

## RJ Lee Monthly Report Summary for January 2017

In support of the ongoing Chemical Vapor Initiative undertaken by the U.S. Department of Energy (DOE) contractor, Washington River Protection Solutions, LLC (WRPS), RJ Lee Group's Mobile Organic Monitoring Laboratory (hereafter referred to as the Mobile Laboratory or ML) conducted monitoring over several days at the Hanford Site over the five-week period from December 9, 2016, to January 17, 2017. The Mobile Laboratory was used to measure levels of airborne concentrations of potential waste vapors within the Hanford site.

The ML sample collection lines are designed to sample air from either of two locations:

- A sample collection line located above the wind shear zone of the van for on-the-road, real-time collection and analysis of emission excursion, and
- A sampling interface located on the side of the van used for stationary measurements only, where air samples are pulled into the sampling system by an oil-free diaphragm pump.

The measurements reported for January 2017 utilize only the sample collection line located above the wind shear zone of the van. Both mobile and stationary monitoring were performed and results reported for this period.

The highlight of the first month of FY2017 tank farm air monitoring project was the first deployment of a high mass resolution time-of-flight instrument focused on the Hanford chemicals of potential concern (COPCs). The instrument is an IONICON Analytik PTR-TOF 4000, the second manufactured instrument of its generation and the first in the United States. Improving mass resolution was a recommendation from 2016 field work in order to resolve compounds of similar nominal mass with different elemental composition. The impact of the improved mass resolution on elimination of some interferences is apparent when looking at the decrease of local sources exceeding 50% of the Occupational Exposure Limit (OEL) for COPCs and more generally, the average concentration of furan or the four nitrosamines encountered around tank farms.

Tests that were conducted during this period include:

- Monitoring focused on AY-102 retrieval and the AP Farm performed during day shifts. (Week 1.1)
- Monitoring of AY, AP, and greater east tank farm areas performed during night-shift hours. (Week 1.2)
- Monitoring of the AP Farm that was performed during day shifts. (Week 1.3)
- Monitoring focused on the AP Farm located in 200 East area and was performed during day shifts only. (Week 1.4)
- Monitoring focused on the AP Farm located in 200 East area and was performed during day shifts.

- Defining the protocol for deploying the Mobile Laboratory during AY-102 retrieval operations. To perform this task, the Mobile Laboratory was deployed during AY-102 retrieval operations to monitor the status of chemical vapors in the retrieval area as well as other areas of interest. (Week 1.5)

Each monitoring period started in the 200 East Area with a stop at the shift office to pick up a radio for the purpose of relaying pertinent information regarding tank farm operations and potential vapor events. The period of monitoring was chosen based on waste disturbing activities. The location monitored was primarily around the AY and AP Tank Farms in the 200 East Area. The routes were determined by personnel in the mobile laboratory as well as the daily stationary monitoring sites. Monitoring was directed around the AY-102 Waste Retrieval activities.

At the time this report was completed, WRPS' Data Quality Objective (DQO) Group and Fugitive Emissions/Source Apportionment Sub-team had not yet developed a process for the Mobile Laboratory to sample and monitor certain sources for analysis or vapor composition. Because of this, vapor source identification and quantitative analysis of vapor composition could not be completed for this report. Source identification processes are under development by the WRPS's DQO Team and the Fugitive Emissions/Source Apportionment Sub-team with input from RJ Lee Group and will be documented in the FY2017 Test Plan.