

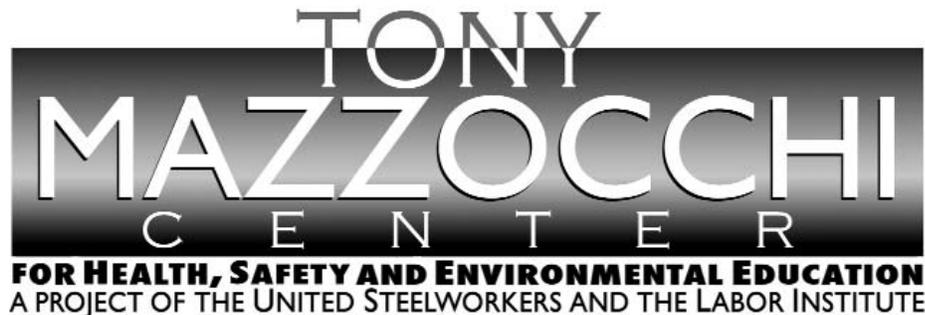
# Bucket That Holds Chain for Hoist Lift Falls

## **Purpose**

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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 4**

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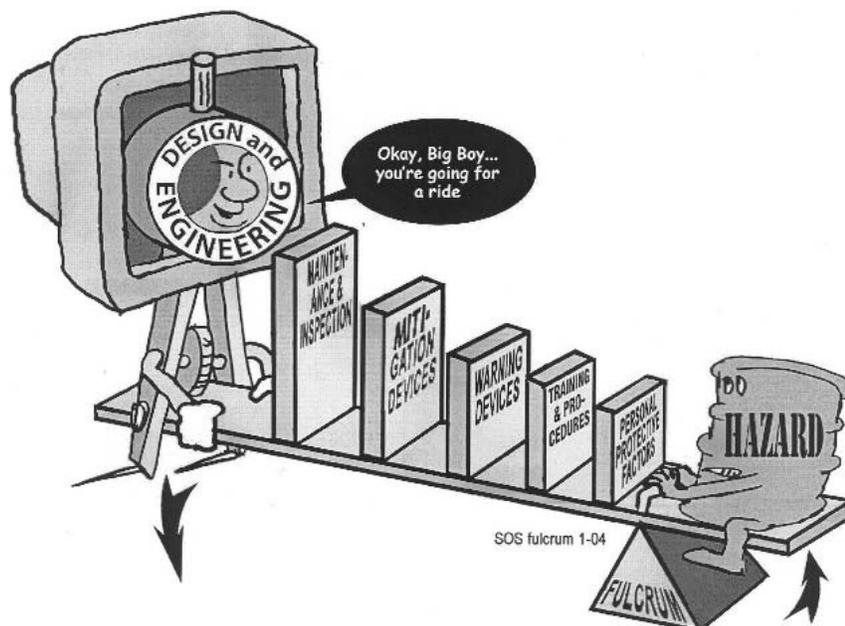
## Background Information

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.

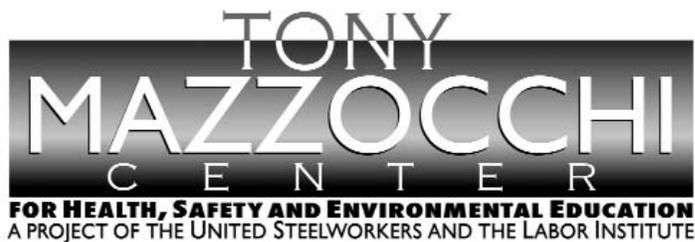
**Systems Are Not Created Equal: Not equal in protection and not equal in prevention.**

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.
<b>Examples of Safety Sub-Systems*</b>	<b>Technical</b> Design and Engineering of Equipment, Processes and Software	Inspection and Testing	Enclosures, Barriers and Containment	Monitors	Operating Manuals and Procedures	Personal Decision Making and Actions <sub>HF</sub>
	Management of Change (MOC)	Maintenance	Relief and Check Valves	Process Alarms	Process Safety Information	Personal Protective Equipment (PPE) and Devices <sub>HF</sub>
	Chemical Selection and Substitution	Quality Control	Shutdowns & Isolation Devices	Facility Alarms	Process, Job and Other Types of Hazard Assessment and Analysis	Stop Work Authority
	Safe Siting	Turnarounds and Overhauls	Fire and Chemical Suppression Devices	Community Alarms	Permit Programs	
	Work Environment <sub>HF</sub>	Mechanical Integrity		Emergency Notification Systems	Emergency Preparedness and Response	
	<b>Organizational</b> Staffing <sub>HF</sub>				Training	
	Skills and Qualifications <sub>HF</sub>				Information Resources	
	Management of Personnel Change (MOPC)				Communications	
	Workload				Investigations and Lessons Learned	
	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:** Bucket That Holds Chain for Hoist Lift Falls

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### Lessons Learned Statement

Although we can have **Mitigation Devices** to hold back a tragedy, when “the worst that can happen” does happen, we can only truly eliminate a hazard in the **Design and Engineering System of Safety**.

When we apply *Systems of Safety*, we view the hazard with an eye toward using **Design and Engineering** to apply a real fix. In this case where a piece of equipment, the bucket holding the excess chain of a hoist, was of such an inappropriate size that normal operation forced the constant bending of the tab securing the bucket, it is necessary to redesign the equipment to remove the hazard presented by a broken tab.

A safety chain must be attached to the bucket to **Mitigate** the effect if the chain bucket were to fall again.

### Discussion

A worker at WTH Industries was using a hoist to move a bin to fill a hopper with product. While the bin was moving, the bucket that holds the hoist chain fell off and fell into the hopper, narrowly missing another worker.

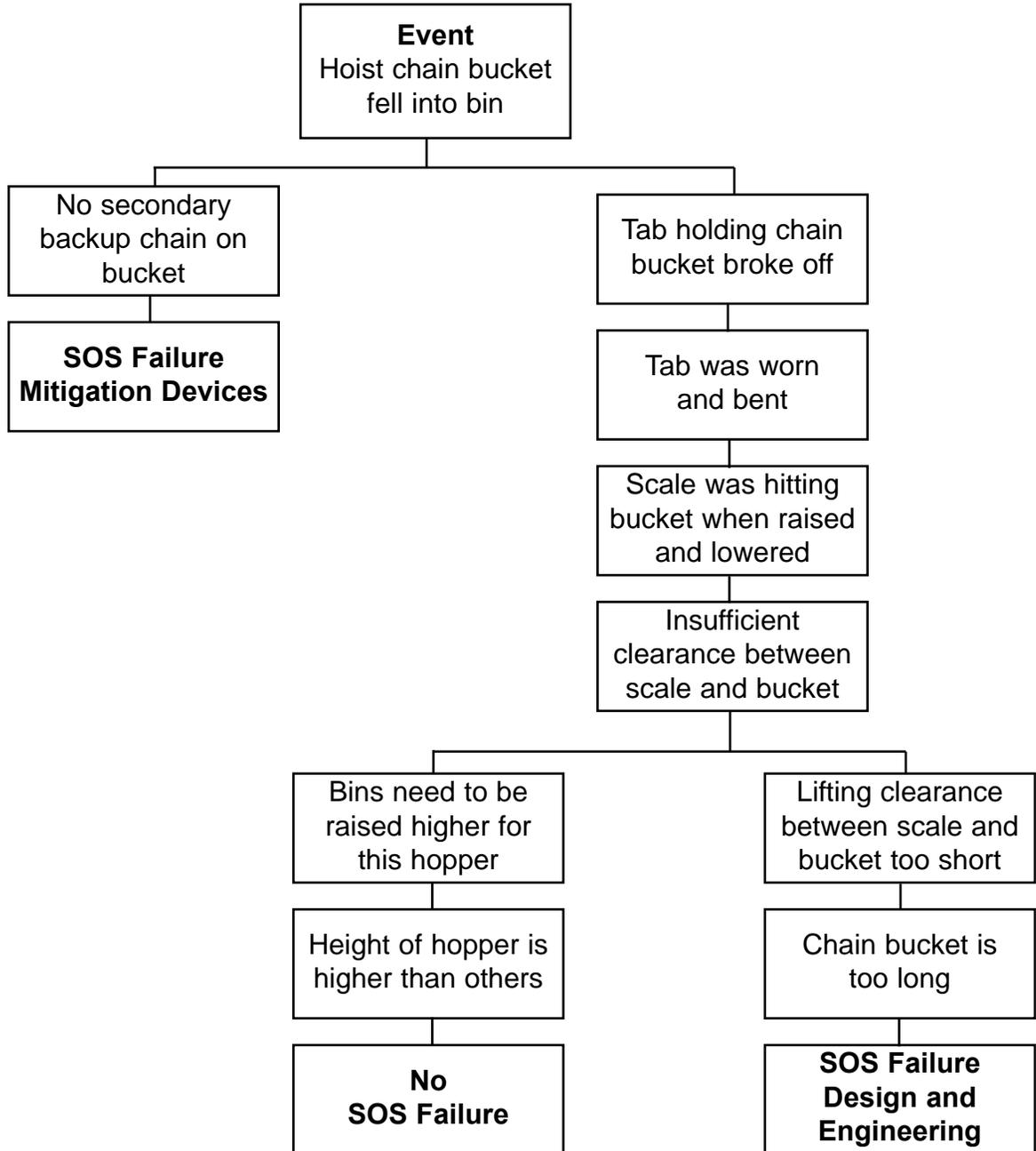
The tab that holds the chain bucket to the hoist broke off. It appeared that the tab had been bent back and forth several times until it broke off.

In the investigation it was discovered that there was not enough clearance between the bucket and the scale that had to be raised and lowered to fill hoppers with product. Every time the bins and scale were raised and lowered, they moved the tab on the chain bucket back and forth by rubbing against it.

Some hoppers were higher than others so the bins had to be hoisted higher to fill hoppers. And the new scale is slightly larger than the old one. It was also noted that there was no safety chain to hold the bucket in place in case the tab broke off.

**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. Install a safety chain to hold hoist chain bucket in place in case of failure of the tab that holds bucket in place.
2. Shorten bucket that holds hoist chain to give more clearance.
3. Hoist has a chain height stopping point. It needs to be raised. Although this did not contribute to the failure of the tab, it may cause problems in the future if any new hoppers are higher than the ones in use.

**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.

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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. Install a safety chain to hold hoist chain bucket in place in case of failure of the tab that holds bucket in place.	
	2. Shorten bucket that holds hoist chain to give more clearance.	
	3. Hoist has a chain height stopping point. It needs to be raised. Although this did not contribute to the failure of the tab, it may cause problems in the future if any new hoppers are higher than the ones in use.	

# EVALUATION

## Lessons Learned: Bucket That Holds Chain for Hoist Lift Falls

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?

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**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.