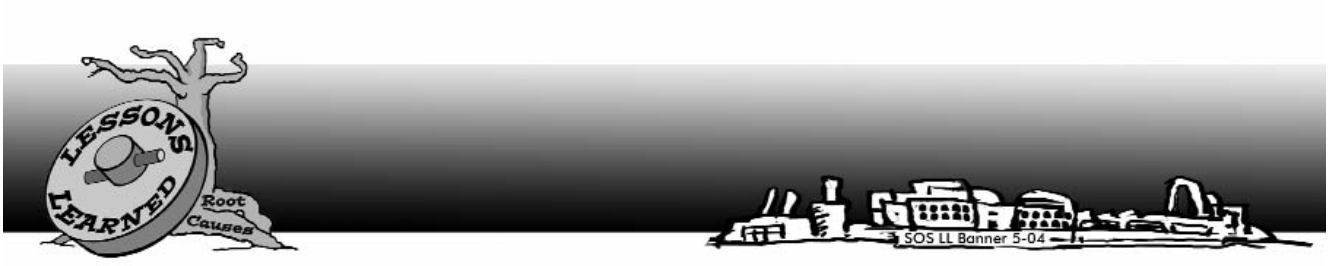

Forklift Damages Trailer Floor

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 08, Issue 49

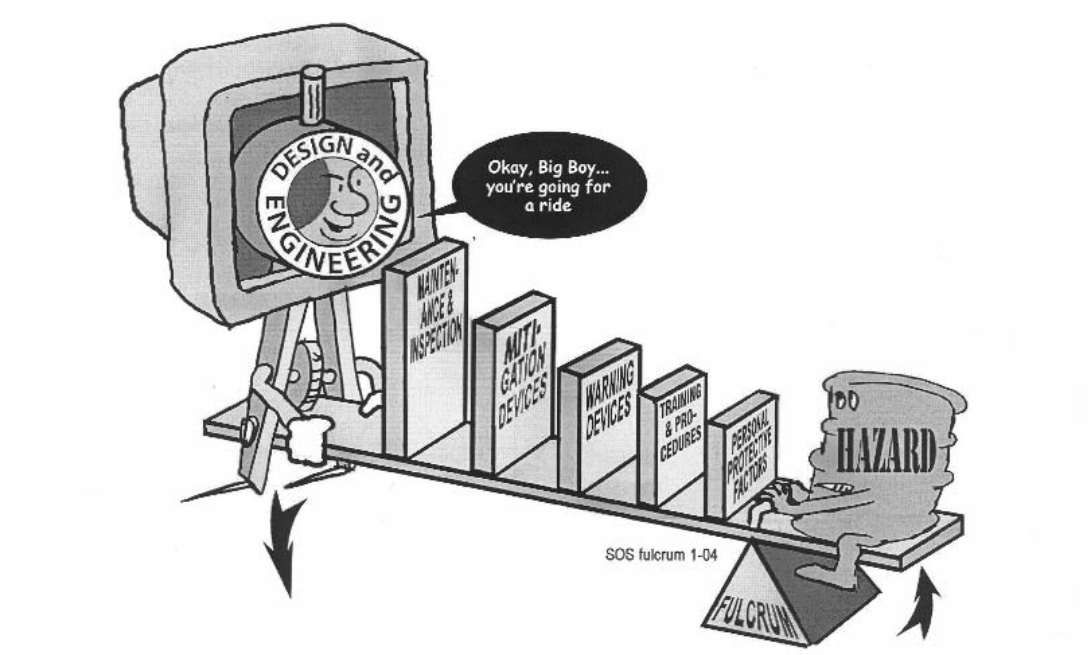
Background Information

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 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.

Revised October 2006

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Title: Forklift Damages Trailer Floor

Identifier: Volume 08, Issue 49

Date Issued: December 28, 2008

Lessons Learned Statement:
Without a comprehensive maintenance and inspection program for equipment used onsite, workers were put at risk.

A **Maintenance and Inspection** ***System of Safety*** failure was identified in the loss of mechanical integrity in the trailer being used in the process. Although the designed capacity of the trailer was not exceeded in this case, the failure to thoroughly inspect the trailer and localized corrosion from an unknown source caused this incident.

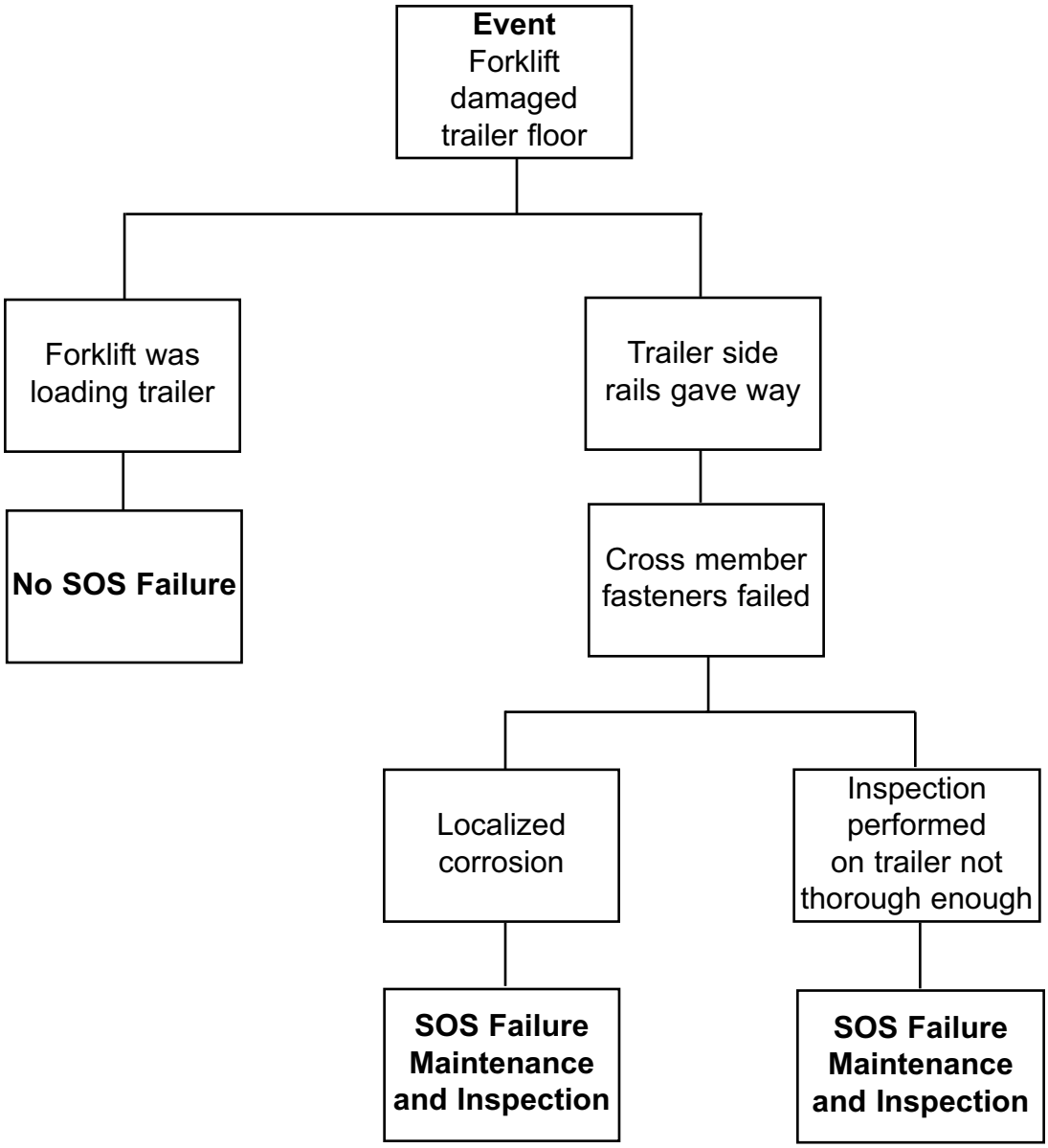
Discussion:
The facility received a 48-foot van trailer with a load rating of 54,000 pounds for the purpose of loading four containers for offsite shipment. Vehicle inspection forms were completed by the Transportation personnel, including verification of current tractor/trailer inspection performed six months before loading started.

While loading the first container onto the trailer with a 12,000 pound capacity, battery-powered forklift, the floor cracked in the trailer and gave way, causing the front left forklift tire to partially extend through the flooring. The operator heard the cracking noise and felt the front tire move downward. The operator immediately stopped the forklift and backed the forklift and load out of the trailer. The operator felt this was the safest exit path from the van trailer. Loading activities were paused and notifications were made to the Project and Facility Managers. Visual inspection of the underside of the trailer revealed that three joints connecting steel cross members to the aluminum trailer side rails failed. Each cross member is held to the frame with four aluminum rivets. Aluminum rivets were the primary type of fastener observed in use on the trailer. Of the 12 fasteners that should have been in place to hold the three cross members, six were missing or had pulled completely through the cross members' end clips. Two rivets had obviously sheared off. All aluminum rivets in the vicinity showed signs of significant localized corrosion at the point where the two dissimilar metals (aluminum and carbon steel) are in contact. The source of the corrosion could not be determined. Although there were no personnel injuries as a result of this incident, this had the potential to cause great bodily harm. When evaluating equipment for use in transportation, all conditions under which the equipment will be utilized should be assessed to ensure all hazardous conditions are identified prior to performing the work activity.

As a DOE contractor, LLP utilizes carriers who have successfully been evaluated under the DOE Motor Carrier Evaluation Program. The expectation is that equipment will be in good condition and have no structural damage. The investigation conducted as a result of this incident revealed that the load, including the weight of the forklift, was within the rated capacity of the van trailer. The trucking company that provided the trailer confirmed the load rating on the trailer. Engineering calculations confirmed the load rating was not exceeded.

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. Although floor capacity was not exceeded, a flatbed trailer rather than a van trailer, would have been a more appropriate conveyance to use given the greater structural capacity and ease of loading heavier boxes onto a flatbed trailer. Evaluating equipment for use in transportation, including specific load configurations and jobsite accessibility, enhance the safety of loading operations.

2. The facility issued a letter of noncompliance to the trucking company restricting the dispatch of van trailer equipment to the facility.

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 more 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.

Please continue on reverse side.

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

Thank you for completing this form.

EVALUATION

Lessons Learned: Forklift Damages Trailer Floor

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:

If you are a TOP Site (excluding DOE TOP Sites)	**Send to: Steve Cable 2915 Gradient Drive St. Louis, MO 63125**
All other sites (including DOE TOP Sites)	**Send to: Doug Stephens United Steelworkers 3340 Perimeter Hill Drive Nashville, TN 37211**

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

Sign-in Sheet

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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