

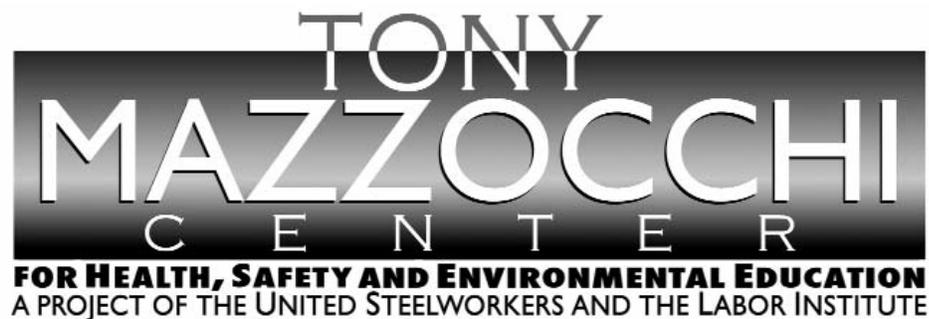


Fan Shroud Falls from Building

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.



This material was produced by the Labor Institute and the United Steelworkers International Union under grant number SH-17045-08-60-F-42 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 products or organizations imply endorsement by the U. S. Government.

Lessons Learned

Volume 09, Issue 08

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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.



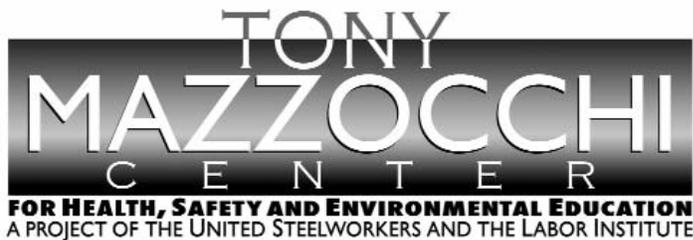
Major Safety System	Design & Engineering	Maintenance & Inspection	Mitigation Devices	Warning Devices	Training & Procedures	Personal Protective Factors
Level of Prevention	Highest—the first line of defense		Middle—the second line of defense			Lowest—the last line of defense
Effectiveness	Most Effective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

Revised October 2006



Title: Fan Shroud Falls from Building

Identifier: Volume 09, Issue 8

Date Issued: July 25, 2009

Lessons Learned Statement:

The failure of a means to secure loose items left on the roof after a maintenance evolution and the unpredictability of strong winds, led to vehicle damage and the potential to injure workers from falling debris. *Systems of Safety* are utilized to provide prevention for this type of incident.

The protection provided by a well-defined work plan that addresses hazards before, during and after the job is completed, is applying the **Design and Engineering System of Safety** approach. The practice of leaving loose parts on the roof without means to secure them eliminates the protection afforded by this *System of Safety*.

Despite the knowledge and the difficulty in scheduling and coordinating different crafts and departments to initiate a coordinated move to remove loose parts from the roof, there was no action taken within the *Work Organization and Scheduling Subsystems* of the **Design and Engineering System of Safety** to address the problem. No review was made within the **Design and Engineering System of Safety** to find a better way to coordinate the work.

Pre-job briefings should be scheduled with all crafts before any work is started. Stressing the importance that all lightweight and loose items be secured before leaving the job site is applying a fix in the **Training and Procedures System of Safety**; therefore ensuring this incident does not happen again and workers and equipment are not put at unnecessary risk.

Discussion:

A ventilation fan shroud had been blown off of a building during a recent storm. The fan shroud struck a service truck parked on the north side of the facility.

Although the truck only sustained a minor dent and some minor scratches on the hood, the incident was considered a near-miss because of the potential for injury due to the falling debris.

The fans are located in a contamination-control zone located on top of the building. The Radiological Work Permit requires special Personal Protective Equipment and a Health Physics Survey on items removed from the area.

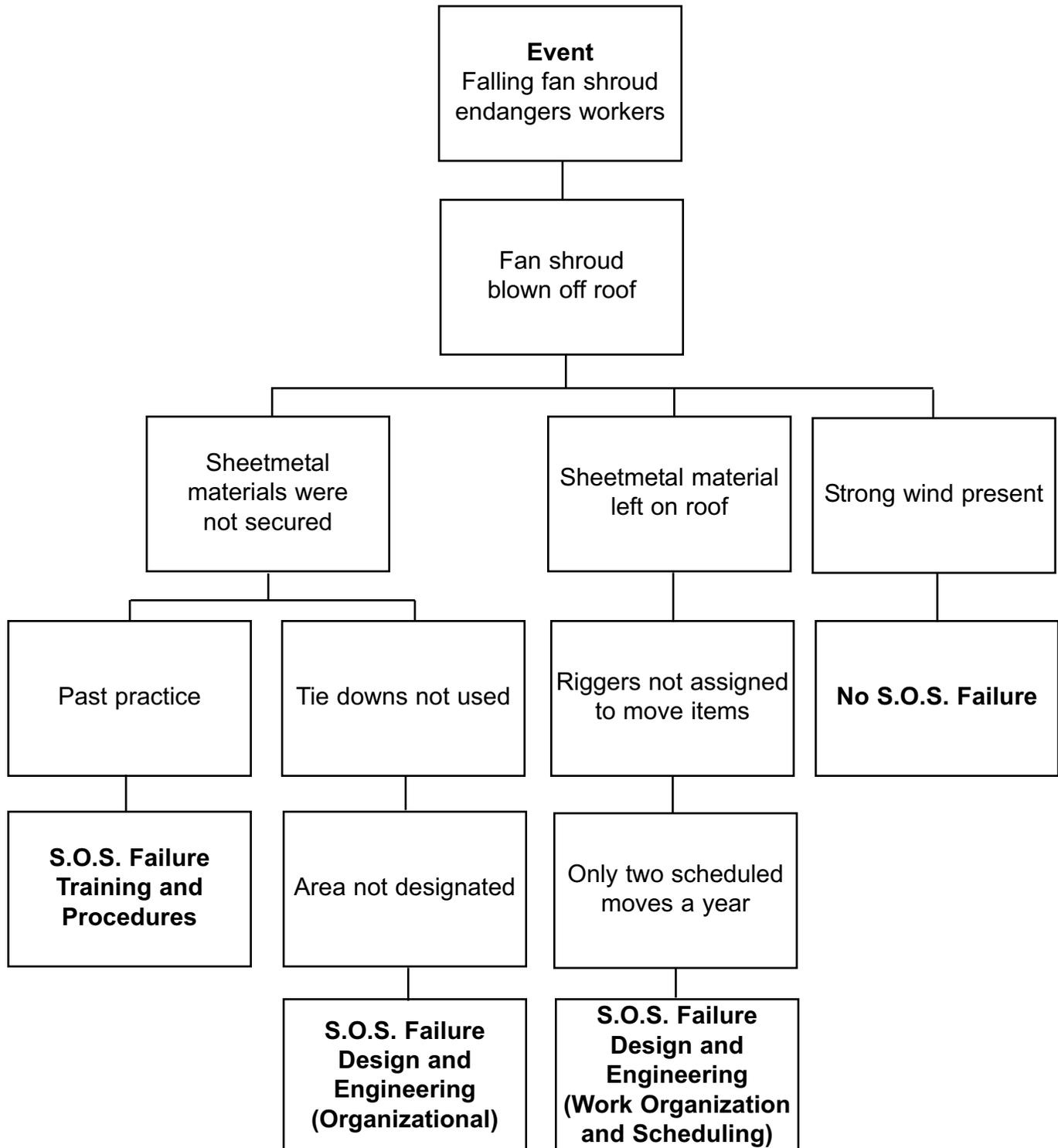
The ventilation fans are in continuous operation and therefore are repaired or replaced often. Many of the items removed from the fans are often large or bulky and could cause a slip, trip or fall hazard if hand-carried down.

A coordinated move is set up a couple of times a year. During this move, all items (fans, motors and other miscellaneous parts that have accumulated) are removed and put into B-25 boxes (a receptacle for disposing of contaminated waste). Riggers lift the box up to the side of the building and workers put the items in the box. Health physics personnel are present to monitor items put into the box.

There is no area designated where the lighter parts or items can be tied down or secured until the coordinated move.

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. Set up and use some type of cage (kennel-type with a gate to allow easy access) to house the smaller and lighter items to keep them secure until the coordinated move.
2. Put the roof area on the monthly walkdown program (Management by Walking Around). This will aid in complying with Work Control Process procedures.
3. Whenever work is to be done on the roof, provide pre-job briefing to all the crafts involved on the importance of securing all small, light-weight items in the cage to prevent them from being blown off by the wind.
4. Building and Maintenance management should review their procedures to identify any special needs on performing maintenance work on the roof.
5. Have Engineering check on a netting to hold down loose items.
6. Have Senior Management investigate ways to improve work control to better coordinate groups.

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: Fan Shroud Falls from Building

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:

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:

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

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

SIGN-IN SHEET



(Please print clearly.)

Class Title: _____ **Class Completion Date:** _____

Location (City, State)/Facility: _____

Grant Program: _____ **Dist. & LU #:** _____

Instructors: 1) _____ **2)** _____

3) _____ **4)** _____ **5)** _____

Name (Print first and last.)

Check one:

		Hourly	Management
1			
2			
3			
4			
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