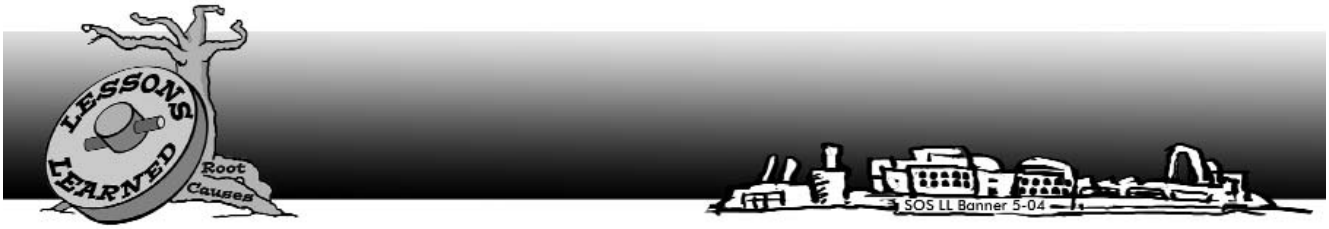

Worker's Leg Injured by Sheet Metal

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

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Lessons Learned

Volume 07, Issue 67

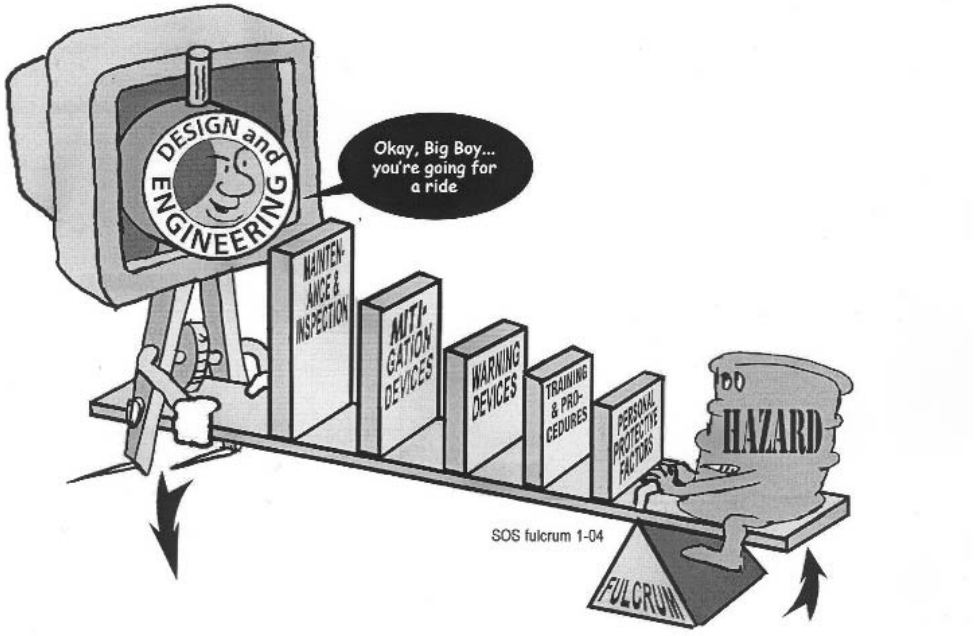
Background Information

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 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 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 subsystems 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: Worker's Leg Injured by Sheet Metal

Identifier: Volume 07, Issue 67

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Lessons Learned Statement:
A worker was struck by a piece of sheet metal resulting in an injury to his leg. This injury could have been avoided by implementing S*ystems of Safety*. Having the employee use more cribbing to center and stabilize the load would have eliminated the hazard. This would be applying a fix using the **Design and Engineering *Systems of Safety*** approach to accident prevention. A redesign of the gulper, allowing it to stand free, would enable worker to help with the sheet metal being cut. A **Design and Engineering *System of Safety*** fix of doing away with the gulper all together would eliminate the hazard.

Adherence to the Radiological work Permit's (RWP) minimum working distance would have maintained a safe exit route for the worker and is an example of the **Training and Procedures *Systems of Safety***, to further minimize and control hazard. Retraining all workers at the workplace on permit programs and reviewing the permit program in morning safety meetings would utilize *Systems of Safety*.

Implementing procedures for this process and training workers on the procedures would utilize more of the **Training and Procedures *Systems of Safety***, making the overall scope of the job safer.

Discussion:

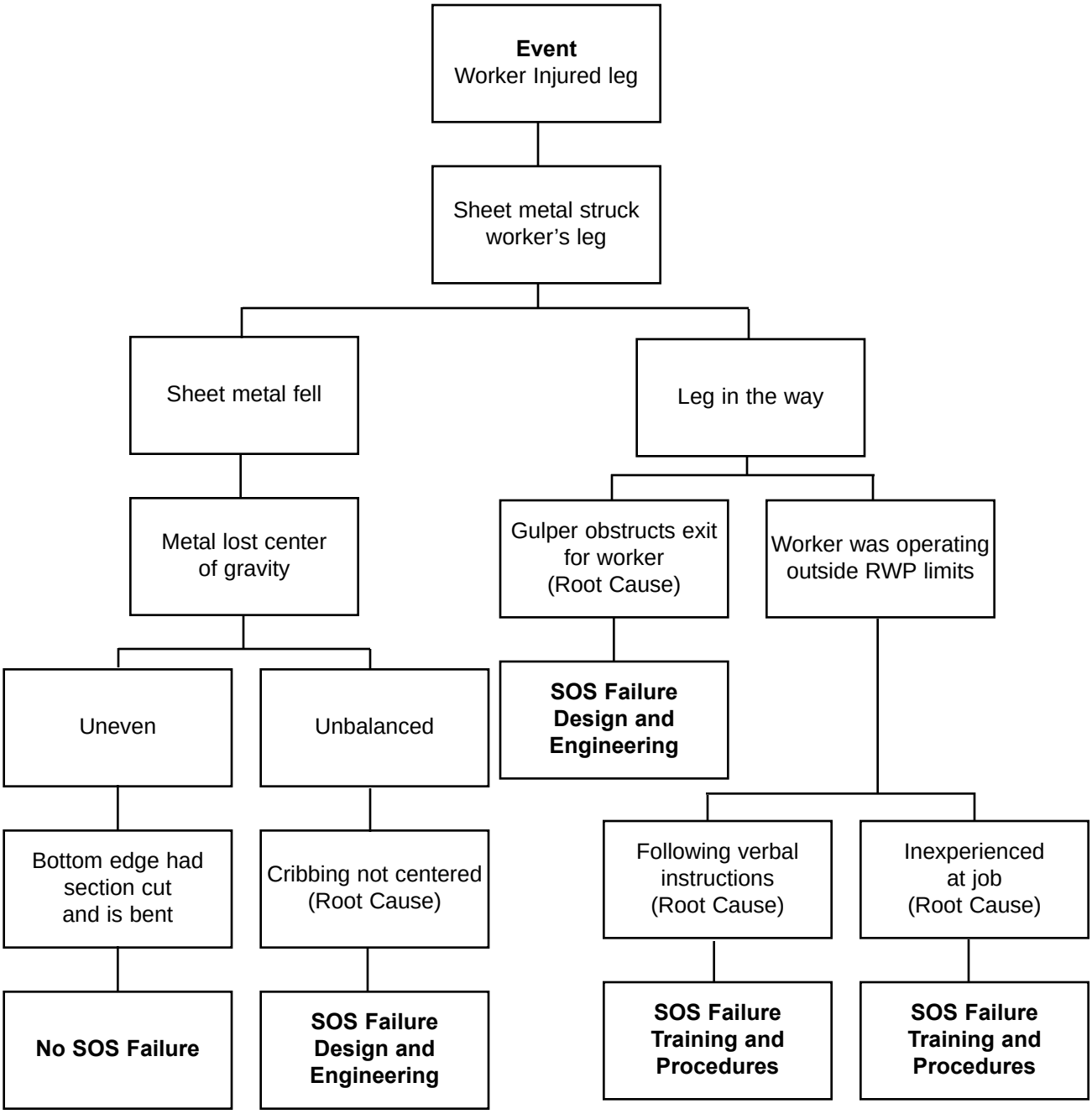
An employee was injured by a piece of sheet metal while operating a gulper. (A gulper is a piece of equipment similar to a vacuum cleaner that is used to pull contaminants out of the air while cutting metal parts). A piece of segmented metal fell, which is a usual condition. But as it fell, it made a second uncut sheet lose its center of gravity and fall outward, toward the employee. He tried to sidestep the sheet metal, (which weighs in excess of 400 lbs.); but behind him was laying a gulper tank and the hose, which impaired his ability to move out of the way of the sheet of metal. The operator was also wearing a respirator and welder goggles, which could have impaired his sight. The corner of the sheet metal struck him in the left inner thigh.

The investigation revealed several situations:

- The bottom of the segmented metal was bent with a piece cut out of the edge (a normal condition).
- The cribbing was located close to the cut; was the only cribbing used in this case; and was not centered.
- Cribbing was not initially used to center objects but for the issue of helping to control slag as the cut is made and to prevent burns.
- Cribbing, however, can be used to help center a load. On this day, cribbing was not centered.
- This particular job is shared by many different employees; some have more experience at this job than others.
- There was also a question and confusion as to the distance that the operator should be from the cutting. The verbal directive was to follow the cut; however, the RWP states to maintain a minimum three-foot distance between work being performed and the gulper.

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.



Recommendations:

1. Workers use more cribbing to stable and center the load.
2. All workers need more training on RWP's and implementing them on the job. RWPs should be reviewed each morning in the morning safety meeting.
3. Mount the gulper and hose on a stand allowing worker to help with the sheet metal being cut or possibly doing away with gulper altogether.
4. Implement procedures for this type of job.
5. Train workers on the procedures.

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.)

Trainer's Lessons Learned Success Inventory

Following a Lessons Learned (LL) session, **the trainer who led the LL** should complete this form. This information will: 1) Help you reflect on the successes and challenges of the session; 2) Help USW with new curriculum development; and 3) Help USW as a whole better understand how the LL Program is supporting their workers.

By reviewing LL from different sites or from other areas of their workplaces, workers are able to analyze the information and apply these lessons to their own workplaces in order to make their workplaces healthier and safer.

1. Site name (if there are participants from ore than one site, please list all).

_____

2. Date of LL training _____
3. LL number used in today's Training_____
4. Your name_____
5. **Summary of Education Question 1:** Please summarize participants' examples of ways to apply this LL Statement to their workplace.

6. **Summary of Education Question 2:** Please summarize which actions or recommendations participants discussed pursuing at their workplace(s).

Thank you for completing this form.

EVALUATION

Lessons Learned: Worker's Leg Injured by Sheet Metal

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:

1. This page;
2. The Education Exercise (page 8);
3. The Trainer's LL Success Inventory form (pages 9 and 10);
4. The evaluation for each participant (page 11); and
5. The Sign-in sheet (page 13) 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

TONY MAZZOCCHI CENTER
FOR HEALTH, SAFETY AND ENVIRONMENTAL EDUCATION
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Name of Class_____ Date of Class_____

Instructors: _____

Please Check One* H	M	Print Name	Signature

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