.0) and accompanying report were released in May. The report describes the APGEMS-TF software and presented three test cases illustrating model performance for simulations involving the AP, AW, and AN Stacks, as well as the 242-A Evaporator. The test cases were selected to provide model predictions of ammonia and mercury air emissions during low, medium, or high wind conditions. The APGEMS-TF software was refined and version 1.1 was delivered to WRPS for

acceptance testing. WRPS Engineering and IH are evaluating the software and providing feedback to the PNNL team. Representatives from Process Engineering and Chief Technology Office (CTO) Fugitive Emissions team were trained in the use of APGEMS-TF Version 1.1 last week.

#### Central Residence for Industrial Hygiene Technicians (IHT)

**Last update 9/6/2018:**

The HLAN installation is ongoing in the new 10-Wide facility. Furniture is being assembled and installed. The roof was completed on August 23, 2018. The fire protection piping, drain piping and power installation have been scheduled. The contractor continues creating forms for the perimeter sidewalks.

### **KPP 4. Engineering Controls**

#### A Farm Exhausters

**Last update 9/6/2018:**

**Exhausters:** In the last two weeks, concrete was poured on the west half of the exhauster slab thus completing the concrete pad in support of the exhauster skid operation.

**Procurement/Fabrication:** Continued procurement of the POR518/POR519 exhauster valve manifold, manifold support and access platform, ventilation ducting, riser assemblies, work platforms, cover plates, grout boxes and large spray rings. Received bids for the ventilation ducting, riser assemblies, work platforms, cover plates and grout boxes, and awarded subcontracts for fabrication of the demister shields and concrete support blocks.

**Construction Subcontract:** Prepared the requisition for installation of the A-Farm exhauster manifold and ductwork.

**Equipment Removal:** Continued planning to remove thermocouples from A-101, A-103, A-104 and A-106 to accommodate vent installation. **Exhauster Valve**

**Manifold:** Mobilized to place the POR518/POR519 Exhauster Valve Manifold slab.

#### **Key Performance Parameter 4**

Complete engineering control concept demonstrations for Strobic Air Tri-Stack® and NUCON® International, Inc. thermal combustion in support of unrestricted

#### AW Stack Extension

**Last update 9/6/2018:**

The AW Farm stack extension installation continued the last two weeks; the following was accomplished:

- Preparations of the non-radiological and radiological permit applications continued. The radiological permit is with ORP for review while comments from Ecology on the non-radiological permit continue to be resolved.
- Stack installation and fabrication activities continued. For installation activities, the draft lift plan was completed and comments are being resolved

for approving the final lift plan. Fabrication efforts have been delayed approximately a month in order to support higher priority work and because of delays in approving the non-radiological permit.

#### AN Stack Extension

##### **Last update 9/6/2018:**

In the last two weeks, the team performed dispersion modeling and worked on the dispersion modeling report. A meeting has been scheduled to review the proposed engineering evaluation and current dispersion modeling results with WRPS management.

#### Strobic® Air Dilution Fan

##### **Last update 9/6/2018:**

The evaluation of the test results and data from the recently completed off-site Strobic® Air Unit is well under-way, and the report is being drafted.

#### NUCON®<sup>3</sup> Thermal Oxidation Vapor Abatement Unit (VAU)

##### **Last update 9/6/2018:**

**Terragraphics:** Terragraphics, having received feedback on the 90% Conceptual Design of the NUCON® infrastructure for the field demonstration on BY-108, continued to work on comment-resolution.

**NUCON®:** Continued providing telephone consultations.

**PNNL:** Resolved all reviewer comments on the draft A test report, entitled *NUCON® Vapor Abatement Unit Performance on Hanford Tank Farm Chemical of Potential Concern*, which captures the test results from the NUCON® engineering-scale test.

**WRPS:** Reviewed and provided comments on the 90% conceptual design for the BY-108 field demonstration. Additionally, WRPS completed its review of the draft report summarizing data results from the NUCON® engineering-scale test, entitled *NUCON® Vapor Abatement Unit Performance on Hanford Tank Farm Chemical of Potential Concern*.

## KPP 5. Administrative Controls and Monitoring

### Permanent Installation of VMDS Equipment in AP Farm **Update:**

Efforts to obtain approvals on the Phase 2 Pilot-Scale Report continue. For the AP Farm ultra-violet fourier transform infrared spectrometer (UV-FTIR) turnover, numerous activities were on-going during the last two weeks, including the following:

- Completing the Operational Acceptance Tests (OAT) needed to support turnover. The OAT was split into three separate tests to optimize the approval process. The first OAT addresses interim reliability of the system to support startup testing, the second OAT addresses startup activities where no gas testing is required, while the third OAT addresses startup activities where gas testing is required. A status of each OAT is provided below:
  - **Interim Reliability OAT:** Efforts to modify the algorithm have not been started because Cerex was directed to support the installation of the stack monitor.
  - **No-Gas Testing OAT:** Comments on the draft OAT by the Joint Test Working Group have been resolved.
  - **Gas Testing OAT:** Awaiting further development of other support activities before proceeding.
- Efforts also continued on installing the bottle racks, and procuring permeation tubes and calibration gases.

#### 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.

### Stack and Boundary Monitors

#### **Update:**

**702-AZ Stack Monitor:** Installation of the 702-AZ Ultra-Violet-Differential Optical Absorption Spectrometer (UV-DOAS) stack monitor continued.

**AN Farm Stack Monitor:** The site preparation work was completed, and installation of the UV-DOAS unit has begun.

**AX Farm Stack Monitors:** The UV-DOAS monitors were delivered on-site and efforts are on-going to prepare the monitors for installation. In addition, site preparation for the units, including staging tube bundles and finalizing electrical wiring, continues.

**AW Farm Stack Monitor:** The factory acceptance test of the UV-FTIR unit was completed successfully and the monitor was shipped. Site preparation was completed and is ready to receive the monitor upon its arrival.

### Establishing Safe Unrestricted Boundaries

#### **Update:**

Depicted on the Weekly Report cover is one of the new signs marking the boundary of a potential vapor emission source greater than or equal to 50% of the OEL. On September 5, 2018, Industrial Hygiene, in an all-employee email, notified the workforce of a major revision to TFC-ESHQ-IH-C-48, *Managing Tank Chemical Vapors*. Signs have been prepared to identify the Industrial Area, Exclusion Zone, and Contamination Reduction Zone. Signs will not be prepared to identify the Support/Administrative Zone or Site Boundary at this time. Meetings have been held with other site representatives informing them of the pending changes to farm signage. The new Exclusion Zone signs will be installed “in the coming days.”

### Public Address (PA) System

#### **Update:**

The functional testing for S, T U, and B Farm public address (PA) systems was completed, while the remaining punch-list items were completed at C Farm. Administrative activities are underway to officially turnover all PA systems to Operations.

## **KPP 6. Tank Operations Stewardship**

### Pilot SST Stewardship Program

#### **Update:**

The activities completed over the last couple of weeks include the following:

- Mission Support Alliance (MSA) continued network development activities by installing conduit that will store communications fiber. MSA confirmed the conduit was plugged. This is creating challenges. An excavation permit and work package are being prepared to support unplugging the conduit.
- In addition to these activities, efforts continue to prepare a statement of work (SOW) for FY2019 activities. The SOW will support the T Farm complex construction activities.

#### **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 8/2/2018:**

IH attended meetings with WRPS management to discuss the status of self-contained breathing apparatus (SCBA) alternatives. Cartridge testing has been completed for FY2018, and the SX-101 and SX-104 APR and powered air purifying respirator (PAPR) reports have been issued. The BY sampling data is being analyzed by PNNL. The headspace comparison/line-loss project data is being analyzed as well.

#### **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

#### **Last text update 9/6/2018**

#### **Updated Photograph:**

Construction of the new Mobile Lab with enhanced capability is complete. Tours of the new Mobile Laboratory were conducted at the 3110 Port of Building parking lot last week. **Figure 2** depicts the laboratory and the TerraGraphics staff that designed and built the lab. The laboratory provided area monitoring support for the AY-102 rinse evolution and continued supporting the Fugitive Emissions initiative in the following ways:

- Sampled around the septic tanks located near the 242-A evaporator
- Sampled downwind of the septic tanks near 244-AR
- Sampled in the vicinity of a local onion producer



*Figure 2. Pictured at the Mobile Laboratory's open-house are the TerraGraphics personnel who built the mobile laboratory (left to right) John Cottington, Matt Erickson, Adrielle Olson, Rich Westberg, Heath Low, Todd Rogers. (Photo courtesy of TerraGraphics.)*

#### Personal Vapor Monitor

##### **Last update 9/6/2018:**

A draft report covering Phase I and Phase III testing of the personal vapor monitoring devices was completed. The test report discusses the results and conclusions of field tests performed on personal vapor monitoring devices, including Ventis™ Pro V<sup>4</sup>, GfG Micro IV<sup>5</sup>, ToxiRAE, and the ChromAir<sup>6</sup> ammonia badge. The draft report was submitted to the C<sub>2</sub>Sense®<sup>7</sup> Integrated Project Team (IPT) members for review. C<sub>2</sub>Sense® devices are not evaluated in this report.

**As reported last week**, C<sub>2</sub>Sense® submitted an interim draft report covering data analysis and development of an alpha version of the device algorithm. While the algorithm has improved, false positives in the data reveal that more work is required. C<sub>2</sub>Sense® is continuing to enhance the algorithm, and a new revision of the report is expected before the end of FY2018.

Due to limited Radiological Control Technicians (RCT) and IHT support for the remainder of FY2018, IH management decided to stop Phase II C<sub>2</sub>Sense testing with the mobile laboratory and proceed directly to report preparation.

#### KPP 8. Medical Support

The scope of KPP-8 is to support RL medical program enhancements in conjunction with other Hanford Site organizations. **The last update from HPMC was April 12, 2018, for the 2<sup>nd</sup> Quarter.** During the 2<sup>nd</sup> Quarter:

- The Office of the Ombudsman visit was cancelled. No new visit has been confirmed.
- Discussions continue between the HAMTC President and committee related to revising the Access Control Entry System (ACES) exclusion note in the TFC-BSM-HR\_EM-C-10, *Reasonable Accommodations* procedure. No agreement has been reached as of the date of this publication.
- HPMC confirmed that it is currently working on the epidemiology study comparing Tank Farm Vapor Exposures and Non-Exposed Group of Hanford Workers.

#### **Key Performance Parameter 8**

Support medical program enhancements in conjunction with responsible Hanford Site organizations and establish update to WRPS process/procedures.

<sup>1</sup>RAE Systems by Honeywell, San Jose, California.

<sup>2</sup>Strobic Air Tri Stack is a registered trademark of Strobic Air Corporation, Bensalem, Pennsylvania.

<sup>3</sup>NUCON is a registered trademark of Nucon International, Inc., Columbus, Ohio.

<sup>4</sup>Ventis™ Pro5 Multi-Gas Monitor is a registered trademark by Industrial Scientific in Pittsburgh, Pennsylvania

<sup>5</sup>GfG Micro IV Single Gas Detector from GfG Instrumentation, Inc.

<sup>6</sup>ChromAir is registered to Morphix Technologies, Virginia Beach, Virginia.

<sup>7</sup>C<sub>2</sub>Sense is a registered trademark by C2Sense®, Inc., Cambridge, Massachusetts.