

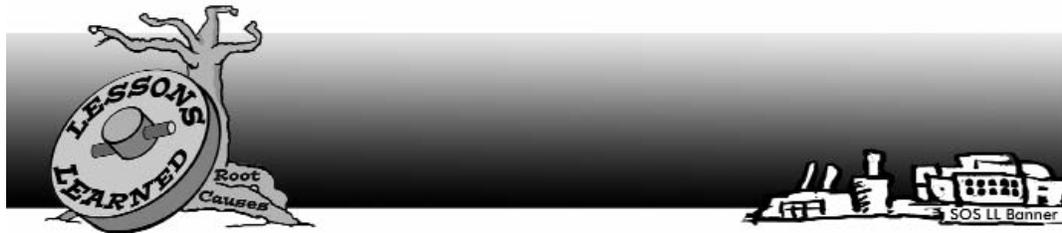


## Vehicle Almost Hit by Cylinder Hauler

### 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 08, Issue 30**

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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.



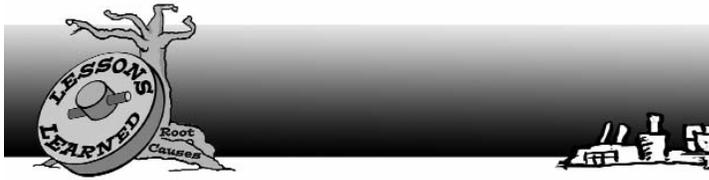
| Major Safety System                     | Design & Engineering  | Maintenance & Inspection  | Mitigation Devices                            | Warning Devices                | Training & Procedures  | Personal Protective Factors                  |
|---|---|---------------------------|---|--------------------------------|--|--|
| 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    |
| <b>EXAMPLES OF SAFETY SUB-SYSTEMS**</b> | <b>Technical</b>  | Inspection and Testing    | Enclosures, Barriers<br>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: Vehicle Almost Hit by Cylinder Hauler**

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**Lessons Learned Statement:**

The inability to see cylinder haulers moving cylinders onto the loading trailers poses a hazard for vehicular traffic in these areas. *Systems of Safety* are utilized to provide prevention from this type of incident. Triple-stacked cylinders and surrounding buildings make any movement hard to see. An action that consists of staging the trailer being loaded in such a manner as to make it obvious that cylinder movement is happening would allow a well-defined **Design and Engineering System of Safety** approach.

Additional precautions should be taken for vehicular traffic in the cylinder yards. The unmarked areas, without the use of cones or flagging, left roadways open to all traffic. Using consistent markings in these zones would provide good **Mitigation System of Safety** protection.

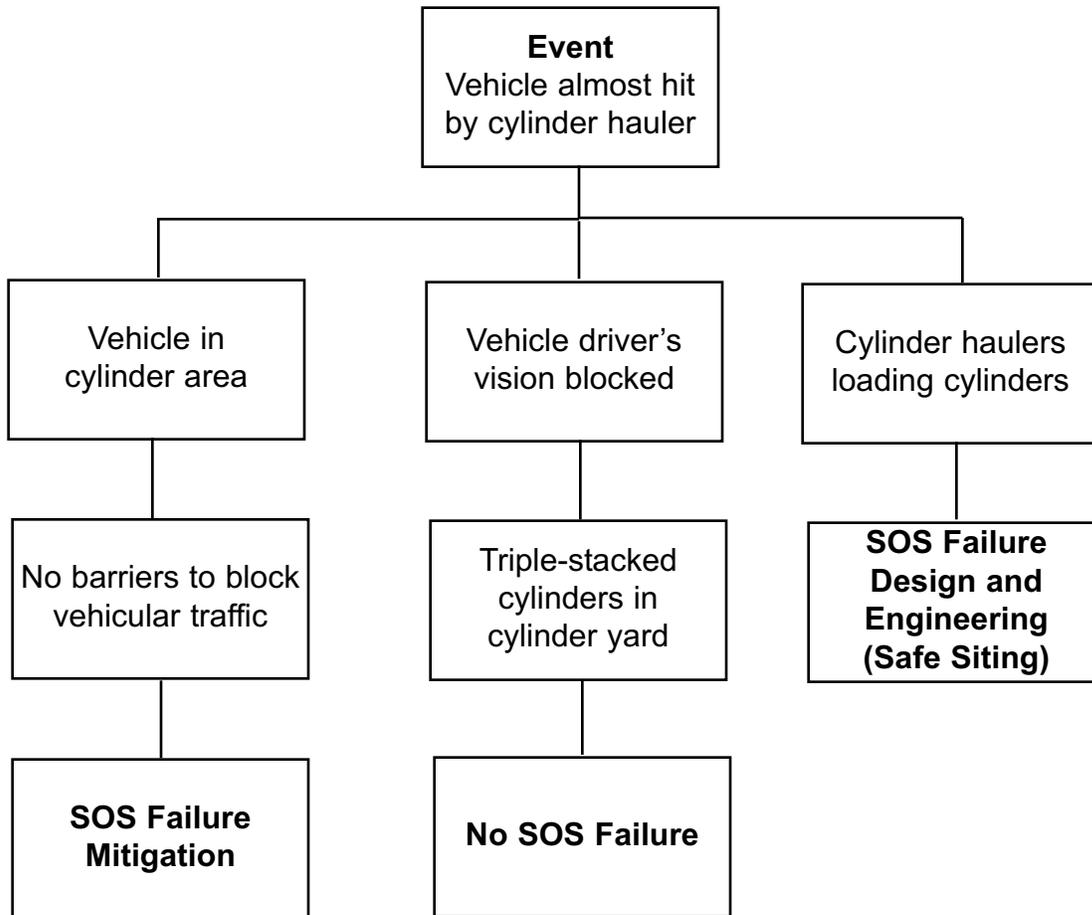
A good **Training and Procedures System of Safety** for all plant personnel should include avoiding these areas and watching for cones and flagging. Another good approach would be to alert all vehicular traffic to avoid all cylinder hauler movement. Visibility from these large haulers makes it impossible to see vehicles close to them.

**Discussion:**

An employee was driving a plant vehicle past a storage building and adjoining cylinder yard. A cylinder hauler exited between the rows of triple-stacked cylinders and was trying to cross the road in order to place the cylinder on a trailer located on the concrete pad. There was a blind spot for both vehicle operators because of the triple-stacked row of cylinders. This contributed to the near-miss. No vehicle damage or personnel injury occurred.

**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. Immediate corrective action to restage the trailers being loaded to a different location would make it obvious that cylinder movement is happening.
2. Require that cones or flagging be used in any blind spots and road crossings in loading zones.
3. Using additional precautions to eliminate all “road” traffic during cylinder movement would be a double contingency.
4. Training and procedures for plant traffic to avoid these areas, avoid all cylinder movement and have no entry into cylinder yards without previous approval, would prevent vehicular traffic from being in harm’s way.

### 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. 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: Vehicle Almost Hit by Cylinder Hauler

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?

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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 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:

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

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



