OFFICE OF RIVER PROTECTION
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Richland, Washington 99352

FEB 0 9 2015

15-CPM-0034

Mr. Charles A. Simpson, Contracts Manager
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Mr. Simpson:

CONTRACT NO. DE-AC27-08RV14800 – DIRECTION TO IMPLEMENT PHASE 1 OF THE TANK VAPORS ASSESSMENT TEAM VAPOR IMPLEMENTATION PLAN AND REQUEST FOR PROPOSAL FOR PHASE 1

The U.S. Department of Energy, Office of River Protection (ORP) remains committed to protecting workers, the public and the environment. ORP recognizes that substantially reducing the potential for worker exposures to chemical vapors in the tank farms to As Low As Reasonably Achievable levels will require a dedicated effort. As such, ORP requested that Washington River Protection Solutions LLC (WRPS) identify potential actions responsive to the recommendations in the Tank Vapors Assessment Team (TVAT) report. The TVAT report contained a number of recommendations, including research and development and new technical approaches to evaluate the validity of the report's hypothesis that bolus (i.e., short-term, acute) exposures to chemical vapors are the primary cause of reported worker health effects. WRPS has provided to ORP a document titled, *Implementation Plan for Hanford Tank Vapor Assessment Report Recommendations*, identifying a broad spectrum of potential actions, as well as anticipated costs and time-frames. After considering the suite of potential actions identified by WRPS, ORP has determined to implement a two-phased approach in response to the TVAT report's recommendations.

ORP gives highest priority to Phase 1 actions, which will reduce the potential for chemical vapor exposures in the near-term and aid in the effort to more fully evaluate the bolus exposure hypothesis or to identify other potential exposure pathways. ORP will analyze the data and information gathered through the Phase 1 actions and will determine which specific activities will be implemented in Phase 2 based upon the Phase 1 review and analysis.

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This letter directs WRPS to continue with implementation of the vapor resolution program in accordance with the not-to-exceed direction previously provided. In parallel, WRPS is to prepare and submit: 1) a certified cost and pricing proposal within 60 days from receipt of this letter, for the work scope identified in the attachment to support completion of Phase 1 activities of the IP; and 2) a baseline change proposal.

If you have any questions, please contact Wade E. Hader on (509) 376-3388.

Marc T. McCusker
Contracting Officer

CPM:WEH

Attachment

cc w/attach:
WRPS Correspondence

ATTACHMENT TO

15-CPM-0034

SUMMARY OF SCOPE TO BE ADDRESSED IN PROPOSAL

Table 1. Planned Actions Addressing the TVAT Report Recommendations.

TVAT #	Recommendation	Actions	Status
Site Characterizations			
TVAT 1 – SC1	Develop a prioritized program to sample and characterize tank head space composition and stratification during quiescent as well as disturbed conditions.	• Develop a prioritized project schedule to sample tank head spaces during quiescent as well as waste-disturbing conditions. (Phase 1) • Develop and/or revise the head space sampling Data Quality Objectives. (Phase 1) • Incorporate sample results into the existing IH Technical Basis. (Phase 1)	In progress Scheduled Scheduled
TVAT 2 – SC2	Assess the potential for materials to plate or condense in vent risers, stacks and HEPA filters, and characterize the emissions for each condition.	• Conduct an assessment of the potential for materials to plate or condense. (Phase 1)	Scheduled
TVAT 3 – SC3	Implement technologies to assess fugitive sources of emissions that are not connected to tank head spaces, and characterize the emissions for each non-head space fugitive source.	• Initiate technological evaluations, field testing, and deployment of advanced technologies focused on fugitive emission sources. (Phase 1) • Implement procurement and deployment of the selected monitoring/sampling technology, based on evaluation and field testing. (Phase 1) • Develop and issue a Technical Maturation Plan (TMP), including subject-matter expert reviews for identified technologies. (Phase 1)	In progress In progress In progress

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TVAT #	Recommendation	Actions	Status
TVAT 4 – SC4	Identify and implement new technologies to detect, locate and quantify fugitive and episodic releases.	• Develop and issue a technical maturation plan for new technologies. The review, selection, and incorporation of selected technologies will include subject-matter expert reviews. (Phase 1)	In progress
		• Initiate multiple actions to perform technological evaluations, field testing, and deployment of new technologies focused on fugitive emission sources. Based on the evaluation and field testing, procurement and deployment of the selected monitoring/sampling technology will be implemented. (Phase 1)	In progress
TVAT 5 – SC5	Identify and implement new technologies to quantify stack and vent emissions with suitable local alarms so that workers can respond in a timely fashion.	• Develop and issue a technical maturation plan for new technologies. The review, selection, and incorporation of selected technologies will include subject-matter expert reviews. (Phase 1)	In progress
		• Initiate multiple actions to perform technological evaluations, field testing, and deployment of new technologies focused on stack and vent emission sources and local alarming systems. (Phase 1)	In progress
Exposure Assessment			
TVAT 6 –	Continue the development and expedite deployment of new techniques for real-time	• Schedule actions which include the	Completed

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TVAT #	Recommendation	Actions	Status
EA1	response and appropriate sampling for short duration intermittent releases.	assessment of characterizing tank head spaces. (Phase 1) • Develop and issue a technical maturation plan for new technologies. The review, selection, and incorporation of selected technologies will include subject-matter expert reviews. (Phase 1) • Perform air dispersion models to increase the fidelity of the technical basis for the vapor control zones. (Phase 1) • Initiate actions to accelerate the procurement of additional real-time direct reading instruments, personal sample pumps, and alarm detecting capabilities to capture and protect workers from short/intermittent bolus releases. (Phase 1) • Based on the results, incorporate the changes into a revised IH Technical Basis. The characterization will assist in strengthening the overall program requirements and will focus on potential bolus exposures within the tank farms. (Phase 1)	In progress In progress In progress In progress
TVAT 7 – EA2	Identify and implement sampling and/or in-situ analytical methods as appropriate for reactive volatile organic chemicals (VOCs), submicron	• Contract with industry experts to revise and update the 2004 Droppo Report based on newer technologies,	Scheduled

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TVAT #	Recommendation	Actions	Status
	aerosol, volatile metal compounds, and volatile metalloid compounds that may be present but would have been missed by past head space sampling and analytical methods.	methodologies, and sampling/monitoring results. (Phase 1) • Perform an assessment that focuses on the development of sampling strategies, utilizing analytical methods for reactive VOCs, submicron aerosols, volatile metal compounds, and volatile metalloid compounds. Results of the assessment will determine appropriate actions for implementing sampling methodology enhancements. (Phase 1)	Scheduled
TVAT 8 – EA3	Use modeling, including computational fluid dynamics methods, to determine the potential locations, conditions, and next steps in attempting to measure sporadic exposure events.	• Contract with industry experts to perform dispersion modeling. The basis of the model will help to determine the predicted locations and levels of potential chemical vapor emissions, effectiveness of increased stack heights, and other engineered controls. (Phase 1) • Incorporate additional models, such as the American Industrial Hygiene Associate (AIHA) Air Dispersion Model, into the work control & worker protection program. (Phase 1)	In progress Scheduled

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TVAT #	Recommendation	Actions	Status
Dose Response			
TVAT 9 – DR1	Conduct an additional review and re-prioritization of COPCs under tank-disturbing conditions to provide adequate emission characterizations, OEL development, and worker exposure surveillance.	• Initiate additional exhaust stack sampling, head space sampling, and fugitive-emission monitoring/sampling. (Phase 1) • Perform COPCs evaluation for both waste-disturbing and non-waste disturbing activities. (Phase 1)	Completed In progress
TVAT 10 – DR2	Conduct a rigorous review of the COPC list to ensure it is current, and develop a process to document the mechanisms used to ensure COPC updates and the basis for changes in the COPC list over time.	• Perform an IH program review and incorporate changes as necessary. (Phase 1)	Scheduled
TVAT 11 – DR3	Conduct additional evaluations of COPC toxicological studies to provide insight into the sensory and pathophysiological irritation response, including the role of mixture interactions and the potential need for additional toxicological evaluation.	• Bring process to start toxicological study on tank chemistry mixtures and how they interact with the COPC listing and other chemical constituents. (Phase 1)	Scheduled

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TVAT #	Recommendation	Actions	Status
TVAT 12 – DR4	Perform a comprehensive evaluation of acute odor thresholds and toxicity effect levels for each COPC to facilitate the establishment of action levels based upon the relationship between odor and toxicity thresholds.	• Conduct an assessment on acute odor threshold and toxicity effect levels for each COPC. (Phase 1)	Scheduled
TVAT 13 – DR5	Continue to evaluate COPC OELs within the context of observed symptomatology versus 10% of the irritations thresholds and develop a "new" acute OEL list.	• Conduct an assessment to extrapolate a short-term bolus exposure and compare to 10% of the excursion limit. (Phase 1)	Scheduled
TVAT 14 – DR6	Maintain a robust health surveillance program that follows up with exposed workers to evaluate short- and long-term consequences from vapor exposures.	• Participate in and provide feedback on DOE's evaluation of an enhanced medical-surveillance program that provides continuous feedback and evaluation results based on short-term and long-term health consequences. (Phase 1)	Scheduled
TVAT 15 – DR7	Evaluate tank vapor mixture toxicological interactions at concentrations associated with transient plume exposures to modify OELs to accommodate mixture effects.	• Conduct a review on the vapor mixture toxicological interactions at concentrations associated with transient plume exposures. In the event this review results in any changes to OELs, the cost and schedule for implementation of these changes will be addressed separately. (Phase 1)	Scheduled

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TVAT #	Recommendation	Actions	Status
TVAT 16 – DR8	Develop an overall IH strategy for aerosol evaluations that focus on analytical quantifications, the evaluation of chemical aerosols for inclusion in the COPC list, as well as the establishment of appropriate aerosol OELs.	• Conduct a review of potential aerosol hazards. (Phase 1) • Incorporate results of the evaluation into the IH program requirements as necessary.(Phase 1)	Scheduled Scheduled
TVAT 17 – DR9	Develop a research strategy roadmap in partnership with DOE, national laboratories, and university faculty subject-matter experts to address critical questions regarding tank vapor emissions and exposures.	• Collaborate with technical experts (e.g., national laboratories, medical providers, other prime contractors) and implement actions through the tank farms operations contract managed by DOE-ORP. (Phase 1)	Scheduled
Risk Characterization			
TVAT 18 – RCH1	Identify an Occupational Exposure Limit – Ceiling Limit – (OEL-C) for each analyte in Hanford tank head spaces.	• Update the existing program to incorporate OEL-Time Weighted Averages (TWA), and Short-Term Exposure Limit (STEL) values for each analyte in the head space. (Phase 1)	Scheduled
TVAT 19 – RCH2	Classify and conduct toxicological testing on a reasonable number of distinct types of Hanford tank head space vapors (e.g., potential classes of tank vapor types such as ammonia rich, ammonia poor, nitrosamine rich).	• Conduct a toxicological study on tank chemistry mixtures and how they interact with the COPC listing. (Phase 1) • Incorporate results of the evaluation into the IH program requirements as necessary. (Phase 1)	Scheduled Scheduled
TVAT 20 – RCH3	Use the OEL-C from analysis or subsequent toxicological testing to characterize the hazard index and risk from the tank vapor mixtures.	• Provide results from the toxicological studies and establishment of OEL-C to DOE and support a revision to the hazard index. (Phase 1)	Scheduled

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TVAT #	Recommendation	Actions	Status
TVAT 21 – RCH4a	(Chronic) The WRPS IH program has in place procedures for evaluating chronic chemical exposures [based on Time Weighted Average (TWA)]; it is recommended that more periodic follow-up monitoring be conducted and documented to provide needed data for the industrial hygienist to verify that worker chronic exposures have not changed with time.	• Initiate a strategy for an enhanced IH monitoring routine for the tank farms. This includes developing and implementing additional routine processes to identify and validate chemical vapor controls and fugitive emission points. (Phase 1)	In progress
TVAT 22 – RCH4b	(Acute) Transient vapor/gas exposures (i.e. high dose rate) are substantially greater than what is currently measured as a TWA; alternative strategies for evaluating transient plume-like vapor exposures are recommended and adherence to excursion limit principles must be implemented (5 times OEL).	• Incorporate additional monitoring programs based on short episodic releases from tank farm sources and other appropriate forms of short-duration exposures sampling (e.g., alternative personal sampling), in addition to Short-Term Exposure Limit (STEL) sampling/monitoring. The program will account for more than traditional TWAs, but also bolus-type events. (Phase 1) • Incorporate results of the monitoring and sampling into advanced vapor training for employees. (Phase 1)	In progress Scheduled
TVAT 23 –	(Medical Surveillance) Routine medical surveillance is a key workplace evaluation tool	• Initiate a review of the medical surveillance program for chemical	Completed

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TVAT #	Recommendation	Actions	Status
RCH4c	needed to predict health impairment from vapor exposures; appropriately designed epidemiology studies focused on tank farm workers are recommended to evaluate the potential long-term health consequences.	compounds found within the current IH technical basis and incorporate into the Employee Job Task Analysis (EJTA) program. (Phase 1) • Support the study, evaluation, and potential development of epidemiology studies focused on long-term health consequences. (Phase 1)	 Scheduled
Risk Management			
TVAT 24 – RM1a	Provide and manage IH professional and technician staffing levels to properly characterize and assess worker vapor exposure in the tank farms.	• Build the IH organization with the correct expertise and resources to assist with the characterization, enhanced monitoring, research, and exposure assessment modeling. (Phase 1)	Completed
TVAT 25 – RM1b	Provide and manage IH professional and technician staffing levels to participate in all planning, execution and evaluation phases of tank farm work activity, similar to radiological and flammability control functions.	• Complete staffing comparisons between radiological controls, flammability, and IH. (Phase 1) • Complete and implement additional qualifications and requirements for the IH function. (Phase 1) • Initiate actions to increase IH staffing levels so that additional emphasis will be placed on work planning, field execution, and oversight. (Phase 1)	Completed Completed In progress

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TVAT #	Recommendation	Actions	Status
TVAT 26 – RM1c	Provide and manage IH professional and technician staffing levels to properly recommend and evaluate the effectiveness of work practices, PPE and engineering controls.	• Complete staffing comparisons between radiological controls, flammability, and IH. (Phase 1) • Initiate actions to increase IH staffing levels so that additional emphasis will be placed on work practices, PPE and engineering controls. (Phase 1)	Completed In progress
TVAT 27 – RM1d	Provide and manage IH professional and technician staffing levels to effectively inform, advise, and train line functions and address workers concerns regarding tank farm vapors. In addition, available analytical resources should be re-evaluated and increase to assure the timely reporting of sample results associated with tank farm vapors.	• Complete staffing comparisons between radiological controls, flammability, and IH. (Phase 1) • Initiate hiring actions to increase IH staffing levels so that additional emphasis will be placed on informing and training line functions and managers regarding worker concerns. (Phase 1) • Hire additional professionals to support lab work scope resulting in a timely reporting of sample results. (Phase 1) • Place external contracts for additional sample processing capabilities. (Phase 1)	Completed In progress Completed Completed
TVAT 28 – RM1e	DOE should increase its focus on chemical hazards and develop more specific implementation guidelines on the anticipation, recognition, evaluation and control of chemical hazards that is comparable to the focus and rigor given to radiological hazards. Consistent guidance on implementation of IH programs in DOE facilities would assist in assuring		

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TVAT #	Recommendation	Actions	Status
	functional parity with radiological controls.		
TVAT 29 – RM2	Achieve functional parity of the IH program with the radiological control program with respect to worker training and core competencies.	• Evaluate the current DOE programmatic requirements between IH and RadCon, and develop processes to address programmatic differences. (Phase 1)	In progress
TVAT 30 – RM3	Expand general chemical hazard awareness training (CHAT) for tank farm workers to be more consistent with the length and intensity of the radiological-hazard training currently mandated for all site workers.	• Enhance CHAT to increase worker, supervisor, and management understanding of chemical management practices, specific to the tank farms.(Phase 1) • Incorporate CHAT training into the existing employee training profiles and EJTA. (Phase 1)	Scheduled Completed
TVAT 31 – RM4	Adequately staff the IH function to ensure proper resources are deployed in the planning, pre-job, job execution, and post-job ALARA review in a fashion similar to that of the radiological control function.	• Complete staffing comparisons between radiological controls, flammability, and IH. (Phase 1) • Initiate hiring actions to increase IH staffing levels so that additional emphasis will be placed on work planning, job execution and post-job	Completed In progress

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TVAT #	Recommendation	Actions	Status
		ALARA review. (Phase 1)	In progress
TVAT 32 – RM5	Redefine unacceptable chemical exposure risk to include short-term, episodic exposure to chemicals that can result in adverse health impacts.		
TVAT 33 – RM6	Investigate and implement best available technologies to detect and control vapor plumes from fugitive sources as well as from vents and stacks.	• Initiate actions to conduct research, evaluation, and field testing of technologies to detect and control chemical vapor plumes. (Phase 1) • Form a dedicated task team of technical experts, workers, and managers to research and implement the most appropriate methods. Solicited industry experts for additional review. This effort has been underway since June 2014. (Phase 1) • Begin field testing for multiple technologies. (Phase 1)	In progress Completed Completed
TVAT 34 – RM7a	Establish a more effective methodology for designating Vapor Control Zones (VCZs) and Vapor Reduction Zones (VRZs).	• Initiate a comprehensive review and evaluation regarding the establishment, implementation, and maintenance of VCZs and VRZs. (Phase 1) • Conduct a comprehensive evaluation of air dispersion modeling based on the	In progress In progress

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TVAT #	Recommendation	Actions	Status
		AIHA Standards to assist in the revaluation of VCZ and VRZ boundaries. (Phase 1)	
TVAT 35 – RM7b	Confirm that air-purifying respiratory protective equipment is effective in reducing exposure to tank vapors below acceptable levels.	• Implement the use of half-face/full-face combination chemical-cartridge respirators in the SST farms with the appropriate posting and communications of this control, based on the release of the TVAT report. (Phase 1)	Completed
		• Implement the control of supplied air for all work in SST and DST farms where there is a potential for low-threshold vapors. These controls were initiated to focus on worker safety while respiratory protection (i.e., cartridge effectiveness) evaluations could be conducted). (Phase 1)	Completed
		• Perform chemical-cartridge technical evaluation to determine source-sampling locations, duration of samples, sample results, modeling, and vapor-control zones. (Phase 1)	In progress
TVAT 36 – RM8	Modify the medical case evaluation process and reporting procedures to recognize the appropriate uses and limitations of the available monitoring data and other potential exposure information when evaluations are made regarding vapor exposures.	• Support DOE and the Hanford on-site medical provider to refine the medical protocol for potential chemical exposure evaluations. (Phase 1)	In progress
		• Enhance communications to medical providers; describe the limitations of the sampling data for chemicals and vapors	Completed

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TVAT #	Recommendation	Actions	Status
		in ongoing and frequent interactions among medical service providers and the tank farms contractor as changes in the sampling data or monitoring technologies occur. (Phase 1)	
TVAT 37 – RM9	Verify that all programs associated with vapor controls are properly vetted, evaluated, communicated and tracked to ensure timely completion.	• Incorporate and track all actions associated with the chemical vapor management process through currently established corrective action management system. (Phase 1)	In progress
TVAT 38 – RM10	All levels of line management demonstrate that they are committed to reducing the potential for tank farm vapors releases and continuously improving management systems to assure all workers are properly protected.	• Initiate monthly senior-level management meetings with IH staff and field personnel to ensure direct feedback and that information is communicated. (Phase 1)	Completed
		• Issue a statement from senior ORP and tank farms contractor management to employees and stakeholders supporting the recommendations of the Tank Vapor Assessment Report, and committing to implement the recommendations. (Phase 1)	Completed
		• Have the tank farms contractor Executive Safety Review Board (ESRB) approve and monitor the implementation plan. (Phase 1)	Scheduled
		• Establish an external technical panel to monitor implementation, validate research and development plans, and	Completed

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TVAT #	Recommendation	Actions	Status
		assess effectiveness of vapor prevention and mitigation strategies. (Phase 1)	
Risk Communication			
TVAT 39 – RC1	Develop more routine and transparent communications, which offer unsolicited information to the Hanford Challenge, Hanford Concern's Council, and other interested community groups regarding potential health impacts, health and safety risks, and WRPS/DOE efforts to reduce risk to employees and the community.	• Continue efforts to provide additional information about chemical vapor issues, health risks and progress being made to mitigate workplace hazards through periodic presentations, public announcements, and other communication vehicles. The frequency will vary depending on audience and project activities. (Phase 1)	In progress
TVAT 40 – RC2	Improve the EJTA process to include opportunities for worker engagement and buy-in into the process and protective measures assuring the health and safety of the worker.	• Enhance the EJTA program to include improved worker engagement and buy-in into the process and protective measures. This includes worker review, comment, and concurrence when changes are made. (Phase 1)	Completed

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TVAT #	Recommendation	Actions	Status
TVAT 41 – RC3	Improve the degree of employee involvement in and ultimate acceptance of all teams and programs that are associated with tank farm vapor issues (e.g., PERs, CVST).	• Initiate efforts to develop and formalize a Chemical ALARA Program to manage and oversee overall improvements for vapors. It will manage the corrective actions and improvements identified within the Tank Vapor Assessment Report, and oversee implementation of advanced detection and monitoring technologies, IH vapor practices, analyses, sampling methods, and sampling protocols. Program elements include the development and management of a chemical vapor communications plan, performance indicators, and program effectiveness reviews. (Phase 1)	In progress
TVAT 42 – RC4	Revise the content of the employee monitoring notification letters to include more relevant information regarding the capabilities and limitations of technology used to collect and analyze samples, which should include clear definitions for concepts such as "ND" vs. "<LOQ" vs. "<RQL."	• Revise the content of the employee monitoring notification letters to include more detailed analysis of the sampling, monitoring, limitations of instrumentation, and analysis. These revisions will continue as new monitoring becomes available.	In Progress

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TVAT #	Recommendation	Actions	Status
TVAT 43 – RC5	Establish a greater IH technician and professional presence in the tank farms and undergo specific risk communication training and improve their ability to deliver effective risk communications to employees.	• Hire additional qualified Industrial Hygienists and Technicians to support field activities and increase field presence. (Phase 1) • Develop and establish a training module focused on risk communication. This training course will be required for safety & health professionals and selected line management. (Phase 1)	Completed In progress
TVAT 44 – RC6	Perform an alternatives assessment for the current Shift Office Event Notification (SOEN) process to identify other methods to assure that all workers potentially impacted by vapor events (i.e. WRPS, MSA, visitors) are immediately alerted of a vapor event and understand what mitigating actions they must take to avoid possible health or safety impacts.	• Perform a specialty assessment of personnel notification systems and seek out alternative methods for immediate notification of employees. (Phase 1)	In progress
TVAT 45 – RC7	Deploy appropriate laboratory resources to ensure timely analysis and reporting of IH results, and ensure all exposure data is assigned correctly to all members of the Similar Exposure Group.	• Hire additional professionals to support lab work scope resulting in a timely reporting of sample results. (Phase 1) • Place external contracts for additional sample processing capabilities. (Phase 1) • Perform a review of the existing Similar Exposure Groups basis to ensure proper assignment. (Phase 1)	Completed Completed In progress

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TVAT #	Recommendation	Actions	Status
TVAT 46 – RC8	Communicate in a timely fashion to all employees the results of incident investigations, including a description of event, results of any samples taken, lessons learned, and corrective actions planned and completed.	• Revise and improve the event-response protocol for chemical vapor events, which includes improved communications with all employees (e.g., notification letters, event investigation forms, information posting boards). (Phase 1)	Completed
		• Enhance communication mechanisms (e.g., SOEN) for other Hanford site contractors and subcontractors. (Phase 1)	Completed
TVAT 47 – RC9	Evaluate and improve the communication system associated with vapor events and result of worker compensation claims.	*Medical case evaluations and workers compensation claim determinations are made by organizations outside of DOE and its tank farms contractor.*	
		• Improve information provided for the processing of worker compensation claims. This information includes monitoring and sampling results at the time of the potential exposure, working conditions, weather conditions, and the activities occurring during the period when the employee experienced the symptoms. (Phase 1)	Completed
		• Increase the frequency of worker briefings, feedback sessions, and regular interface meetings. (Phase 1)	In progress

Table 1. Planned Actions Addressing the TVAT Report Recommendations.

TVAT #	Recommendation	Actions	Status
Table Key:			
DR = Dose-Response Assessment		*RCH = Risk Characterization*	
EA = Exposure Assessment		*RM = Risk Management*	
RC = Risk Communication		*SC = Site Characterization*	