



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



## Ammonia

Part 1



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Part 2



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*Depicted are the covers of two CPPO Notebooks created by the Center for Toxicology and Environmental Health. Ammonia, Part 1 was published on April 12, 2018. Ammonia, Part 2, is this week's CPPO Notebook.*

**Tank Operations Contract**  
**Chemical Protection Program Office**  
**April 19, 2018**

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

The draft Comprehensive Vapors Action Plan (CVAP) Dashboard with March data is the most recently completed dashboard. The overall progress on draft CVAP scope (measuring the performance for all KPPs) is **Meets** where the options for overall ranking are **Exceeds, Meets, Declining, and Adverse**. The overall score for CVAP progress has been **Meets** for the fiscal year thus far. Most of the measures within the dashboard are lagging indicators. Progress against each KPP is ranked monthly. March has an overall score for CVAP progress as **Meets**.

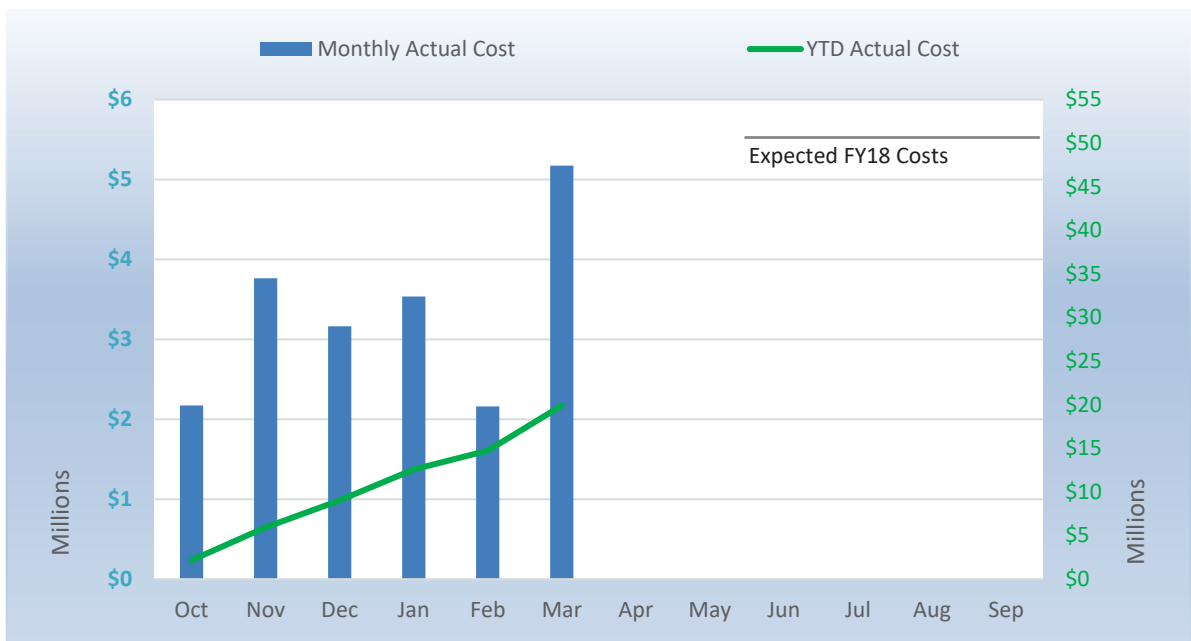
**Exceeds** status was achieved in March for both KPPs 2 and 3, the KPPs that encompass Industrial Hygiene (IH) programmatic activities that are vapors-related. With the exception of KPP 4, all other KPPs are ranked as **Meets**. This is an improvement from last month for KPP 5 where a slight increase in float for the Public Address system installation drove the KPP 5 metric to the better ranking **Meets**, compared to **Declining** last month. KPP 4 is ranked **Declining** based on low schedule float of AW Stack extension and <sup>1</sup>NUCON<sup>®</sup>. WRPS is working to get the NUCON<sup>®</sup> test unit delivered by mid-May. A continuing **Declining** performance within KPP 1 for the attendance of TVRs at the February CVST is noted where 50% of the work groups were represented. This resulted in a score of **Adverse** for the month. Of note, under KPP 1, starting next month, the “IH in the field” will no longer be tracked in a metric – based on the CPPO FY2018 Vapors Information Survey Results indicating that 89% of workers feel that they have adequate access to IH staff to answer vapors-related questions.

The CPPO *FY2018 Vapors Communication Survey* was distributed to 702 randomly selected members of the workforce in January; 235 responses were received – a return rate of approximately 33%. The results have been collated and preliminary evaluation of the data is underway. The results will also be evaluated against the 2017 survey and will be used to drive continued improvement in the vapors-related information provided to the workforce. The analysis and resulting recommendations will be reported to WRPS, ORP and to the workforce. The draft report is in review.

**CPPO Oversight and Tracking**

**Cost and Schedule Metric**

Ongoing vapors projects supporting the draft CVAP Key Performance Parameters (KPP) are moving forward as planned. FY2018 to date, \$19.9M has been spent implementing the draft CVAP KPPs. \$53.5M (93.87%) of the revised not-to-exceed (NTE) value of \$56.995M has been spent. Monthly costs are expected to jump to near \$5M per month through the fall with the Vapor Monitoring and Detection System (VMDS), <sup>2</sup>Strobic® Air and the Industrial Hygiene (IH) Trailer procurement materializing.



**Figure 1. FY2018 Draft Comprehensive Vapor Action Plan Costs**

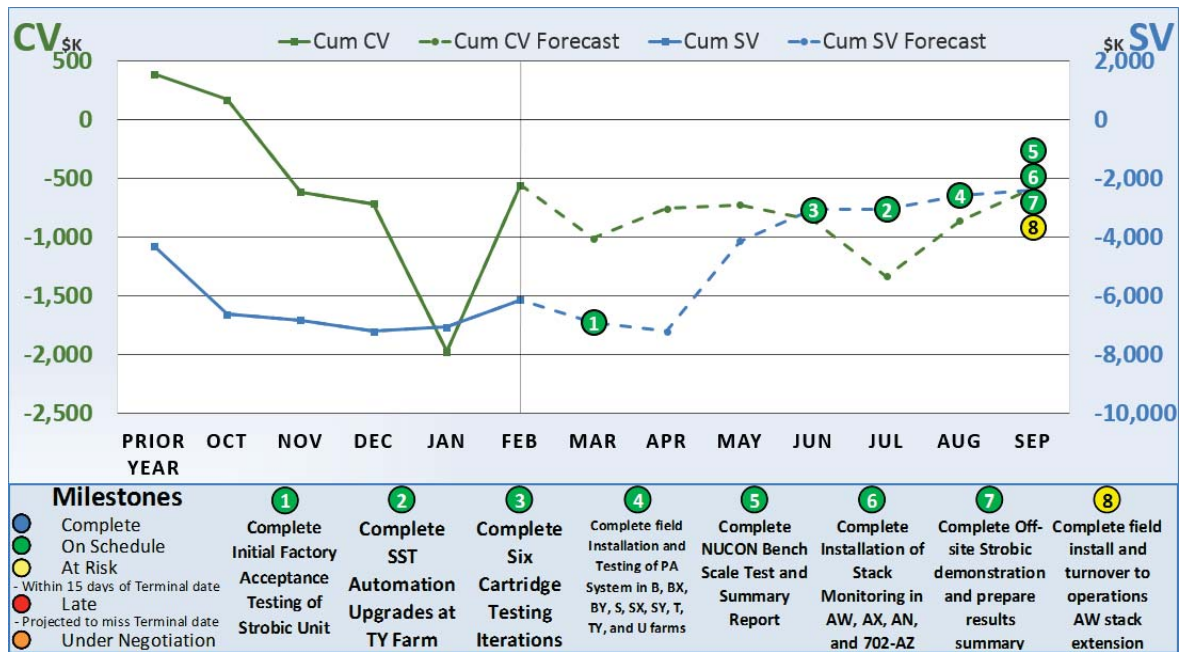


Figure 2. FY2018 Cost and Schedule Variances for the Draft CVAP

## 2. COMPREHENSIVE VAPOR ACTION PLAN Key Performance Parameters

### KPP 1. Engagement and Effective Measurement

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

Last week, the CTEH team attended onsite Plan-of-the-day staff meetings with personnel from Maintenance Ops, Production Ops, and the Sampling Group. Additionally, the CTEH team met with approximately 50 health physics technicians, introducing themselves and fielding tank vapors health questions from the group at large. CTEH met with the HAMTC Safety Representative at the HAMTC/CPPO Meeting held every Wednesday on site. CTEH held dozens of one-on-one interviews with Industrial Hygienists and Leads the last three weeks, eliciting feedback on the state of vapors at Hanford since CTEH's initial assessment published November 2016. CTEH presented on *Ammonia* to the CVST meeting last week.

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

#### Chemical Protection Engagement: Chemical Vapors Solutions Teams

The CVST **Chemical Cartridge** Sub-committee met on April 4, 2018.

The full **CVST** met on April 11, 2018. The Vapor Overview and Update included a presentation on *Respiratory and STC Update*, vapor control strategy for the 242-A Evaporator and air-lift circulator (ALC) operations, *HPMC – Chemical Worker Training Update & Hepatitis C Screening*, and a presentation on *Ammonia* was delivered by the CTEH.

#### Chemical Protection Engagement: Communications

Last week's CPPO Notebook is titled *Ammonia, Part 1*, created by CTEH. This week's CPPO Notebook is titled *Ammonia, Part 2*.

CPPO published its FY2018 2<sup>nd</sup> Quarter Summary on April 12, 2018.

An all-employee email was distributed on April 2, 2018, announcing the opening of The Hanford Workforce Engagement Center.

*Hanford Tank Vapors, Vapors Weekly Update* issued April 4, 2018, announced the opening of the Hanford Workforce Engagement Center (HWEC).

*Solutions*, Issue 432, published April 9, 2018, reported on the factory acceptance testing which the Strobic Air ventilation unit underwent at the Strobic Air facility in Philadelphia, Pennsylvania.

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

- [Clarification statement for the FY17 R.J. Lee PTR-MS mobile lab monthly reports](#)
- [EIR-2018-010](#)
- [EIR-2015-008](#)
- [VMDS Consolidated Weekly Report - April 12-19, 2017](#)
- [VMDS AP Stack Monthly - March 29 - April 3, 2017](#)
- [Vapors Weekly Report 4-11-18](#)

#### Chemical Protection Engagement: Data Analysis and Visualization Tool Update:

In the CPPO's 2<sup>nd</sup> Quarter Summary, CPPO reported:

Since the launch of the Data Access and Visualization (DAV) tool in October 2017, WRPS has been working with Pacific Northwest National Laboratory (PNNL) to enhance its capabilities to include the next iteration of data generated by the Vapors Monitoring Detection System (VMDS). The first phase of the DAV tool brought to life the more than one hundred thousand chemical samples from IH

sampling taken with direct reading instruments (DRI) and logged into the Site Wide Industrial Hygiene Database (SWIHD). The second phase of the DAV will contain the VMDS data. **The VMDS equipment has the capability to test air samples 24 hours a day, 7 days a week, providing a much more extensive look at which chemicals exist in which farms, the levels of each chemical, and in close to real time.** More precisely, the VMDS equipment has the capability to **monitor** 24 hours a day, 7 days a week, providing a much more extensive look at which chemicals exist in which farms, the levels of each chemical, and in close to real time. The VMDS detects the presence of chemicals and identifies the detected chemicals, and measures the air concentrations of those chemicals.

#### Chemical Protection Engagement: Effectiveness Measures

The CPPO *FY2018 Vapors Communication Survey* was distributed to 702 randomly selected members of the workforce in January; 235 responses were received – a return rate of approximately 33%. The results have been collated and preliminary evaluation of the data is underway. The results will also be evaluated against the 2017 survey and will be used to drive continued improvement in the vapors-related information provided to the workforce. The analysis and resulting recommendations will be reported to WRPS, ORP and to the workforce.

#### Chemical Protection Engagement: Workforce Engagement

The CPPO recently completed an employee vapors information effectiveness survey where it was found a large majority of the workforce were either unaware of CPPO's job scope, or unaware of some of the vapors-related information available. In reviewing the survey results at a recent CPPO/HAMTC Safety Representative interface meeting, it was suggested that CPPO visit the various teams to educate the workforce about CPPO. The CPPO manager asked CPPO team members to visit different WRPS field teams to introduce the SMEs from CPPO, and to share which vapors information products are available and where to find them. A draft schedule of the site visits has been sent to management to solicit their interest in CPPO site visits.

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

#### IH Manual and Technical Basis

##### **Last update 4/12/2018:**

In the 2<sup>nd</sup> Quarter, TOC-IH-58435, *Industrial Hygiene Manual*, saw updates to Section 1, *Introduction*; Section 2, *Practices of the Industrial Hygiene Program*; and Section 4, *Tank Waste Chemical Vapors*, of the *IH Chemical Vapor Technical Basis*, all of which were published on the

#### **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.

Industrial Hygiene website. Section 3, *Reporting Occupational Exposure and Medical Monitoring*, is currently being developed. The following procedures have been issued:

- TFC-ESHQ-S\_IH-C-66, *Identifying Chemicals of Concern in Hanford Tank Farms*
- TFC-ESHQ-S\_IH-C-67, *Maintenance of the Industrial Hygiene Chemical Vapor Technical Basis*
- TFC-ESHQ-S\_IH-C-48, *Managing Tank Chemical Vapors*
- TFC-PLN-34, *Industrial Hygiene Exposure Assessment Strategy*
- TFC-PLN-174, *Industrial Hygiene Chemical Vapor Technical Basis Program Plan*
- TFC-ESHQ-S\_IH-C-63, *Modeling/Mapping Procedure*

*The Industrial Hygiene Chemical Vapor Technical Basis Program Plan, TFC-PLN-174, “provides a method and process for reviewing, summarizing, updating, and implementing the Hanford Tank Farm Industrial Hygiene Chemical Vapor Technical Basis [RPP-22491, Rev.1]” (pg. 2). TFC-PLN-174 is usually referred to as the IH Tech Basis.*

#### Health Process Plan (HPP)

##### **Last update 4/12/2018:**

The HPP process has transitioned into the TFC-Charter-71, *WRPS Internal Review Panel, and External Review Panel Process for Review of Health Process Plan Recommendations*, which provides for assessing both the technical and the economic feasibility of implementing study findings and recommendations. The following HPP studies have been developed and are being reviewed and revised under the TFC-Charter-71 process: *Proposed OELs for Chronic Exposures – COPCs with Regulatory Guidelines, Proposed Acute Exposure Limits for COPCs with Regulatory Guidelines, Proposed Risk-Based Approach for Nitrosamine Chemical of Potential Concern, Recommendations for Sampling and Analysis of Hanford Waste Tank Vapors, and Hanford Tank Vapors FY 2017 Chemicals of Potential Concern Update*. An External Expert Committee (EEC) was convened in March to review and comment on the following studies: *Proposed OELs for Chronic Exposures – COPCs with Regulatory Guidelines, Proposed Acute Exposure Limits for COPCs with Regulatory Guidelines, and Proposed Risk-Based Approach for Nitrosamine Chemical of Potential Concern*. Three studies, *Proposed Occupational Exposure Limits for Furans, Proposed OELs for Chronic Exposures – Nitrile Class COPCs and 2,4-Dimethylpyridine, and Assessing the Potential for Chronic or Acute Health Effects from Exposure to COPC Mixtures*, have been developed to Revision A status, and are being held for further development in FY2019.

### Leading Indicators

#### **Last update 4/12/2018:**

During the 2<sup>nd</sup> Quarter, the leading indicators study focused on three candidate compounds: ammonia, mercury, and nitrous oxide. Evaluation methods were developed to compare paired data, data in which two or more samples were taken simultaneously, to various chemical concentrations, including reference concentrations of ½ of the occupational exposure limit (OEL), the OEL, and the excursion limit (3 times the OEL). The leading indicators study draft report (Rev A) was completed and is presently awaiting review and comment by WRPS IH. A *Leading Indicators* CPPO Notebook was published and HanfordVapors.com has more information.

### Air Dispersion Modeling

#### **Last update 4/12/2018:**

The Air Pollutant Graphical Environmental Monitoring System (APGEMS) modeling software (version 1.0) and accompanying draft report were completed and delivered to WRPS by the Dispersion Modeling Project Team in March. The report describes the APGEMS software and discusses the technical limitations of the current version. It is presently awaiting review and comment by WRPS IH. Three tests cases illustrating model performance were presented by the project team in which actual date-specific meteorological conditions were modeled for 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. Further refinements of the APGEMS software are underway.

#### **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 4/12/2018:**

A centralized mobile office (MO) building is slated to house approximately 100 Industrial Hygiene Technicians (IHTs). This new space is designed to be large enough to house the retrieval IHTs and their first-line supervisors. Plans are to install the MO in 200 East area on 4th Street near 218A across from PUREX. KPP 3 advocates a central location for IHTs that is commensurate with other technician level employees. The trailer design has been approved by Washington State Labor and Industries.



## KPP 4. Engineering Controls

### A Farm Exhausters

#### **Last update 4/12/2018:**

FY2018 exhauster activities include pouring concrete pads to accommodate exhauster skids, as well as isolating the existing ventilation ducting for all A Farm tanks. Isolation is necessary to establish enough vacuum for tank ventilation. During the 2<sup>nd</sup> quarter, American Electric Inc. (AEI) successfully conducted the “proof-of-concept” for verifying isolation of the A Farm ventilation ducting. In addition to the ducting activities, the design package for installing the exhauster pad was prepared and the subcontract to construct the new exhauster slab was awarded to AEI. Efforts to establish A/AX-Farm access roads, and to verify the scope of equipment removal and duct isolation activities were also started. The excavation of the exhauster slab retaining wall footings for both the south and north walls were also completed during the quarter.

#### **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.

### AW Stack Extension

#### **Last update 4/12/2018:**

The scope of this effort is to extend the stack’s current elevation from 27 feet to 60 feet. The 2<sup>nd</sup> Quarter of FY2018 focused on completing the design package to support the stack extension, in addition to starting fabrication and installation activities. The final (100%) design package was approved, while the *Plant Forces Work Review* (PFWR) was also completed and installation work awarded to construction crews. Fabrication of the AW Farm stack contract was awarded. Efforts were also initiated on awarding the installation contract. Towards the end of the quarter, a best-and-final-offer was requested from interested vendors.

### AN Stack Extension

#### **Last update 4/12/2018:**

Engineering evaluations are being performed to determine the optimum height required for the stack and whether the existing superstructure can support that stack height increase.

### **✚ Strobic® Air Dilution Fan**

#### **2nd Quarter FY2018 Summary:**

WRPS employees have been working with Strobic® Air to develop new technology that utilizes an advanced exhaust system to provide high dilution factors. Figure 3 depicts the successful fabrication of the Strobic® Unit at Strobic's Pennsylvania testing facility in March 2018. The project began in FY2016 when the CTO office, working with Savannah River National Laboratory, completed an assessment report which identified options to develop and test supplemental exhaust equipment. Starting in FY2017, the project team contracted with Strobic® Air to



start developing this technology. During the 2<sup>nd</sup> Quarter of FY2018, activities focused on completing the factory acceptance test (FAT) by the end of March. The purpose of the FAT is to evaluate the capabilities of a mobile, skid-mounted unit to support future Hanford activities. WRPS visited the Strobic® facility on a couple of occasions to assist in completion of the FAT. As a result of this collaboration between the companies, the FAT was completed the week of March 19, 2018, and the goals were successfully met. The next phase of the project includes delivering the unit to Richland for testing. Hi-Line was awarded the contract to support the second phase of testing, which will be performed at their off-site facility, and have started preparing the draft test plan.

**Figure 3. Fabricated Strobic Unit at Strobic's Pennsylvania testing facility March, 2018. (Photo courtesy of Mr. T. Stoner.)**

### **✚ NUCON® Thermal Oxidation Vapor Abatement Unit (VAU)**

#### **Last update 4/12/2018:**

The engineering-scale test has been designed to answer questions left unanswered by the proof-of-concept tests performed in FY2017. The information collected in the engineering-scale test will support the potential design and permitting of a full-scale unit. This activity is a collaborative effort between WRPS, PNNL, TerraGraphics, and NUCON®. WRPS is responsible for overall coordination and management. PNNL is responsible for developing the test plan, securing and installing equipment, and conducting the test. TerraGraphics is responsible for infrastructure (trailers, power, etc.), while NUCON® is responsible for modifications and delivery of the prototype unit. FY2018 2<sup>nd</sup> Quarter activities are summarized below.

### TerraGraphics:

TerraGraphic's Test and Design Engineers provided support for VAU startup and training activities throughout the 2<sup>nd</sup> Quarter. The team performed the final inspection of the test trailer and delivered the trailer to the PNNL test site on February 9, 2018. TerraGraphics supported the development and fabrication of the major testing components, including the electrical rack, support skid, and VAU exhaust extension. Work on all the components has been completed and shipped to the test facility during the quarter. TerraGraphics continued developing the *Site Selection Report*, used to select the Tank Farm that will support the potential future full-scale integration test (beyond FY2018). Early in the quarter, an initial screening of the site alternatives was performed, with the following four tanks selected for further evaluation: BY-108, TY-103, SX-104, and A-106. After a walkdown of the different tanks was performed, TerraGraphics presented the results of the site evaluation to the IPT and received concurrence on the selected tank, BY-108. The 60% conceptual design package for the BY-108 technical demonstration was submitted for review at the end of the quarter. In parallel with design activities, work continued on finalizing the *Site Selection Report*.



Figure 4. Nucon® Diesel Upgrade Kit - Prepared to Ship to WRPS (Photo courtesy of Mr. George Weeks.)

**NUCON®:**

NUCON® completed the design and fabrication of the diesel conversion kit. The diesel conversion kit was required because the original propane-powered generator presented potential nuclear safety concerns at the Hanford site. The diesel generator kit and upgrade kit were shipped to the PNNL test site and a NUCON® technical representative arrived on-site to assist with the start-up of the vapor abatement unit, shown in Figure 4.

**PNNL:**

PNNL continued to develop the analytical equipment and systems needed to support the engineering-scale test. Efforts focused on the following during the 2<sup>nd</sup> Quarter:

- Developing the proton transfer reaction-mass spectrometry (PTR-MS) and Fourier transform infrared (FTIR) system. The PTR-MS is functional and currently located in the test trailer and is ready for the functional testing. The FTIR test is complete and it's currently located in the test trailer. Operating procedures are currently being developed for both units.
- Heeding worker feedback from 222-S staff allowed WRPS to determine an appropriate path forward for canister sample and sorbent tube sample requirements.
- Developing a pre-concentrator through bench testing, which is being done to help identify methods for analyzing nitrosodimethylamine (NDMA) and furan at low concentrations.
- Demonstrating the effectiveness of chromatography in the laboratory with the calibration gases.

**WRPS:**

In the 2<sup>nd</sup> Quarter, WRPS conducted a market review for a photoionization detector (PID) for volatile organic carbon analysis on high temperature diesel exhaust. The market review team recommended using available AreaRAEs, along with preconditioning the exhaust to cool, dilute, and remove condensable material prior to running through the PID. Two AreaRAE PID instruments were transferred to PNNL from Tank Farms in order to support this effort.

In early February, WRPS received feedback from the workers in Operations on the recently released NUCON® engineering-scale testing CPPO Notebook. A meeting was held between CPPO, CTO, and Operations to discuss the technologies in the context of the worker's many years of experience in the Tank Farms. Historical lessons learned were examined and NUCON's depth of knowledge about the Tank Farms was increased.

WRPS received test plan comments from the State of Washington Qualified Technical Person in the 2<sup>nd</sup> Quarter, and started working with PNNL to develop responses. DOE reviewed and concurred with WRPS's responses.

## KPP 5. Administrative Controls and Monitoring

### Permanent Installation of VMDS Equipment in AP Farm

#### **Update:**

In FY2017, WRPS identified viable VMDS components for use in the Tank Farms, and the turnover of AP Farm UV-FTIR to Operations was initiated. Turnover activities continue into FY2018. Since the beginning of April, activities include the following:

- The *Phase 2 Pilot-Scale Report* draft, a report summarizing the results of the FY2017 pilot-scale activities, was completed. Comments have been resolved. The report is in the approval cycle.
- Work continued on the modification of the Autosampler, including preparing a report summarizing the development and selection of test gases. After this report is complete, it is anticipated that the remaining Autosampler activities will be deferred until FY2019.
- The UV-FTIR installed at AP Farm is in the process of being turned over to Operations. The on-going activities supporting the turnover include the following:
  - Finalizing the review of the functions-and-requirements (F&R) document, RPP-RPT-60580, and entering the document into SmartPlant for final approval.
  - Finalizing several calculations used to support AP Farm turnover. The calculations included the heat trace verification, sample pump flow verification, and heating/cooling verification.
  - Continuing to prepare the test plan for startup activities.
  - Continuing preparation of the uncertainty and testing concentration calculations. Comments have been incorporated to the 90% draft calculations. The document will be submitted to SmartPlant after the final review.
  - Obtaining quotes for the test gases and preparing a draft statement-of-work to purchase the gases.
  - Continuing efforts to complete the *Operational Readiness Checklist* items.

#### **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:**

In addition to the turnover of the AP Farm UV-FTIR stack monitor to Operations discussed above, other stack and boundary monitoring activities are planned. The work scope includes installing stack monitors on the AW, AX (two), AN, and 702-AZ Exhausters. Activities since the beginning of April include:

- Performing fabrication and factory acceptance testing of the Ultra Violet Differential Optic Absorption Spectrometry (UV-DOAS) units.
- Completing final reviews and incorporating comments on the draft 702-AZ and AN Farm stack monitor designs.
- Continuing development of the AW Farm stack design revision.
- Continuing preparation of the AX Farm 90% design installation package.
- Preparing draft work packages and procuring equipment to support 702-AZ installation activities.

#### Establishing Safe Unrestricted Boundaries

##### **Last update 4/12/2018:**

When managing risks at Hanford, **administrative controls** are used to change the way workers interact with processes and work that may present a hazard. Work boundaries are an administrative control used to help manage occupational risks. Newly established are facility boundaries as described:

- **Exclusion Zone** – the area where workers are most likely to encounter the hazard at its highest concentrations (previously Vapor Control Zone (VCZ))
- **Contamination Reduction Zone** – The transition area between the exclusion zone and the clean area or support zone (previously Vapor Reduction Zone (VRZ))
- **Support/Administrative Zone** – the location where the “co-located worker” is allowed to perform their work unmonitored
- **Industrial Zone** – This is the fence line of the 200E and 200W areas where workers are made aware of the presence of increasing industrial hazards
- **Site Boundary** – This is the edge of the Hanford site property where public access is restricted

Coordinated with ORP, a draft paper, tentatively titled *Comprehensive Vapor Action Plan KPP 5 - Defining the Unrestricted Work Boundary*, was developed clarifying how WRPS will define work boundaries in and around the Tank Farms. This document provides a regulatory basis for the implementation of the Tank Farm boundaries moving forward for the IH Program and provides defense in depth. It is in final review by ORP and WRPS IH program staff.

#### Public Address (PA) System

##### **Update:**

Activities since the beginning of April include the following:

- Continuing activities to support turnover of the second set of PA systems (AW, AN, AP and C Farms).
- Continuing efforts for the next set of PA systems (B, S, T, and U-Farms). Started preparing the statement-of-work that will be used to procure conduit installation support.

## KPP 6. Tank Operations Stewardship

### ✦ Pilot SST Stewardship Program

#### Update:

Activities completed since the beginning of April include the following:

#### **SST Remote Monitoring Equipment:**

Efforts continued on the TY Farm temperature and surface level design packages. The contract for the TX Farm was awarded and a kick-off meeting was held to initiate activities.

#### **FY2015 LEAN Report:**

The *SST Stewardship Execution Strategy Document* has been entered into SmartPlant for final reviews and approvals.

#### 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 4/12/2018:

During the 4<sup>th</sup> quarter of FY2017, WRPS and HAMTC agreed upon the implementation and use of Full-Face Air-Purifying Respirators (FFAPR). In the 1<sup>st</sup> Quarter of FY2018, WRPS and HAMTC jointly agreed to expand the use of FFAPRs to 241 SY Tank Farm for specific work evolutions. On December 14, 2018, WRPS implemented FFAPRs use in 241 SY Farm, and limited their use to low hazard work during non-waste disturbing activities (SEG 1 and SEG 2). However, on February 7, 2018, WRPS issued an *IH Safety Flash*



Figure 5. Headspace sampling at BY Farm, February 2018. ((Photo courtesy of Ms. Parks-Beyer.)

entitled “Revision to Use of FFAPR in AP Farm.” This *IH Safety Flash* indicated a new report from Stoneturn Consultants (STC), the independent third party reviewer selected by HAMTC, had been received, recommending that WRPS no longer approve the use of FFAPRs in AP Farm. STC’s reason for this recommendation is based on the review of sample data collected from within the AP Exhauster (source data) that shows >50x the OEL for N-nitrosodimethylamine (NDMA) and >8x the OEL for furans. It is important to note that STC’s decision does not take into consideration WRPS engineering controls (active ventilation and

extended stack height). STC's decision is also based on the lack information on the adequacy of FFAPR cartridges on furans. WRPS and STC are working to a resolution that will take into consideration WRPS engineering controls and cartridge test data. Headspace sampling at BY Farm was completed the weekend of February 9, 2018. On the weekend of February 24<sup>th</sup>, Cartridge testing was conducted at BY 108 (**Figure 5**) and BY-110, and included PAPR and APR cartridge testing.

#### Mobile Laboratory

##### **Last update 4/12/2018:**

After several discussions in the 1<sup>st</sup> Quarter to determine the FY2018 work scope for RJ Lee, a contract was issued. Activities performed in the 2<sup>nd</sup> Quarter of FY2018 include the following:

- A contract to R.J. Lee was issued for supporting the FY2018 spring background study using the mobile laboratories. After the contract was awarded, a kickoff meeting was held with R.J. Lee to discuss details of the study. In addition to the kick-off meeting, a meeting was held with the workforce as part of the weekly HAMTC/CPPO meeting to solicit input on sampling locations. The group discussed locations where monitoring would occur and feedback was provided by the workforce on alternate locations. The spring background study began on March 17, 2018. A stop-work on the spring background study was implemented towards the end-of-March for the following reasons:
  - Determine the source of human interference (door open, leak in sampling system, etc.) and mitigate
  - Understand why losing weather data; repair
  - Fix procedure issues
  - Understand time differential issue between equipment and resolve
  - Consider diluting ammonia calibration check to  $\leq 0.1$  ppm to prevent long decay time of ammonia in lines after calibration check
- Work was also started on the new *Mobile Lab Services Contract*. Efforts in the 2<sup>nd</sup> Quarter focused on establishing grading criteria for the competitive procurement of the new PTR-MS mobile laboratory and initiating procurement activities.



## Personal Vapor Monitor

### **Last update 4/12/2018:**

The 2<sup>nd</sup> Quarter activities centered on the pending <sup>3</sup>C<sub>2</sub>Sense<sup>®</sup> field demonstration. A contract was issued for C<sub>2</sub>Sense<sup>®</sup> to provide support for the upcoming field test in the Tank Farms. An IPT, comprised of management, engineering, safety, IH, and HAMTC representatives, held a kick-off meeting on January 18, 2018, with weekly follow-on meetings planned to status the C<sub>2</sub>Sense<sup>®</sup> activities. The C<sub>2</sub>Sense<sup>®</sup> *Field Demonstration Test Plan* was approved by the IPT. The fabrication of the mounting plates used to secure the ammonia sensors was begun mid-quarter. The procedures and work packages needed to support the C<sub>2</sub>Sense<sup>®</sup> field trial were also started mid-quarter, and are being prepared with support of the WRPS Industrial Hygiene group. The test plan for the C<sub>2</sub>Sense<sup>®</sup> field demonstration was modified towards the end-of-the quarter to be consistent with changes to the test program as follows:

- Deleted Phase 2 Testing (8 weeks of IHTs wearing ammonia detectors during their daily work routines). This was deleted since the C<sub>2</sub>Sense<sup>®</sup> device is currently a prototype and does not represent the final size and weight.
- Cut back Phase 1 testing from 7 to 4 days a week for cost efficiency.

Another 2<sup>nd</sup> Quarter activity for WRPS was conducting a market survey for other personal ammonia detectors. Several are being considered. (See CPPO Weekly Report, March 1, 2018) A material requisition was prepared to procure several alternative ammonia detectors for the field trials.

## **KPP 8. Medical Support**

The scope of KPP-8 is to support RL medical program enhancements in conjunction with other Hanford Site organizations. 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 they are 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>NUCON is a registered trademark of Nucon International, Inc., Columbus, Ohio.

<sup>2</sup>Strobic Air is a registered trademark of MPC Inc., Wilmington, Delaware.

<sup>3</sup>C<sub>2</sub>Sense is a registered trademark by C2Sense, Inc., Cambridge, Massachusetts.