

Notable Event Worksheet

(See [ES&H Manual Chapter 5200 Appendix T1 Event Investigation and Causal Analysis for Instructions](#))

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Title of Event			
Event Title:	TEDF-12-0329 - Recurring Subcontractor Failure to Recognize Silica as a Hazard		
Date and Time of Occurrence:	Multiple; recurring ORPS	Notable Event Number:	TEDF-12-0329
Event Location:	TEDF Construction Site	Date Notable Event Report is Due*:	12-0429

*The Notable Event Report is due to the ESH&Q Reporting Officer with 30 days of the Initial Fact Finding Meeting unless an extension is requested.

Categorization and Reporting (To be completed by ESH&Q Reporting Officer within two hours – unless essential information is still pending)			
ORPS Determination:	Date:	Time:	
<div style="border: 1px solid gray; background-color: #e0e0e0; padding: 5px; margin-bottom: 5px;"> <p>Subject: ORPS determination - Recurring - TEDF-12-0329-NEW Recurring Subcontractor Failure to Recognize Silica as a Hazard</p> <p>From: Stephen Smith</p> <p>Date: 3/29/2012 1:42 PM</p> <p>To: Steve Neilson</p> <p>Cc: Mary Logue, Tina Johnson</p> </div> <p>Steve,</p> <p>Per our phone discussion, we have reviewed the recent Silica related subcontractor events, including the two near misses involving brick cutting, and determined that they meet the criteria below for a recurring ORPS entry. We have also determined that an NTS entry is appropriate as well.</p> <p style="margin-left: 40px;">(6) 4 Personnel exposure to chemical, biological or physical hazards (e.g. noise, laser, ultraviolet light, heat, etc.) above limits established in 10 CFR Part 851, but below levels deemed immediately dangerous to life and health (IDLH).</p> <p>I will be the Lab's point of contact for these entries and, per the usual process, will provide courtesy copies prior to official submission. Please contact me if there are any questions.</p> <p>Thanks, Steve</p>			
10 CFR 851 Screen:	Date:	Time:	
Positive – see above			

Categorization and Reporting

(To be completed by ESH&Q Reporting Officer within two hours – unless essential information is still pending)

ORPS Determination:

Date:

Time:

Citation	Description	Citation Type
1910.134	Respiratory Protection	WSH
851.21(a)(1)	Hazard identification and assessment. Contractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness. Procedures must include methods to assess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring	WSH
851.22(b)(2)	Hazard prevention and abatement. Contractors must select hazard controls based on the following hierarchy engineering controls where feasible and appropriate	WSH
851.22(b)(4)	Hazard prevention and abatement. Contractors must select hazard controls based on the following hierarchy personal protective equipment	WSH
851.27(9)	Reference Sources. 'DOE Manual 231.1-1A, Environment, Safety and Health Reporting Manual, September 9, 2004.	WSH
851-A 1(a)(1)(i)	Construction Safety. 'For each separately definable construction activity (e.g., excavations, foundations, structural steel, roofing) the construction contractor must prepare and have approved by the construction manager an activity hazard analysis prior to commencement of affected work. Such analyses must identify foreseeable hazards and planned protective measures;	WSH
851-A 1(a)(2)	Construction Safety. For each separately definable construction activity (e.g., excavations, foundations, structural steel, roofing) the construction contractor must ensure workers are aware of foreseeable hazards and the protective measures described within the activity analysis prior to beginning work on the affected activity	WSH
ACGIH TLVs	American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices," (2005) (incorporated by reference, see § 851.27) when the ACGIH Threshold Limit Values (TLVs) are lower (more protective) than permissible exposure limits in 29 CFR 1910. When the ACGIH TLVs are used as exposure limits, contractors must nonetheless comply with the other provisions of any applicable expanded health standard found in 29 CFR 1910.	WSH

Unless otherwise specified the following is to be completed by the Lead Investigator.

Step 1 Initial Fact-Finding Meeting					
Date:	03-29-12	Time:	1100	Location:	ARC 600
Required Attendees:			Optional Attendees:		√ if Present
Lead Investigator: Stephen Smith			Associate Director: Mary Logue		X

(Print Name): Stephen Smith	(Print Name): Mary Logue
ESH&Q Representative:	TJSO Observer:
(Print Name): Bob May	(Print Name): Steve Neilson
Supervisor of involved persons(s):	Subject Matter Expert(s), Facility/Equipment Owner as applicable:
(Print Name):	(Print Name): Paul Collins
Involved or impacted person(s):	(Print Name): Tina Johnson
(Print Name):	(Print Name):
(Print Name):	(Print Name):
Witness(es):	(Print Name):
(Print Name):	(Print Name):

Agenda (Ensure the pace of the meeting allows time for accurate note taking.)	√ if Complete
<i>This was an internal rollup based on a series of events; a timeline and commonalities were created. There was no single fact finding meeting however the decision and path forward were still reached in a team environment.</i>	
1. Introduction – Provide Event Title, Date and Time of Occurrence, and Location:	
2. Attendance - Are Required Attendees present.	
3. Purpose of Initial Fact-Finding meeting.	
4. Event Reconstruction – Use information to complete Section 3. Summary of Event and/or Injuries below.	
a. Personnel and organizations involved in the event.	
b. Conditions and actions preceding the event.	
c. Chronology (timeline) of the event; and	
d. Immediate actions taken in response to the event.	
5. Clarify information – Subject-Matter Expert (SME) confirms work conditions.	
6. Stop Work or the Tag Out Required? If “Yes” – establish the restart criteria and inform the affected Management chain.	
7. Compensatory Actions Required? If “Yes” determine responsibility and include confirmation documentation.	
8. Records or documentation required to confirm, clarify, or complete information (i.e., work plans, work control documents, photos, etc).	
9. Other Questions or Concerns: Ask attendees if there are any other questions, concerns, or information that they wish to provide.	
10. Obtain TJSO Observer feedback on conduct of fact finding meeting and potential improvements.	

Step 2 Investigation Team:		Date Convened:	
		(Within 24 hours of Fact Finding Meeting.)	
Role	Name	Department/Group	Phone
Lead Investigator	Stephen Smith	ESH&Q/QACI	7007
	Mary Logue	ESH&Q/QACI	7447
	Keith Royston	FML/TEDF	6117

	Paul Collins	ESH&Q/QACI	5981
	Bob May	ESH&Q/QACI	7632
	Rusty Sprouse	FML	7589
	Teresa Danforth	<i>CFO</i> COO /PROCUREMENT	7364
<u>TJSO Observer</u>		TJSO	

Step 3 Summary of Event and / or Injuries, including Initial Fact Finding Meeting information: determine the chain of events and timeline. Use attachment as necessary.

Objective: There have been 3 incidents and 2 near-misses in the past year involving instances where employees were exposed to materials above the ACGIH TLV for that substance. Although each has been addressed individually, a team was formed to examine the events as a whole to determine if there were any common causes that would warrant reporting into ORPS as a recurring event, and warranted self-reporting into NTS.

Discussion: The 5 events were examined against the Integrated Safety Management Core Functions of:

- Identify Scope of Work;
- Identify and Analyze the Hazards;
- Identify Controls;
- Perform Work within Controls.; and
- Feedback into the Work Planning Process

The results are summarized in Table 1 below. The team considered the common threads among the 5 events. Four of the events involved subcontractors not recognizing the hazard posed by silica, and therefore unable to adapt their work planning processes to incorporate proper mitigation techniques into their work planning. The first event, involving exposure to lead, was performed by JLab employees, who were working in accordance with their identified controls. They stopped the work when the lead was discovered and replanned the job. When the work was restarted, the work was performed in accordance with the new plan; unfortunately the controls were not effective to prevent a potential overexposure.

All of the 3 incidents had monitoring performed during the work activity. Exposure was found to be above the limits upon receipt of results from the analytical laboratory. In each case this was after the work had been completed, as each job last approximately one day.

Step 3 Summary of Event and / or Injuries, including Initial Fact Finding Meeting information: determine the chain of events and timeline. Use attachment as necessary.

Table 1 - Examination of Events Against the ISM Core Functions

Event Title	Event Date	Scope of Work Defined	Identify & Analyze Hazard	Identify Controls	Work Within Control	Comment
Lead Exposure in Excess of ACGIH TLV	6/20/11	Remove steel beams making up electronic hut wall of SOS	Lead being present being wall not initially identified. It was not present on drawings, but "old-hands" acknowledged its existence after the event.	Initial controls were identified, when lead was discovered. Work was stopped and new controls identified (respiratory protection).	Work was performed within controls; however controls were not sufficient to prevent exposure.	<ul style="list-style-type: none"> Blood lead levels were within normal range. Monitoring was performed by placing sample outside the welding facemask because of interference with the employee's personal protective equipment. This likely resulted in a higher measured exposure for the torch cutter. Lessons learned shared at 6 Month Accelerator Shutdown safety meeting (~400 people) Lessons learned incorporated to ongoing planning for removal of SOS (450 tons of concrete). New tools being acquired, etc.
Exposure to Respirable crystalline silica (quartz) during	9/30/11	Removal of previously poured concrete in Tagger Tunnel	Confined space as a contributing hazard was not recognized	Initial controls were to wet the concrete and provide	Work was performed within controls; however	<ul style="list-style-type: none"> No AHA found Job was Rework Subcontractor event Extent of Conditions examined and Lessons

Step 3 Summary of Event and / or Injuries, including Initial Fact Finding Meeting information: determine the chain of events and timeline. Use attachment as necessary.

concrete chipping in excess of ACGIH TLV				additional ventilation. These were observed to be ineffective. Work was stopped and new controls identified (respiratory protection).	controls were not sufficient to prevent exposure	Learned shared
Exposure to silica during concrete chipping in excess of ACGIH TLV,	12/21/11	Removal of previously poured concrete in a stairwell of a building under construction	Silica and confined space not recognized as a hazard	Wet methods were required	After hazard was identified, N95 voluntarily worn	<ul style="list-style-type: none"> • Job was Rework • Subcontractor event • Lesson Learned did not flow down from previous event • Silica training was offered – not accepted
TEDF Subcontractor Observed to be dry-cutting bricks	3/7/12	Cutting masonry bricks outside	Dust was identified, but silica not expressly recognized	Wet methods required	Wet methods were not being used	<ul style="list-style-type: none"> • Subcontractor event • AHA not being followed
TEDF	3/9/12	Cutting masonry bricks outside.	Dust was identified, but silica not expressly recognized	Wet methods required	Wet methods were not being used	<ul style="list-style-type: none"> • Subcontractor (same subcontractor as 3/7/12 event) • AHA not being followed • Lesson not learned

The events were then subjected to a causal analysis using TapRoot to identify an commonalities. See Table 2 below.

In four events, silica was not recognized as a hazard. In all four events the work was suspended only after concern identified by oversight personnel. In two events, this was further complicated by the fact the work was being performed in an enclosed space, which would warrant stricter controls.. In two other events this was further complicated by the fact that engineering controls for dust (silica not specifically mentioned) were not being used.

Again, the event involving the lead exposure appears to be an outlier. Once lead was discovered, the work was halted when the lead was discovered. Subject Matter Experts were consulted and additional controls were identified. Work was then performed within those controls. Thus, this event will not be included in the ORPS “R” or NTS classification.

Step 3 Summary of Event and / or Injuries, including Initial Fact Finding Meeting information: determine the chain of events and timeline. Use attachment as necessary.

Table 2 - Causal Analysis Results for Each Event

Event	Causes
Lead Exposure in Excess of ACGIH TLV	<ul style="list-style-type: none"> LTA consultation with SME during planning and post discovery
Exposure to Respirable crystalline silica (quartz) during concrete chipping in excess of ACGIH TLV	<ul style="list-style-type: none"> Direct Cause - Silica was not recognized as a hazard during work planning Work Planning did not account for work being performed in an enclosed space
Exposure to silica during concrete chipping in excess of ACGIH TLV,	<ul style="list-style-type: none"> Direct Cause - Silica was not recognized as a hazard during work planning Work Planning did not account for work being performed in an enclosed space Flowdown of lessons learned LTA
TEDF Subcontractor Observed to be dry-cutting bricks	<ul style="list-style-type: none"> Direct Cause - Silica was not recognized as a hazard during work planning Enforcement of controls LTA
TEDF Subcontractor Observed to be dry-cutting bricks	<ul style="list-style-type: none"> Direct Cause - Silica was not recognized as a hazard during work planning Enforcement of controls LTA

Conclusion:

The 4 subcontractor events have enough common threads that rolling them up and reporting them as a Recurring ORPS is appropriate. Additionally, reporting in NTS as a series of common events is appropriate as well.

Notable Event Report

Emergency Notifications Made (Subsequent to the Event):	Date	Time
Fire, Rescue & Emergency Medical: (9-911)		
Guard Post: x4444; 269-5822		
Occupational Medicine 269-7539		
ESH&Q Reporting Officer: 876-1750	03-29-12	1130
Crew Chief 630-7050		
Industrial Hygiene: 269-7863:		

Other:

Witness Accounts: (Use attachments as necessary. Box will expand as necessary)

NA

Environmental Aspects

Type of Material Released:

NA

Quantity:

Source:

Time Flow was Halted or Controlled:

For Investigation Team (√ All That Apply):

Reportable Quantity

Impact Ground/Soil

Storm Water Channel/Drain

Sanitary Sewer

Records, Documents, Pictures, and Other References: (Copy and paste, use attachments or document links as necessary)

NA

Causal Analysis: (Use attachment as necessary)

Root Cause:

Silica was not recognized as a hazard during work planning

Contributing Causes:
 (List as many as apply.)

- 1) Communication / flow down of lessons learned less than adequate
- 2) Enforcement of controls less than adequate

Extent of Condition Check	Responsible Person(s)	JLab CATS Number	Target Date
The CATS actions below are the result of an extent of condition check and therefore programmatic in nature; extent of condition requirements are covered in all cases except items 5 and 11.		NA	

Corrective Action(s)	JLab CATS Number	Target Date
Revise Jefferson Lab Master Spec to include Silica as a special hazard (Section 1.XX), denoting requirement for formal AHA, if this type of work has been identified as part of a project. Evidence of completion is revised JLab master spec.	NE-2012-08-01-01	5-31-12
Revise Jefferson Lab Master Spec to include a requirement for SAF138 (or equivalent) training of subcontractors when Silica related work has been identified as part of a project. Evidence of completion is revised JLab master spec.	NE-2012-08-01-02	5-31-12
Modify existing subcontracts to include requirements for revision of master spec and use of JLab (or approved Equivalent) AHA form where Silica related work has been identified as part of the project. Evidence of completion is contract numbers or database links to modified subcontracts.	NE-2012-08-01-03	7-17-12
Require JLAB ESH&Q Subject Matter Expert reviews of Silica related Activity Hazard Analyses prior to SOTR approval. Evidence of completion is documentation from ESH&Q AD to FML Manager.	NE-2012-08-01-04	4-30-12
Receive revised corrective action plan from Mortenson. Evidence of completion is final Mortenson document and transmittal letter to JLab.	NE-2012-08-01-05	5-15-12
Revise pre-bid meeting instructions to require an ESH&Q representative's presence. Evidence of completion is documentation to Procurement personnel directing / communicating this requirement.	NE-2012-08-01-06	5-31-12
Revise ES&H Manual chapter 3410 (ES&H Aspects of Procurement) to include requirement for AHA training as well as ESH&Q review of AHAs involving silica work, and other	NE-2012-08-01-07	9-17-12

Corrective Action(s)	JLab CATS Number	Target Date
hazardous materials as deemed appropriate (similar types of hazards). Evidence of completion is approved ES&H Manual Chapter 3410		
Develop checklist for ESH&Q use at pre-bid meeting. Attach as Technical Appendix to 3410. Evidence of completion is approved technical appendix	NE-2012-08-01-08	9-17-12
Develop an Activity Hazard Analysis form for subcontractors, and accompanied required training. Evidence of completion is approved AHA form, references for when it is to be used and an approved lesson training plan.	NE-2012-08-01-09	7-31-12
Schedule an effectiveness review for implemented corrective actions and overall Silica program efficacy; schedule for late FY13, Q114 or Q214. Evidence of completion is incorporation of this assessment into the Assessment Scheduling tool	NE-2012-08-01-10	7-31-12
Levy a fine against Mortenson for repeated Silica related safety problems at the JLab site. Evidence of completion is the contract modification showing the fine	NE-2012-08-01-11	4-30-12
Revise Jefferson Lab master Spec to include requirement for subcontractor to utilize JLab AHA form (or approved equivalent) and Superintendent (or equivalent) to complete JLab provided AHA training. Evidence of completion is revised JLab master spec	NE-2012-08-01-12	5-31-12

Lessons Learned (Confer with Division/Department Lessons-Learned Coordinator) (Use attachment as necessary)	JLab COE Number
Flow down and implementation of requirements specifically related to guidance showing the difference between OSHA and ACGIH TLV threshold for respirable silica.	TBD – this is also a required DOE LL entry

Investigation Team Confirmation:

The below signees, confirm to the best of their knowledge, that the information presented in this document is accurate and complete.

Role	Print	Signature	Date
Lead Investigator	Stephen Smith		5-9-12
	Mary Logue		5/9/12
	Bob May		05/10/12
	Rusty Sprouse		5/21/12
	Teresa Danforth		5/22/12
	KEITH ROYSTON		5/9/2012

Upon confirmation submit document to the ES&H Reporting Officer for completion and distribution.

Documentation of Findings: (To be Completed by ESH&Q Reporting Officer)

Notable Event Number:	TEDF-12-0329
CATS Number:	NE-2012-08-01-01 through 12
JLab COE Number:	TBD -- must have both JLab and DOE entries since "R" ORPS
ORPS Number:	SC--TJSO-JSA-TJNAF-2012-0004
NTS Number:	NTS--TJSO-JSA-TJNAF-2012-0004
CAIRS Entry:	NA
DOE Cause Code:	A4/B1/C06 - Management Problem; Management Methods Less Than Adequate (LTA); Previous industry or in-house experience was not effectively used to prevent recurrence A4/B3/C08 - Management Problem / Work Organization and Planning Less than Adequate / Job Scoping did not identify special circumstances and / or conditions A4/B3/C11 - Management Problem; Work Organization & Planning LTA; Inadequate work package preparation
ISM Code:	Define the Scope of Work

Acceptance/Acknowledgement of Facts

	Print	Signature	Date:
Associate Director/ Department Manger	Mary Logue		5/22/12
CO - signed by FML	ES&H & MS		5/22/12

Distribution:

- ES&H Reporting Officer (Original)
- Associate Director/Department Manager
- Division Safety Officer
- Investigation Team Members

Form Revision Summary

Revision 1.3 – 01/31/12 – Updated ESH&Q Reporting Officer assignment from SSmith to CJohnson per MLogue Edited to clarify process steps.

Revision 1.2 – 10/20/11 – Updated ESH&Q Reporting Officer assignment from JKelly to SSmith per MLogue.

Revision 1.1 – 05/24/11 - Edited to clarify process steps.

Revision 1 – 11/23/10 – Updated to reflect current laboratory operations.

ISSUING AUTHORITY	FORM TECHNICAL POINT-OF-CONTACT	APPROVAL DATE	EXPIRATION DATE	REV.
ESH&Q Division	Tina Johnson	10/19/09	10/09/12	1.3

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