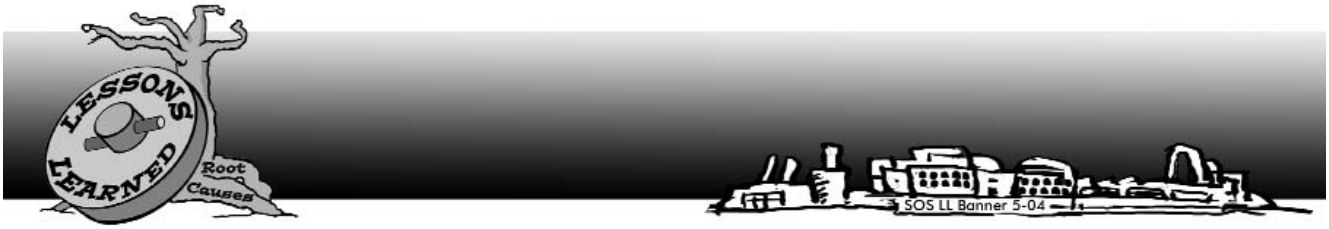


Groin Injury from Shoveling Overflowing Muck from Mining

Purpose

To share "lessons learned" gained from incident investigations through a small group discussion method format.

To understand "lessons learned" through a Systems of Safety viewpoint.

TONY MAZZOCCHI CENTER
FOR HEALTH, SAFETY AND ENVIRONMENTAL EDUCATION
A PROJECT OF THE UNITED STEELWORKERS AND THE LABOR INSTITUTE

This material was produced by the Labor Institute and the United Steelworkers International Union under grant number 46DO-HT11 Susan Harwood Training Grant Program, for the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does mention of trade names, commercial product or organizations imply endorsement by the U. S. Government.

Lessons Learned

Volume 07, Issue 8

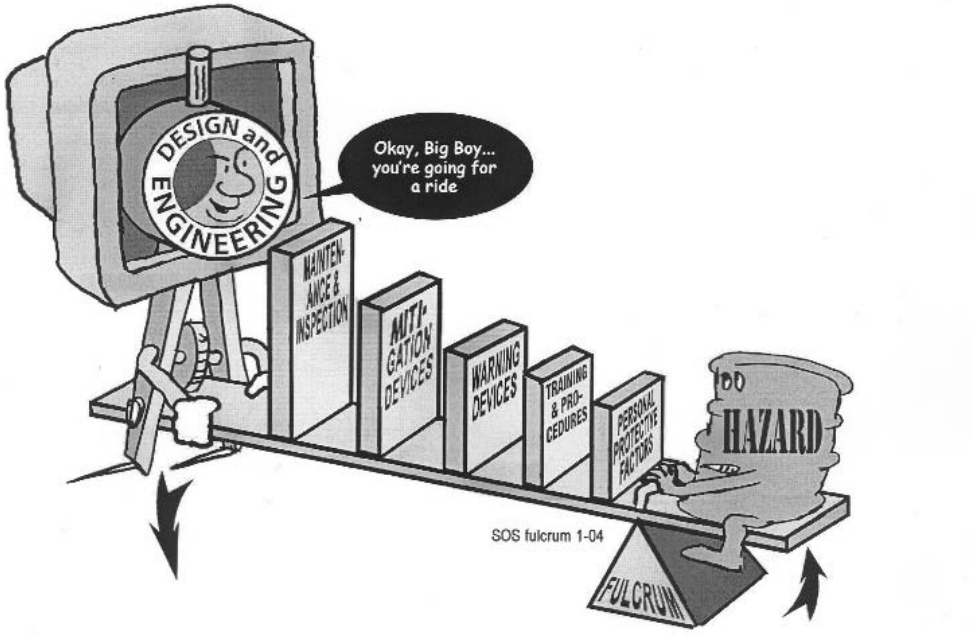
Background Information

Before beginning this Lessons Learned, please review this and the next page which contain information that will introduce the concepts of Lessons Learned and Systems of Safety.

Creating a safe and healthy workplace requires a never ending search for hazards that sometimes are not obvious to us. These hazards exist in every workplace and can be found by using various methods. Lessons Learned are just as the name suggests: learning from incidents to prevent the same or similar incidents from happening again.

Systems Are Not Created Equal: Not equal in protection and not equal in prevention.

Using our Systems Focus to uncover system flaws or root causes is only one part of controlling hazards. We also need to look at the systems involved to decide on the best way to deal with the problem. The most effective way to control a hazard is close to its source. The least effective is usually at the level of the person being exposed. The system of safety in which the flaw is identified is not necessarily the system in which you would attempt to correct the flaw.



Major Safety System	Design & Engineering	Maintenance & Inspection	Mitigation Devices	Warning Devices	Training & Procedures	Personal Protective Factors
Level of Prevention	**Highest—the first line of defense**	**Middle—the second line of defense**				**Lowest—the last line of defense**
Effectiveness	**Most Effective**	←			→	**Least Effective**
Goal	*To eliminate hazards*	*To further minimize and control hazards*				*To protect when higher level systems fail*
EXAMPLES OF SAFETY SUB-SYSTEMS**	**Technical** Design and Engineering of Equipment, Processes and Software Management of Change (MOC)** Chemical Selection and Substitution Safe Siting Work Environment HF **Organizational *(must address a root cause)*** Staffing HF Skills and Qualifications HF Management of Personnel Change (MOPC) Work Organization and Scheduling HF Work Load Allocation of Resources Buddy System Codes, Standards, and Policies**	Inspection and Testing Maintenance Quality Control Turnarounds and Overhauls Mechanical Integrity	Enclosures, Barriers Dikes and Containment Relief and Check Valves Shutdown and Isolation Devices Fire and Chemical Suppression Devices Machine Guarding	Monitors Process Alarms Facility Alarms Community Alarms Emergency Notification Systems	Operating Manuals and Procedures Process Safety Information Process, Job and Other Types of Hazard Assessment and Analysis Permit Programs Emergency Preparedness and Response Training Refresher Training Information Resources Communications Investigations and Lessons Learned Maintenance Procedures Pre-Startup Safety Review	Personal Decision-making and Actions HF Personal Protective Equipment and Devices HF Stop Work Authority

HF - Indicates that this sub-system is often included in a category called Human Factors.
* There may be additional subsystems that are not included in this chart. Also, in the workplace many subsystems are interrelated. It may not always be clear that an issue belongs to one sybsystem rather than another.
** The Codes, Standards and Policies and Management of Change sub-systems listed here are related to Design and Engineering. These subsystems may also be relevant to other systems; for example, Mitigation Devices. When these sub-systems relate to systems other than Design and Engineering, they should be considered as part of those other system, not Design and Engineering.

Revised October 2006

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Title: Groin Injury from Shoveling Overflowing Muck from Mining

Identifier: Volume 07, Issue 8

Date Issued: January 31, 2007

Lessons Learned Statement:

When we think about **Maintenance and Inspection**, we usually picture work being done on equipment that is shut down. But some operations require continuous monitoring and inspection throughout the operation; and adjustments are made accordingly. It is imperative that workers are given ample time to do such inspections and to make the required adjustments.

When we have ***Systems of Safety*** in place, we can deal with the unexpected in a safe manner. A properly **designed and engineered** work area can accommodate an emergency situation without putting the worker in harm's way. A quick release mechanism on containers that hold overflow can allow a worker to empty the container without undue effort or exposure to hazards.

When needed, ergonomically-**designed** tools can reduce or eliminate muscle strains and pulls.

One of the sub-systems in the **Training and Procedures** ***System of Safety*** is *Communication*. This is especially important when a process involves several departments or an operation that is continuous throughout the facility. All means of communication have to be operating properly and all workers need access to the radios or phones available.

Discussion:

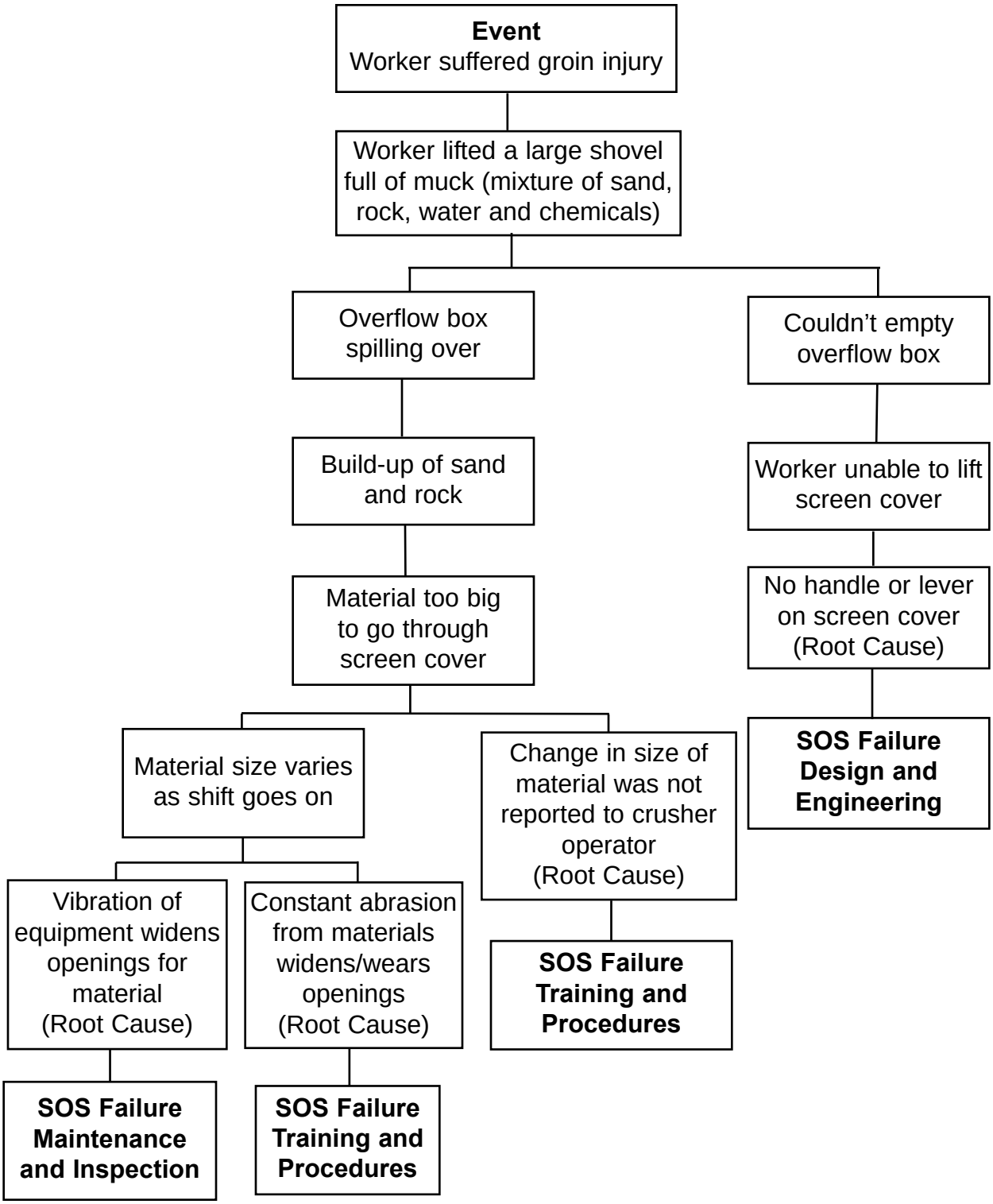
A ball mill in a mining operation is a large cylinder filled with steel balls that tumble inside the cylinder with water and chemicals to break down muck (sludge like material left over from the operation) from mining. There is an overflow box connected to the ball mill in case of excess flow of material.

An overflow alarm on one of the ball mills started sounding and a worker rushed to the mill to see what was wrong and prevent further spilling of muck. The material being mined goes through a series of crushers to break down the material into smaller particles. In this particular case, the gauging of the material took place at the beginning of the shift. After several hours, the vibration of the crushers and the constant abrasion of the material passing through it had widened the openings for material and some of the material was too large to go through the overflow screens.

The worker attempted to open the screen on the overflow box to release the excess material. The screen wouldn't budge and could not be opened. The worker started shoveling to remove the excess muck because the material keeps coming, even though it is overflowing. The worker felt a sharp pain in his groin area but continued his task and then reported the incident to his foreman.

Analysis

The Logic Tree is a pictorial representation of a logical process that maps an incident from its occurrence, "the event," to facts of the incident and the incident's root causes.



Recommended Actions

1. Redesign all of the screens with a handle or lever to move the screen when needed.
2. When there is a change in the size of the material being sent through the series of crushers, crusher operators need to be notified immediately so they can make adjustments and get material back down to the size needed.
3. All crusher and ball mill parts need to be inspected on a regular basis; replacing worn parts as needed.
4. Get ergonomically-designed shovels that ease the strain on the body while shoveling. These shovels have a curved or bent handle, which brings the load closer to the body, thereby easing strain on the body.
5. Advise workers to limit the load on the shovel and avoid awkward positions.

Education Exercise

Working in your groups and using the Lessons Learned Statement, Discussion, Analysis and Recommended Actions, answer the two questions below. Your facilitator will give each group an opportunity to share answers with the large group.

1. Give examples of ways to apply the Lessons Learned Statement at your workplace.

_____

_____

_____

_____

_____

_____

2. Of the examples you generated from Question 1, which will you pursue in your workplace? (**Note:** When we say something "you" may pursue, we mean a joint labor-management activity or a union activity rather than an activity carried out by you as an individual.**)**

EVALUATION

Lessons Learned: Groin Injury from Shoveling Overflowing Muck from Mining

Please answer the two questions below:

1. **How important is this lessons learned to you and your workplace? (Circle one.) Rate on a scale of 1 to 5, with 5 being the most important.**

1	2	3	4	5

2. **What suggestions would you make to improve this Lessons Learned?**

End of Training Trainer's Instructions

Please complete the information below.

Trainer's Name _____
(Please Print)

Date of training: _____

No. of Participants: Total _____ Hourly _____ Management _____

Location of Training: _____

USW Local # _____

Send this page **plus the Education Exercise and Evaluation for each participant and the Sign-in sheet** to:

Doug Stephens
United Steelworkers International Union
3340 Perimeter Hill Drive
Nashville TN 37211

Thank you for facilitating the sharing of this
Lesson Learned with your coworkers.

Sign-In Sheet

Name of Class_____ Date of Class_____

Instructors: _____

Please Check One* H	M	Print Name	Signature

***H = Hourly Worker**
M = Management or Salaried Worker