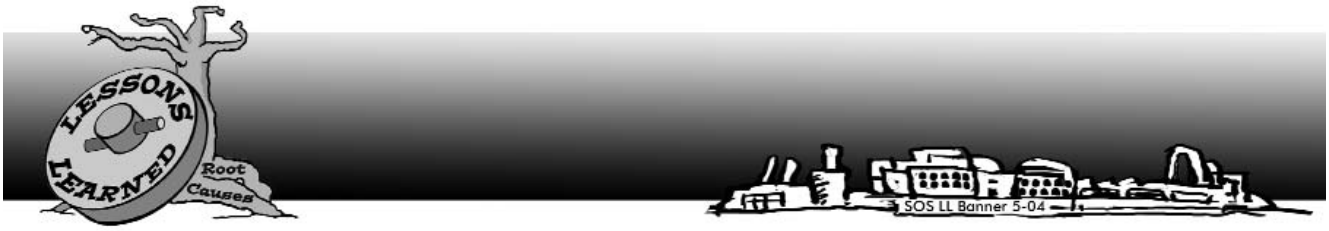

Rusted Metal in Worker's Eye

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

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Lessons Learned

Volume 06 Issue 23

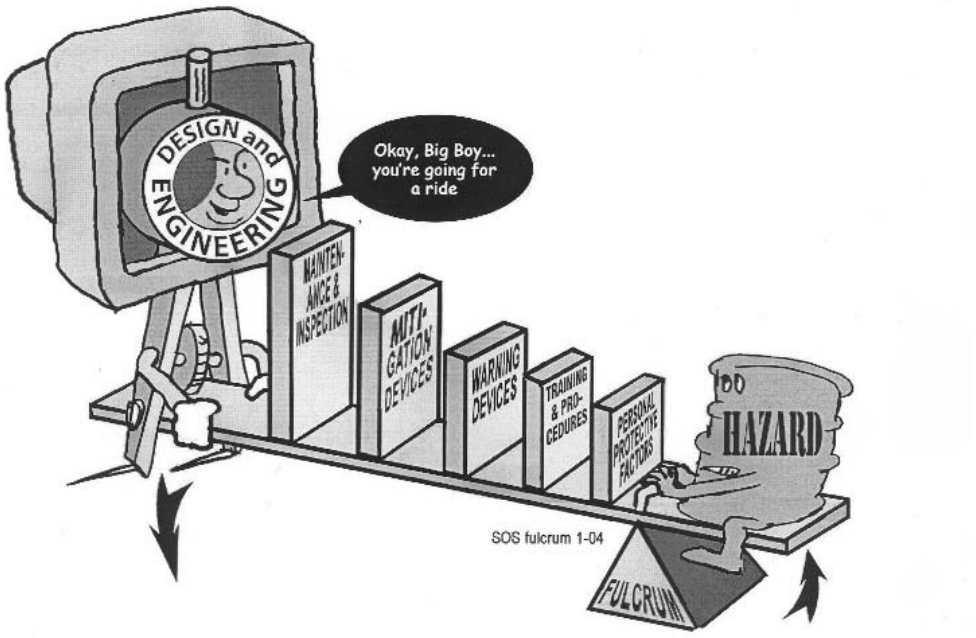
Background Information

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.

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Title: Rusted Metal in Worker's Eye

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Lessons Learned Statement
Working with inadequate equipment, in congested work areas and with machinery running is a recipe for disaster. ***Systems of Safety*** are utilized to provide prevention for this type of incident. Either working in non-congested areas or shutting down before working on or around moving equipment provides a well-defined **Design and Engineering** ***Systems of Safety*** approach.

Because the decision was made to work in a congested area without shutting the equipment down and without using the proper ladder, conditions were created for a disaster. A plant directive that proper equipment will be provided and used for maintenance work and that all moving equipment must be shut down and locked out before work begins could have prevented this injury; thereby providing maximum protection through the proper implementation of the **Design and Engineering** safety sub-systems, *Safe Siting and Codes, Standards and Guidelines*.

Discussion
When Jack, a Maintenance man, came into work he was handed a work order by the maintenance supervisor. The work order was to switch a cold water line over to a hot water line. The hot water was needed for cleaning up on flexo 3. The water line was located above the rotary die cutter. The rotary die cutter had been previously scheduled to be down for the day for some preventive maintenance work.

Jack had previously left a hot water line with a "T" joint and a shut off valve above the rotary in preparation of disconnecting the cold water line and capping it off. However, Jack's supervisor chose not to use that particular line. He wanted to use a water line between the rotary and flexo 3.

In order for Jack to do his work safely, he needed a big ladder to reach above the water pipe. Since the water line was in the area above flexo 3, he would have to place the ladder where it would interfere with the operation of the machine by the machine's operator.

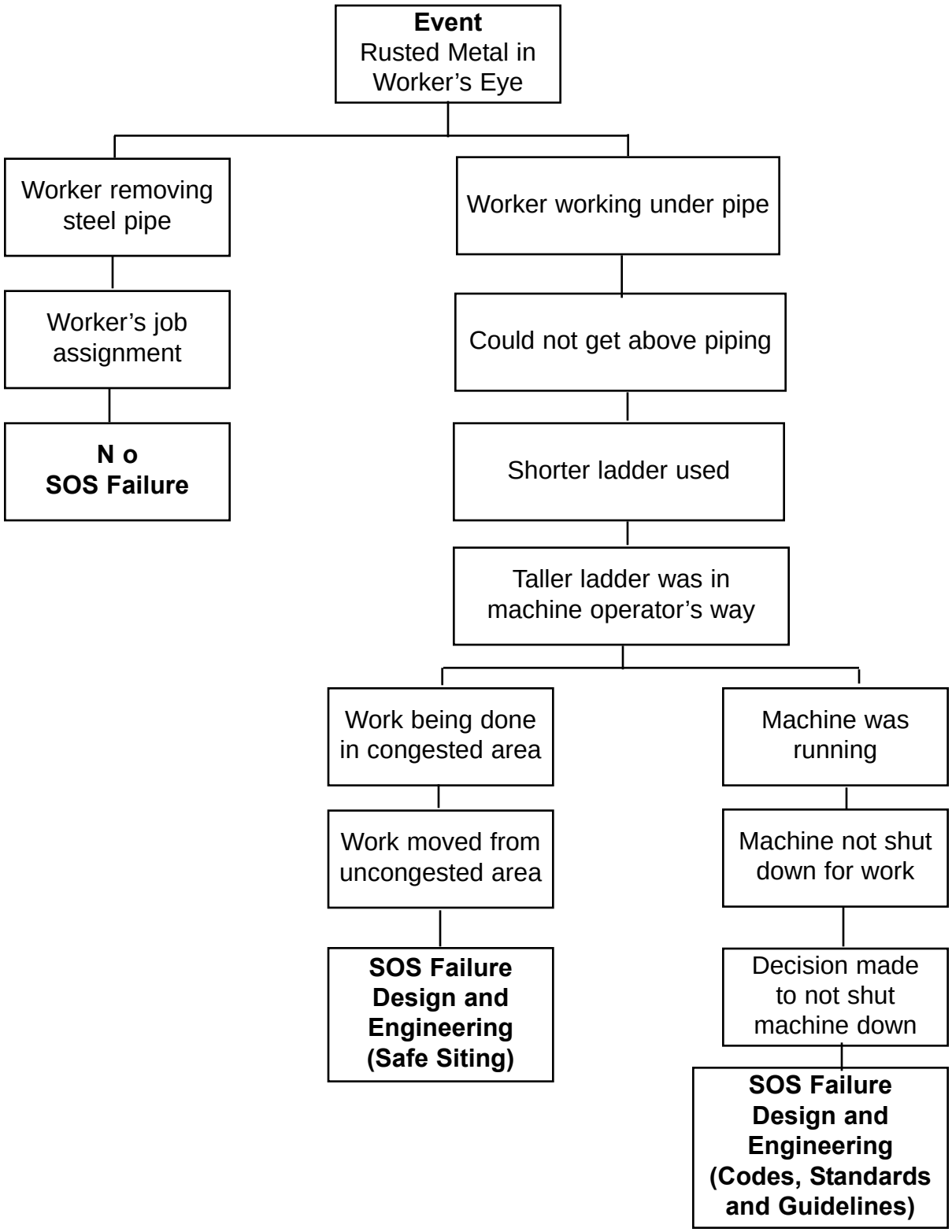
As Jack and flexo 3's operator discussed the situation, Zach, the TOP Rep showed up at the scene. Jack explained the problem to Zach. After hearing what was going on, Zach went to speak to the maintenance and finishing supervisors about the situation. They all felt that it would be unsafe to use the big ladder while flexo 3 was running. Both Zach and Jack felt that either flexo 3 should be shut down or the job be rescheduled for another time. The finishing supervisor did not agree with shutting down flexo 3, stating he would not shut it down.

Jack's supervisor decided to get a smaller ladder for Jack to use. The supervisor wanted the job completed while the rotary was on preventive maintenance.

The ladder was actually too short and would have forced Jack to stand on the top rung to work above the pipe. Although this relieved some of the congestion problem, Jack stated he did not feel safe standing on the top rung. Zach told Jack that if he did not feel safe, he did not have to complete the job at that time. Feeling pressured because the others were upset, Jack decided to complete the job to reduce any further problems. Jack positioned himself in a safe position on the ladder; however, this put him directly under the pipe. As a result of working under the pipe, when the flanges were broken, a sliver of rusted metal fell from inside the pipe into Jack's eye. Jack had to go to a doctor to have it removed.

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. Proper equipment will be provided and used for the performance of maintenance work.
2. Shut down and lock and tag out must be completed before working on or around moving equipment.
3. Directive that all maintenance work will be performed in safe environment.

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. Proper equipment will be provided and used for the performance of maintenance work.	
	2. Shut down and lock and tag out must be completed before working on or around moving equipment.	
	3. Directive that all maintenance work will be performed in safe environment.	

EVALUATION

Lessons Learned: Rusted Metal in Worker's Eye

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** 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