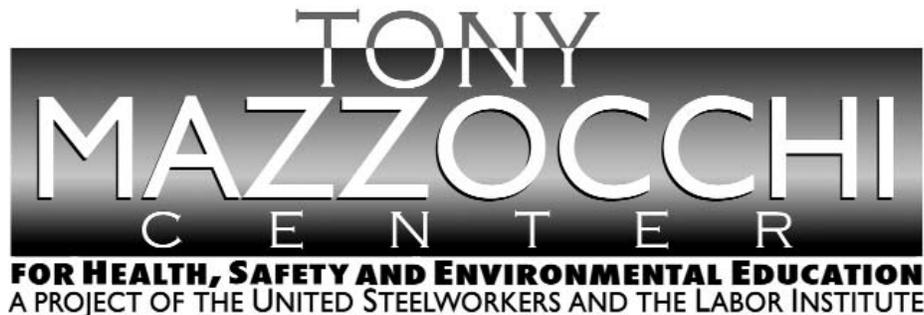


Worker Suffered Fatal Head Injury

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.



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Lessons Learned

Volume 06 Issue 10

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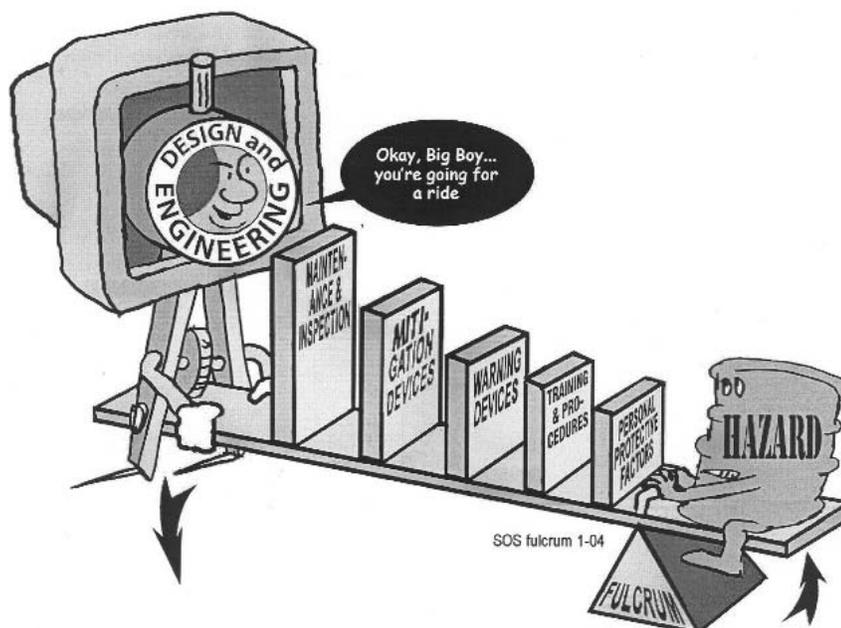
Background Information

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.

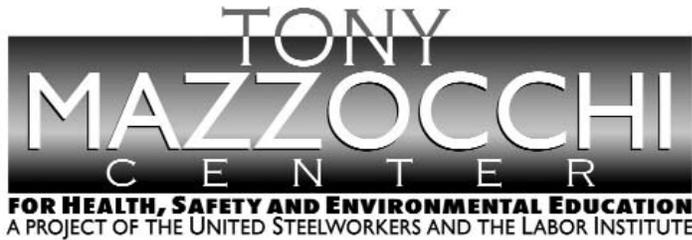
Systems Are Not Created Equal: Not equal in protection and not equal in prevention.

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.



Safety Systems	Design & Engineering	Maintenance & Inspection	Mitigation Devices	Warning Devices	Training & Procedures	Personal Protective Factors
Level of Prevention	Highest — the first 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}	Inspection and Testing Maintenance Quality Control Turnarounds and Overhauls Mechanical Integrity	Enclosures, Barriers and Containment Relief and Check Valves Shutdowns & Isolation Devices Fire and Chemical Suppression Devices	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 Information Resources Communications Investigations and Lessons Learned	Personal Decision Making and Actions _{HF} Personal Protective Equipment (PPE) and Devices _{HF} Stop Work Authority
	Organizational Staffing _{HF} Skills and Qualifications _{HF} Management of Personnel Change (MOPC) Workload Work Organization and Scheduling Allocation of Resource Codes, Standards and Policies**					

HF - Indicates that this subsystem 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 subsystem rather than another.
 ** The Codes, Standards and Policies and Management of Change subsystems listed here are related to Design and Engineering. These subsystems may also be relevant to other systems, for example, Mitigation Devices. When these subsystems relate to systems other than Design and Engineering they should be considered as part of those other systems, not Design and Engineering.



Lessons Learned

Title: Worker Suffered Fatal Head Injury

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Lessons Learned Statement

Proactive *Systems of Safety* are the key to preventing disasters. The **Design and Engineering** System can provide primary prevention by eliminating the possibility of a serious accident. The other *Systems of Safety* provide secondary prevention by reducing the probability or severity of an accident. Workers should absolutely not be put into the position of working on equipment on which they have not been adequately trained. Proper tools and equipment must be supplied and used if accidents, injuries and fatalities are to be prevented.

When “electricians are used to do mechanical work” (failure in *Staffing*, a sub-system of **Design and Engineering**); combined with “appropriate blocking not available” (failure in **Design and Engineering**); combined with “inadequate job procedures” (failure in **Training and Procedures**); and, finally, add a broken pin (failure in **Maintenance and Inspection**), you have an incident where the application of *Systems of Safety* could have saved a life.

Discussion

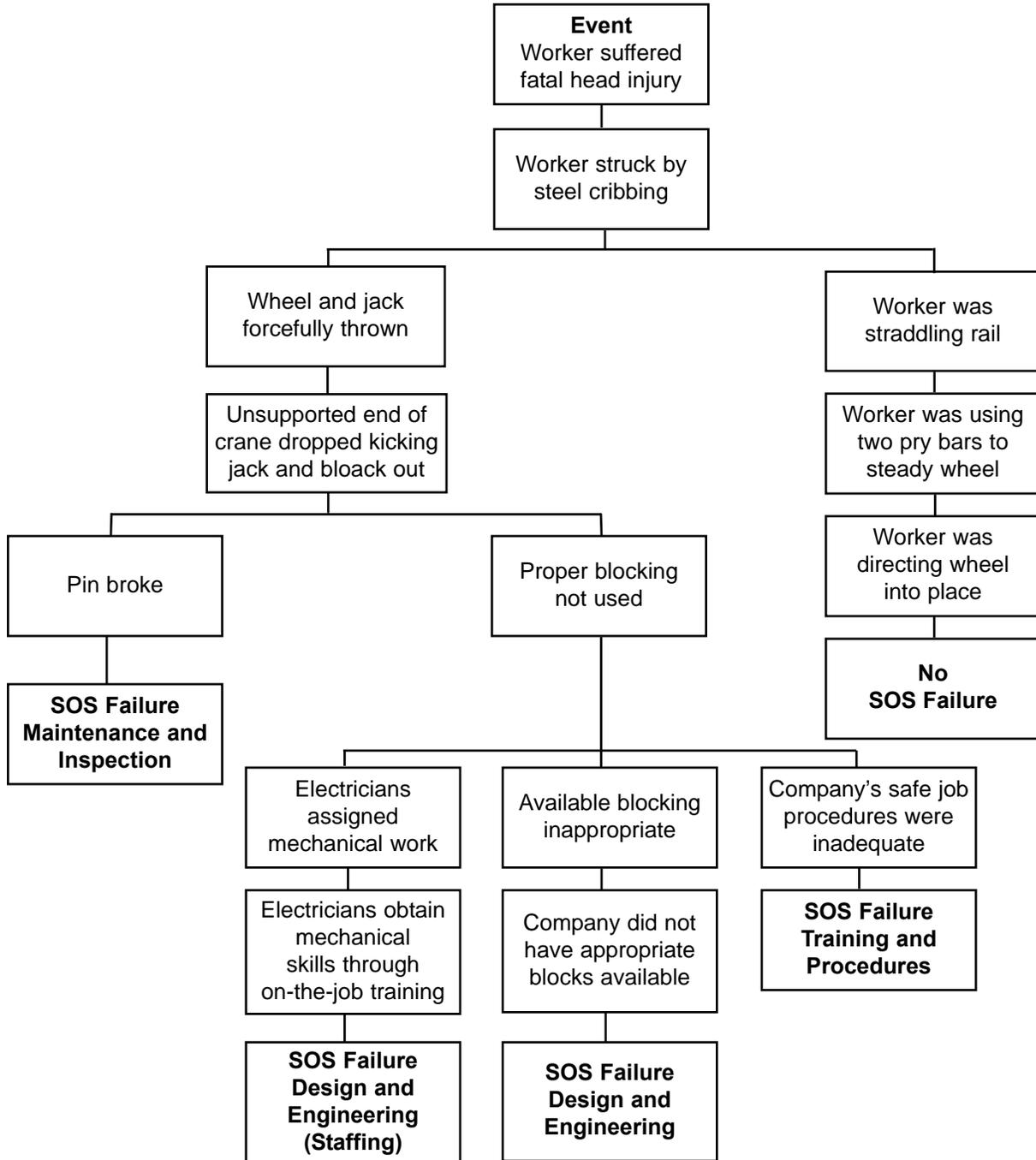
The first thing Monday morning at XYZ Corporation, the crane mechanics were assigned the duties of changing a defective drive wheel on No. 78 overhead crane. Traditionally, a five-person crew is assigned; however, in an effort to rush the job, a sixth person was added. The job progressed well and the crane was jacked up and the wheel removed without a problem. The new wheel was lifted onto the rail and an attempt was made to put it into position but the wheel was hanging up on the coupling side. The coupling was over approximately one-quarter of an inch too much.

Joe, an electrician assigned to do mechanical work, was straddling the rail and had two pry bars to steady the wheel while attempting to roll it into place. The wheel continued to bang against the coupling. In an effort to allow the wheel to clear the coupling, Bob was jacking up the crane a little further when there was a loud bang. The unsupported end of the crane dropped and both the jack and the cribbing were forcefully thrown. The cribbing, a piece of four-by-four steel, one-inch thick, struck Joe in the forehead and he immediately fell to the floor of the crane. The subsequent investigation revealed the following additional facts:

- Proper blocking was not used;
- Company safe job procedures were inadequate;
- Electricians were not trained to do mechanical repairs;
- Electricians obtain mechanical skills through on-the-job training;
- Company did not have appropriate blocks available;
- Pin broke allowing the unsupported end of crane to drop; and
- The available blocking was not appropriate.

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. Provide appropriate cribbing and jacks.
2. Contact manufacturer concerning broken pin.
3. Provide appropriate blocking.
4. Develop safe job procedure.
5. Assign trained mechanics on all jobs.

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. Complete the chart below by:

- Putting an “X” beside the recommended actions you think your employer would implement at your workplace.
- Putting an “X” beside the recommended actions you think should be implemented at your workplace.
- Prepare to share with the group the reasons for your answers.

Employer	Recommended Actions	You
	1. Provide appropriate cribbing and jacks.	
	2. Contact manufacturer concerning broken pin.	
	3. Provide appropriate blocking.	
	4. Develop safe job procedure.	
	5. Assign trained mechanics on all jobs.	

EVALUATION

Lessons Learned: Worker Suffered Fatal Head Injury

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
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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** 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.