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Problem Evaluation Request (PER)**WRPS-PER-2016-0433**

In Process/Work

PER No	Date of Discovery	Time of Discovery (24:00)	Project
WRPS-PER-2016-0433	03/03/2016	08:00	Industrial Hygiene
Location			
Multiple Tank Farms			
How Was Problem Discovered			
Process Hazard Analysis			
Description of Concern or Problem			
<p>Engineering for years has done a thorough job accounting for the total inventory of spilled waste that was deposited from 1944 to 2001 in and around Tank Farms. These account for the liquid waste disposal sites, unplanned releases (misroutes), and tank leaks in WIDS (Waste Information Data System).</p> <p>Problem statement: Exposure (inhalation and dermal) to chemical contaminants in soil resulting from spilled materials needs to be incorporated into the hazard analysis process. The Industrial Hygiene Department needs to consistently evaluate/monitor/sample chemical exposure from re-suspended/ airborne/aerosolized/dust/vapor from deposited contaminants in the ground from various sources, such as PFP, UO3, Purex, T Plant, and Radox waste streams. Chemical exposure analysis when excavating inside or outside the Tank Farms boundaries does not appear to be an institutionalized process.</p> <p>RPP-26744 Rev. 0 Executive Summary states the following;</p> <p>"SIM is an extension and enhancement of previous efforts to quantify contaminant inventories in the Hanford Site waste storage tanks ... SIM generates inventory and uncertainty estimates for 46 radionuclides and 29 chemicals using 196 waste streams applied to 377 liquid-waste disposal sites, unplanned releases, and tank leaks over their operating lifetimes in intervals of one year, from 1944 to 2001. The operating times for these sites varied from several weeks to decades in length and could consist of multiple waste streams ... This is the first time formal, comprehensive estimates of uncertainty have been generated for the inventory from liquid waste disposal sites, unplanned releases, and tank leaks. The total predicted mean volume for the selected liquid waste disposal sites is ~1,023,000 Megaliters (ML). The overall mean volume for the tank leaks is estimated at 2.18 ML, and for the various unplanned release sites, the mean loss volume is estimated to be 3,419 ML. For comparison, the underground storage tanks at the Hanford Site contain approximately 200 ML of waste."</p> <p>Megaliter (ML) is approx. equal to 264,172 US gal.</p> <p>After looking at the waste deposited in the soil, I looked at the areas where we have dug in and around the tank farms. Numerous examples over the years of excavation in and out of the farms have resulted in the discovery of minor to extreme levels of radioactive contamination. This has led to a robust excavation procedure requiring RadCon presence during excavations, however, the procedure does not specifically address industrial hygiene exposure evaluation and controls.</p> <p>The Industrial Hygiene Exposure Assessment Strategy (TFC-PLN-34, Rev E-6) identifies</p> <p>2.5 Engineering Engineering, in collaboration with IH will: Provide technical support to IH in updating the Industrial Hygiene Chemical Vapor Technical Basis (RPP-22491) Involve IH in the design and installation of all engineering controls which may introduce or affect exposure to chemical, biological, physical or ergonomic hazards</p> <p>However this very through historical tank farms soils analysis has not been identified as a potential source.</p> <p>4.1 Chemical Hazards There are several sources of chemical hazards at the tank farms. Sources include:</p> <ul style="list-style-type: none"> • Tank waste from spent fuel and weapons production processes stored in the tank farms • Known or presumed human carcinogens • Procured chemical products used in various tank farm processes (e.g., paint products, urethane foams, acids, caustics, welding rods, etc.) • Materials related to legacy facility equipment (e.g., asbestos, lead, and beryllium) <p>TFC-PLN-47, REV C describes the requirements of the IH program that 6.4 Industrial Hygiene (10.1.1, 10.1.2, 10.1.3, 10.1.4, 10.1.8, 10.1.9.j).</p> <p>The TOC implements a comprehensive industrial hygiene (IH) program. The program is documented in a hierarchy of implementing documents covering exposure assessment methods and selection of controls for chemical, biological, and physical hazards.</p>			

TFC-PLN-55, REV B-1 requires that IH is,

- Providing source, area, and personal monitoring and sampling, as applicable, to evaluate worker exposure to air contaminants.

Also, 4.4 Program Evaluation

The program evaluation element includes the implementation procedures necessary to manage the continuous process improvement of the IH Program.

And, 4.6 Exposure Assessment

The exposure assessment element includes the implementation procedures necessary to ensure that the broad scope of hazardous agents is appropriately evaluated and effectively controlled during work activities. This work includes biological, chemical, ergonomic, and physical hazardous agents. Exposure assessment will evaluate and implement the principles of ALARA for chemical and physical hazards.

Requirement Not Satisfied		Source Document Number	
hazard prevention and controls, work planning, Isms, NFPA 70E		10CFR 851, TFC-PLN-55 , TFC-PLN-47,TFC-PLN-34,DOE-0344	
Equipment Identification Number		System Identification	
		None	
Does issue require immediate actions?			
I Don't Know			
Immediate actions Taken or Planned			
Notified Management Issues PER Notified Lead HAMTC Safety Rep Notified IH Programs manager			
Recommended Corrective Actions			
Assign PER to Kenneth Way, Industrial Hygiene Program Manager.. Establish process to routinely perform chemical analyses of soil material for dermal and inhalable materials. Determine the most appropriate chemical constituents that should be included in the chemical analysis and the appropriate analytical methods. Determine what exposure management processes may be appropriate.			
Originator Contact			
Yes			
Originators Name	Originators ID	Originators Phone	Date Initiated
Slaugh, Don M	H0036458	(509) 373-3298	03/03/2016
SHIFT OPERATIONS REVIEW			
Title			
Spilled materials needs to be incorporated into the hazard analysis process			
Reportability	SSC Operability	Operability Review	Comp Measures Req
Non-Reportable	N/A	N/A	
Describe actions Taken or Recommended			
No action required at this time by CSO.			
SO Reviewer Name	SO Reviewer ID	SO Reviewer Phone	SO Review Date
Maygra, Ryan T	H4706025	(509) 373-2689	03/04/2016
SCREENING			
PER Significance Level	Analysis Level	How Discovered	
TUF		1 Internal (Self-Identified; Internal Assessments)	
Ind Assessment Rev	Occurrence Rpt #	DOE CAP Required?	
		No	
Assigned Responsible	Facilities Rep / SSO	Safety Mgmt Rep	Potentially Recurring Issue

Manager			
Way, Kenneth J		No	
Program		Requirements Area Manager (RAM)	
<ul style="list-style-type: none"> • ^N/A^ 		<ul style="list-style-type: none"> • IH2300 - Industrial Hygiene / Odor/Vapor / None • IH030C - Industrial Hygiene / Assessments / Monitoring • IH190C - Industrial Hygiene / Toxicology / Monitoring • IH210B - Industrial Hygiene / Communications / Non-event 	
PER Screening Comments			
<p>3/7/16 No comments</p> <p>-----</p> <p>5/24/16 RESCREEN REQUEST: Steve,</p> <p>I would like PER 2016-0433 re-screened at a Per with formal resolution to see exactly how the IH programs have missed this hazard and how to institutionalize it. I have ideas on the corrective actions.</p> <p>I also have concern that the Evaluation is miss leading. The statement that concern is addressed in our procedures is completely incorrect. Thank you, Don Slaugh</p> <p>-----</p> <p>5/25/16 HOLD-Action to IH</p> <p>-----</p> <p>5/26/2016 Hold-Meeting to discuss will occur on Tuesday, May 31, 2016.</p> <p>-----</p> <p>5/31/16 Still HOLDING</p> <p>-----</p> <p>6/1/16 F/E to K Way per IS/IH rep on call.</p> <p>-----</p> <p>8/22/16 RESCREEN of Further Evaluation == Further Evaluation Results == Submitted by: Way, Kenneth J (h0046473) - Date: 2016-08-19 13:26</p> <p>Suggested Sig Level: PIE/CIM</p> <p>Evaluation Results / Additional Information: This PER was evaluated and corrective actions assigned by the analyst (IH Prog Manager Bob Mako) and approved by the IH Department Manager (Ken Way). No additional work is necessary at this time.</p> <p>-----</p> <p>8/22/16 RESCREEN COMMENTS: Screen as a TUF to K Way.</p>			
ORPS Code	Functional Area	Work Process	ISMS
Not Applicable	Industrial Hygiene	<ul style="list-style-type: none"> • Other 	
PER Screening Chair	PER Screening Chair ID	PER Screening Chair Phone	PER Screening Date
Owen, Annette	H0054042	(509) 373-6756	03/07/2016
PAAA REVIEW			
PAAA Screening	PAAA Codes	Function Codes	
PAAA, Non-NTS Reportable	<ul style="list-style-type: none"> • 10 CFR 851.22 (a)(1) 	<ul style="list-style-type: none"> • Hazard Prevention and Abatement 	
PAAA Cause Analysis Review	NTS Report Number	NTS Report Date	
No			

PAAA Screening Comments			
1) Waited on results of TUF before final determination of noncompliances. 2) Basis for PAAA screening is in file attached to PER. In file, see highlighted green text for non-compliance. 3) Approval per procedure TFC-ESHQ-PAAA-D-08 dated 7/19/2012 (paragraph 4.1.5-7).			
PAAA Reviewer Name	PAAA Review Date		
Thom, Barry	10/03/2016		
PAAA Approver Name	PAAA Approve Date		
Thom, Barry	11/14/2016		
Track Until Fixed (TUF)			
Evaluation			
Action is appropriate to address this PER.			
Existing procedures address this topic: DOE-0344, Hanford Site Excavating, Trenching and Shoring and WRPS implementing procedure TFC-ESHQ-S-STD-30, Implementation of DOE-0344, Excavating, Trenching and Shoring. The WRPS implementing procedure addresses the review and consideration of soil contamination by Environmental Protection before an Excavation Permit is approved. Item 20 on the current WRPS JHA Checklist, WRPS A-6004-101, addresses Excavation, Trenching and Shoring.			
A Corrective Action is included to revise the JHA Checklist item 20 to include soil contamination. An additional Corrective Action is included to provide orientation for WRPS industrial hygienists to become familiar with and utilize the Waste Information Data System (WIDS) and appropriate exposure evaluation tools, as needed, to perform appropriate hazard assessments before excavation or trenching is performed.			
Has the evaluation of this PER resulted in additional information that could affect the Central Shift Office (CSO) determination of operability or reportability?			Comments
No			
Submitter Name	Submitter ID	Submitter Phone	Submit Date
Mako, Bob R (inactive)	H0091675	(509) 373-6348	09/12/2016
CAUSE CODES			
CORRECTIVE ACTIONS			
Actionee	Action Due Date	Status	E-STARS Number
Orgill, Tom K	07/12/2016	Closed	WRPS-PER-2016-0433.1
CAP Reportable	ORPS Reportable	NTS Reportable	LTCA Reportable
No	No	No	No
Action			
Revise WRPS Job Hazard Analysis Checklist, A-6004-101, to add Soil Contamination as an evaluation criterion. Item 20, Excavations, Trenching, and Shoring may be an appropriate location.			
Deliverable			
Revised Job Hazard Analysis Checklist.			
Corrective Action Attachments			
Actionee	Action Due Date	Status	E-STARS Number
Mako, Bob R	12/06/2016	Closed	WRPS-PER-2016-0433.2
CAP Reportable	ORPS Reportable	NTS Reportable	LTCA Reportable
No	No	No	No
Action			
Provide WRPS industrial hygienists familiarization with the Waste Information Data System (WIDS) and appropriate exposure evaluation tools, as needed, to perform appropriate hazard assessments before excavation or trenching activities are performed.			
Deliverable			
Attendance lists for WIDS and soil hazard evaluation orientation.			
Corrective Action Attachments			

Actionee	Action Due Date	Status	E-STARS Number
Orgill, Tom K	04/25/2017	Closed	WRPS-PER-2016-0433.3
CAP Reportable	ORPS Reportable	NTS Reportable	LTCA Reportable
No	No	No	No
Action			
Revise WRPS Job Hazard Analysis Checklist, A-6004-101, to add Soil Contamination as an evaluation criterion. Item 20, Excavations, Trenching, and Shoring may be an appropriate location.			
Deliverable			
Revised Job Hazard Analysis Checklist.			
Corrective Action Attachments			
<ul style="list-style-type: none"> Extend Request.msg FW_ WRPS-PER-2016-0433_3.msg JHA Soil Cont.docx 			
Actionee	Action Due Date	Status	E-STARS Number
Ganapathy, Raj	01/31/2017	Open	WRPS-PER-2016-0433.4
CAP Reportable	ORPS Reportable	NTS Reportable	LTCA Reportable
No	No	No	No
Action			
Provide WRPS industrial hygienists familiarization with the Waste Information Data System (WIDS) and appropriate exposure evaluation tools, as needed, to perform appropriate hazard assessments before excavation or trenching activities are performed.			
Deliverable			
Attendance lists for WIDS and soil hazard evaluation orientation.			
Corrective Action Attachments			
ATTACHMENTS			
Link to PER			
soils.doc			
PAAA_Screen_3-07-16.pdf			
Env1.pdf			
Env2.htm			
Env3.pdf			
Evn4.htm			
WTF HISTORICAL OCCURENCE REPORTS.pdf			
WTFRadspills.pdf			
Extension Request.msg			
FW_ PER.msg			
OLDIES ETF.docx			
PAAA_Screen for PER-2016-0433.pdf			
MODIFICATION TO PER WRPS-PER-2016-0433.msg			
AUDIT HISTORY			
Change Date	Auditor	Comments	
03/03/2016 09:33	Slaugh, Don M	Initiator Tab initial submission.	
03/04/2016 01:26	Maygra, Ryan T	SO Tab initial submission.	
03/07/2016 13:12	Thom, Barry	PAAA Tab initial submission.	
03/07/2016 13:13	Owen, Annette	Screening Tab initial submission.	
03/08/2016 10:22	Owen, Annette	Originator Contact Task Launched by Owen, Annette	
03/08/2016 10:22	Owen, Annette	Responsible Manager Task Launched by Owen, Annette	
04/25/2016 08:39	Kraus, Jennifer V	'PER Title' was changed for clarity.	

	Mako, Bob R	TUF Tab initial submission.
05/16/2016 13:44	Gunter, Pete	Change to Cause Analysis screen/Corrective Action plan.
05/16/2016 14:46	Owen, Annette	Corrective actions Launched by Owen, Annette
05/24/2016 14:37	Owen, Annette	'Assigned Responsible Manager Task Instructions' were changed. 'PER Screening Comments' was changed.
05/25/2016 12:49	Owen, Annette	'Assigned Responsible Manager Task Instructions' were changed. 'PER Screening Comments' was changed.
05/26/2016 06:12	Thom, Barry	PAAA Screening Changed PAAA Screening Comments Changed PAAA Codes Changed PAAA Function Codes Changed
05/26/2016 12:52	Charlo, Shannon	'Assigned Responsible Manager Task Instructions' were changed. 'PER Screening Comments' was changed.
05/31/2016 13:13	Owen, Annette	'Assigned Responsible Manager Task Instructions' were changed. 'PER Screening Comments' was changed.
06/01/2016 13:27	Owen, Annette	'PER Significance Level' was changed from TUF to Further Evaluation. 'Assigned Responsible Manager Task Instructions' were changed. 'PER Screening Comments' was changed.
08/03/2016 13:54	Thom, Barry	PAAA Screening Comments Changed
08/22/2016 06:30	Owen, Annette	'Assigned Responsible Manager Task Instructions' were changed. 'PER Screening Comments' was changed.
08/22/2016 13:44	Owen, Annette	'PER Significance Level' was changed from Further Evaluation to TUF. 'Assigned Responsible Manager Task Instructions' were changed. 'PER Screening Comments' was changed.
08/31/2016 08:18	Charlo, Shannon	Change to Cause Analysis screen/Corrective Action plan.
09/12/2016 09:26	Owen, Annette	Change to Cause Analysis screen/Corrective Action plan.
10/03/2016 09:16	Thom, Barry	PAAA Screening Changed PAAA Screening Comments Changed PAAA Codes Changed PAAA Function Codes Changed
10/27/2016 12:53	Owen, Annette	Corrective actions Launched by Owen, Annette
01/31/2017 10:53	Owen, Annette	Corrective Action item (WRPS-PER-2016-0433.3) - modification to synchronize with E-STARS. 'Action Due Date' was changed from 2017-01-31 00:00:00.0 to 03/07/2017 per attached request.
02/22/2017 11:22	Owen, Annette	Corrective Action item (WRPS-PER-2016-0433.3) - modification to synchronize with E-STARS. 'Action Due Date' was changed from 2017-03-07 00:00:00.0 to 04/25/2017 per attached request.

-- End of Report --
04/11/2017 10:58 AM