

# Worker Fatally Injured by Being Caught Between Hydraulic Cylinder and Reel Section

## **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 46DO-HT11 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 product or organizations imply endorsement by the U. S. Government.

**Lessons Learned**

**Volume 06 Issue 9**

**© 2006 The Labor Institute**

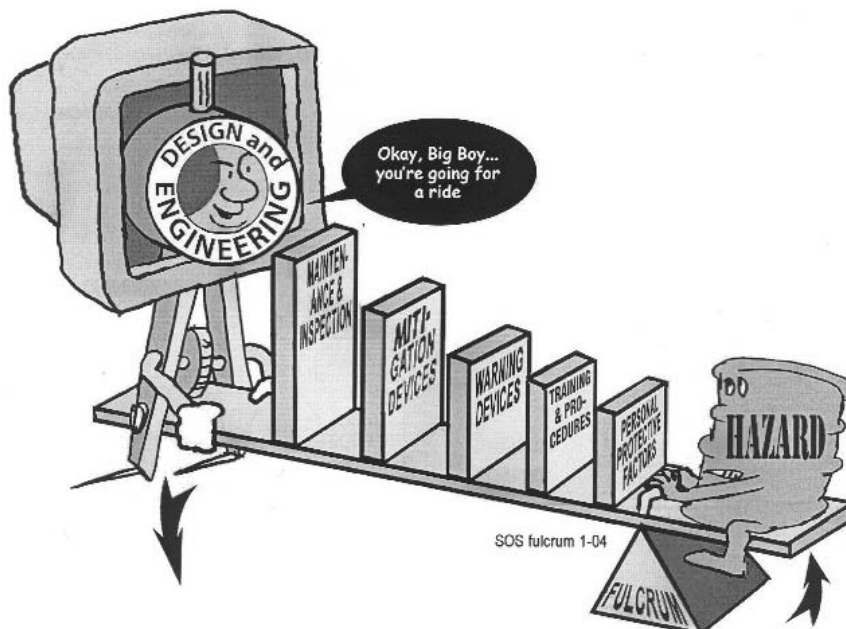
## **Background Information**

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.

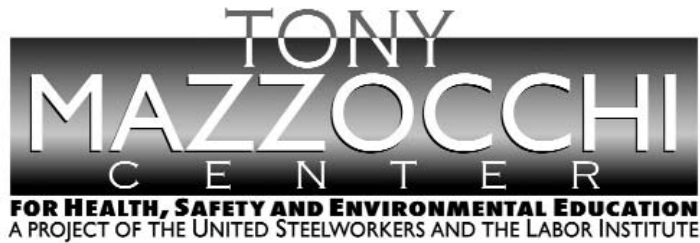
**Systems Are Not Created Equal: Not equal in protection and not equal in prevention.**

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.
Examples of Safety Sub-Systems*	<b>Technical</b> Design and Engineering of Equipment, Processes and Software  Management of Change (MOC)  Chemical Selection and Substitution  Safe Siting  Work Environment <sub>HF</sub>	Inspection and Testing  Maintenance  Quality Control  Turnarounds and Overhauls  Mechanical Integrity	Enclosures, Barriers and Containment  Relief and Check Valves  Shutdowns & Isolation Devices  Fire and Chemical Suppression Devices	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  Information Resources  Communications  Investigations and Lessons Learned	Personal Decision Making and Actions <sub>HF</sub>  Personal Protective Equipment (PPE) and Devices <sub>HF</sub>  Stop Work Authority
	<b>Organizational</b> Staffing <sub>HF</sub>  Skills and Qualifications <sub>HF</sub>  Management of Personnel Change (MOPC)  Workload  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: Worker Fatally Injured by Being Caught Between Hydraulic  
Cylinder and Reel Section

Identifier: Volume 06 Issue 9

Date Issued: August 15, 2006

### Lessons Learned Statement

*Systems of Safety* are the key to protecting workers as they work close to moving equipment. The most effective systems must be in place. Safe work procedures must be developed before workers are expected to enter or work around machinery. A *Lockout/Tagout* policy, a sub-system of **Design and Engineering**, must be in place to ensure that the machinery is shut down and properly locked out before entering and any work being performed.

The hazard of rotating and moving equipment must be mitigated by having the rotating equipment guarded at all times. This **Mitigation** of the hazard in this instance would have saved a life.

Workers should never be put in the position of working on equipment for which they have not been adequately trained (**Training and Procedures**).

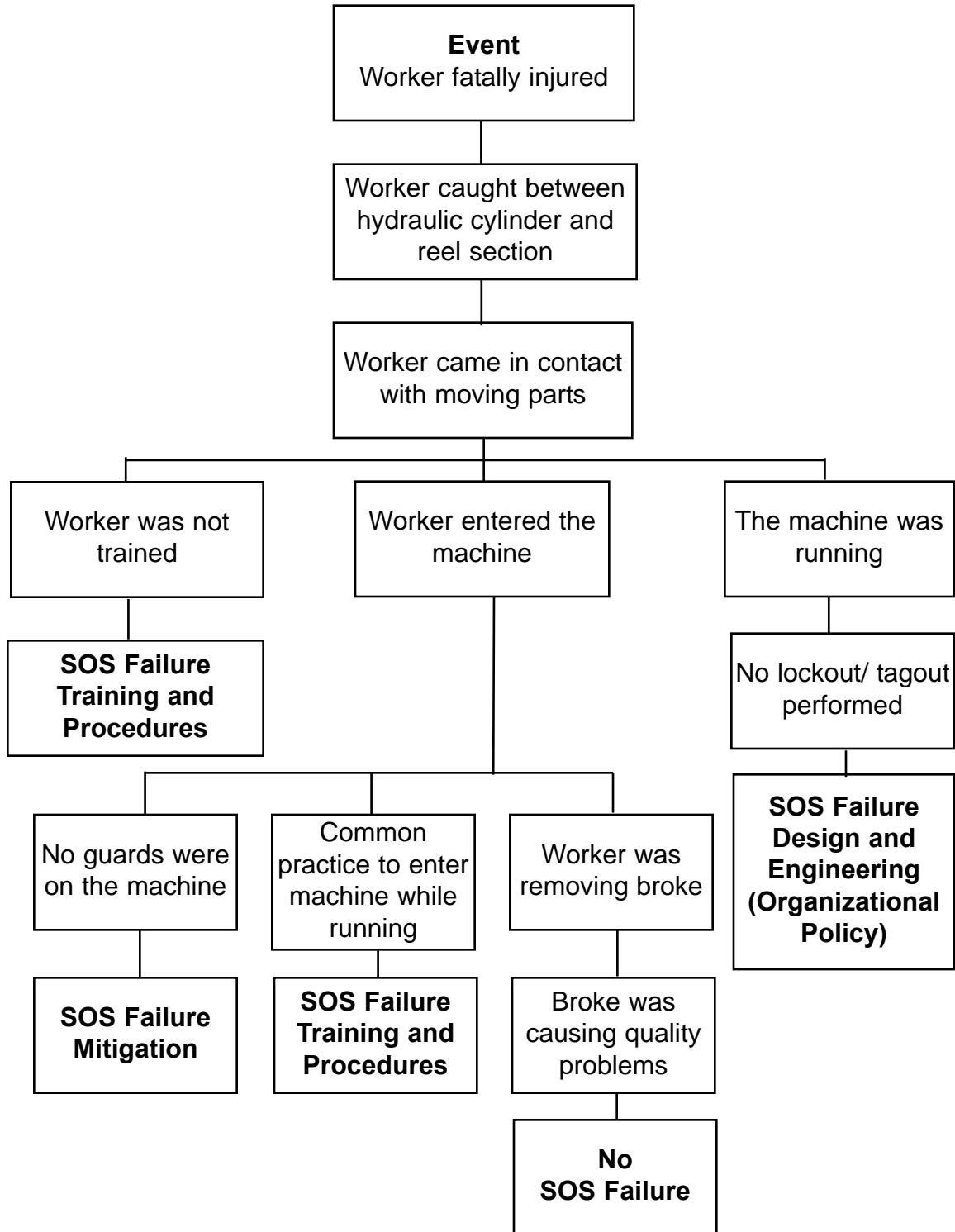
**Discussion**

Number one machine at XYZ paper mill had been experiencing on-going problems throughout first shift. Shortly after the beginning of second shift, Bill the operator, was having sheet quality problems when he discovered broke build-up in the reel section. Bill instructed Jim, the broke hustler, to go in and clean out the broke buildup. Although Jim had limited training, he had not been trained to remove broke while the machine was running. Jim entered the machine and began to remove the broke when he became caught between the hydraulic cylinder and the reel section. Bill was watching and immediately shut the machine down and called for help. Jim was taken to the hospital in critical condition and died the following day.

The subsequent investigation revealed that there was no written procedures for clean-up of broke in the reel section. Because of the need for quick access to the machine, no guards were in place and there was no written or enforced policy or procedures on quick access to the machine.

### 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. Adequately train all workers.
2. Place guarding to limit access to machinery.
3. Develop and implement lockout/tagout policy and procedure for entering machine.

### **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.

<b>Employer</b>	<b>Recommended Actions</b>	<b>You</b>
	1. Adequately train all workers.	
	2. Place guarding to limit access to machinery.	
	3. Develop and implement lockout/tagout policy and procedure for entering machine.	



# EVALUATION

## Lessons Learned: Worker Fatally Injured by Being Caught Between Hydraulic Cylinder and Reel Section

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.