

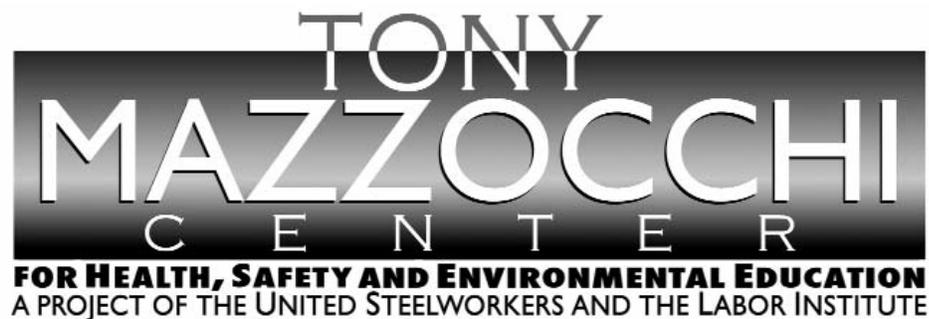


## Nip Point Causes Injury to Arm

### 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.



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### **Lessons Learned**

**Volume 09, Issue 30**

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## Background Information

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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
<b>EXAMPLES OF SAFETY SUB-SYSTEMS**</b>	<b>Technical</b>	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	
	<b>Organizational (must address a root cause)</b>				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.

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**Title:** Nip Point Causes Injury to Arm

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**Lessons Learned Statement:**

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The hazards involved in removing a dryer wrap (paper wrapped around a dryer canister after a sheet break) from a paper machine led to a worker's arm being pulled into a nip point. The root causes have been identified and *Systems of Safety* can prevent this type of injury from occurring.

Designing and fabricating a tool, **Mitigation Device**, that would enable workers to grab hold of the dryer wrap without getting close to nip points would avoid putting fingers and hands in harm's way.

In all cases, every effort should be made to guard nip points. Guarding nip points is a **Mitigation Devices System of Safety** fix.

The **Design and Engineering** of oil pipes protruding out at the base of the dryers is a *System of Safety* failure. Workers need to have a clear path along the dryers to be able to concentrate on their duties. Designing and relocating the oil pipes out of the workers' path will eliminate the potential tripping hazard.

**Discussion:**

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A dryer wrap occurred on the No. 3 paper machine (Fig. 32-1). A dryer wrap has to be removed before attempting to thread the sheet through the paper machine.

With the use of an air hose (Fig. 32-2) and a long pole (Fig. 32-3) as tools, workers cut the dryer wrap and removed it by guiding it into the top of the dryer (Fig. 32-4). The dryer wrap is then pulled up and around the dryer and simply falls into the pulper. The dryers are slowly jogged forward by one of the Machine Hands at a control panel (Fig. 32-1).

Once the dryer wrap was cut and in place, one of the Machine Hands took hold of the edge of the slab and started guiding it up into the nip point. The worker was wearing long welder's gloves because the paper can get very hot when it is being dried. Another Machine Hand was using a spade to help guide the slab up the dryer.

The worker was straddled over an oil pipe at the base of the dryers so that he could get close to the dryer wrap. Once ready, he then gave the signal to jog the dryers forward.

As the worker was guiding the dryer wrap into the nip point, he lost his footing. In the amount of time it took to re-establish his footing, his hand was being pulled into the nip point. His coworkers realized that the worker's arm was being pulled in and they shouted to the person at the control panel to stop the dryers. The worker immediately pressed the stop button, but the dryers continued to turn a little before stopping.

The injured worker immediately pulled hard on his arm to release it from the nip point. His arm could have been severely burned had he not been wearing heat-resistant gloves. He was immediately taken to the Medical Department and then transported to the hospital.



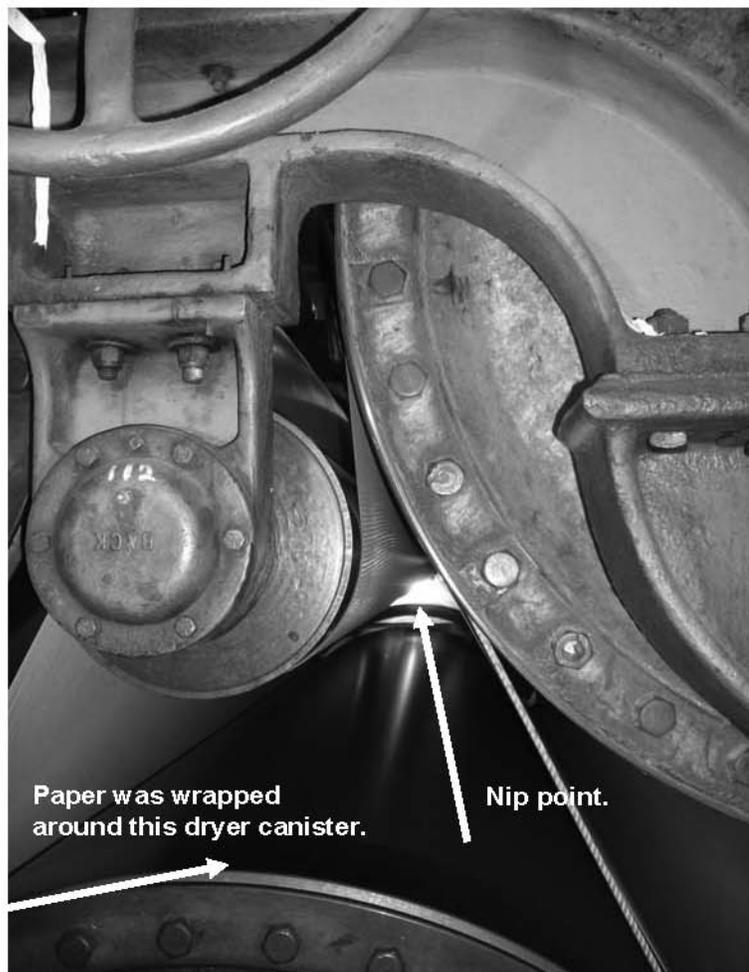
**Fig. 32-1. No. 3 paper machine.**



**Fig. 32-2. Air hose that was used to assist cutting dryer wrap.**



**Fig. 32-3. Long pole used to cut dryer wrap.**

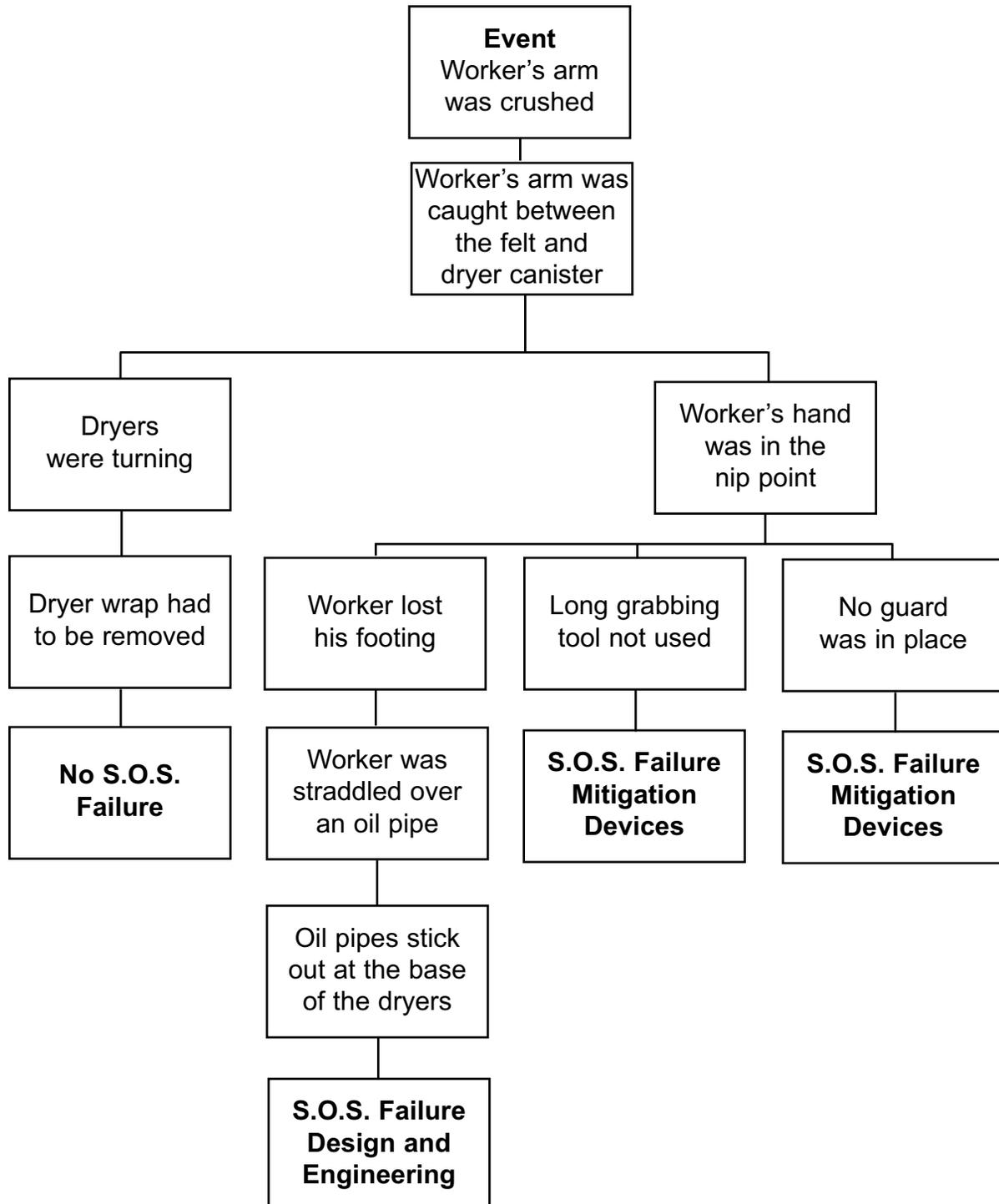


**Fig. 32-4. Nip point where injury occurred.**

## Analysis

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**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**

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1. Design oil return lines so that they don't protrude from the base of the dryers.
2. Install guarding at nip points.
3. Design and fabricate a tool to grab hold and guide dryer wraps so that workers don't have to get close to nip points.

## Education Exercise

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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. 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).

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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: Nip Point Causes Injury to Arm

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:

1. This page;
2. The Education Exercise (page 10);
3. The Trainer’s LL Success Inventory form (pages 11 and 12);
4. The evaluation for each participant (page 13); and
5. The Sign-in sheet (page 15) to:

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

		<b>Hourly</b>	<b>Management</b>
1			
2			
3			
4			
5			
6			
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