** Lifting Operations & Suspended Loads**

**– Related Advisories and PFEs**

The company has experienced several serious incidents related to suspended loads. Below is a summary of a few PFEs to discuss.

* **September 16, 2016 – Chino –** After removing a failed drive pulley on a conveyor, a new drive pulley (10 tons) was rigged and moved into place. Two forklifts were used during this process: one to lift the assembly and one to aid in pushing the assembly into place. When the new assembly was rigged and hoisted, it had to be rotated 90 degrees clockwise in order to allow passage between the drive house support beams. A come-along was used to control the stored energy created by the rotation of the rigging. When the assembly was in position, it became necessary to remove and reposition the come-along to allow it to lift vertically as well as horizontally. One of the employees moved to help adjust the rigging and positioned himself between the pulley and the drive house structural support beams. At the same time, a different employee gave a signal to the operator of the lifting forklift to raise the load. When the load weight was removed from the assisting forklift, the assembly rotated and pinned the employee between the pulley and the drive house structural supports.
* **May 10, 2016 – Sierrita -** a crush/convey employee, on the third floor, was using the auxiliary hook on the west overhead crane in the fine crush building to lower a used mantle liner to the bottom floor of the west work bay for disposal. As the mantle liner made contact with the floor on one side and the employee started to lower it all the way down, one side plate of the crane block came off and fell to the floor. The employee made the decision to lower the block some more and the remaining parts of the block fell to the floor. No employees were inside the work bay when the crane block fell. Post incident findings: Wire rope was observed to be damaged and twisted along with stretched and bent bolts in the block yoke. One snap ring was missing when parts were gathered.
* **May 24, 2013 – Morenci 125K Project -** A contractor employee received a serious contusion to the left forearm when the arm was caught between a structural steel cross brace and a steel beam. The cross brace was approximately 11 feet long and weighs approximately 930 lbs. and was attached to a crane. The injured employee and co-worker were in the process of connecting the brace when the injured employee reached under the load to secure a nut to the back of a bolt when the load unexpectedly came down onto the injured employees arm. Through the investigation it was discovered that the headache ball got caught in either the webbing or on top of the beam and when the tension was released from the connection point it caused the load to shift and drop ~2 feet striking the employees arm.
* **July 31, 2010 – EL Abra Sulfolix Project -** During the process of preparing high tension power lines (23 KV) for the Sulfolix project, employee was lifting a tool bucket (5kg) using a block and tackle when the knot with which it was tied came untied. The tool bucket fell from an approximate height of 8 meters, bouncing off a structure and hitting an employee on the ground. The employee was not in the direct line of fire but when the tool bucket hit part of the structure it was redirected and ‘grazed’ the employee on the ground.

It is common practice for construction and maintenance workers to work with, around and/or near suspended loads. There is a high risk of serious injury if a suspended load should fall during handling operations.

To prevent an injury, the following approaches, at a minimum, should be implemented:

* Make sure all are trained and, as needed, certified in the equipment they use.
* Do not carry loads over people. This is required to protect people from the hazard of a falling load due to inadvertent failure of a crane, hoist, forklift or other machinery; or operator error.
* A suspended load can be moved using a crane, forklift, hoist or tractor bucket. However, don't forget that forklift masts and forks, hoists or empty buckets are also considered a suspended load. When someone stands under any of these items they are at risk of injury.
* For overhead cranes and hoists, remote controls should be used to allow operation and movement of the machinery from a safe distance.
* Use specific hand signals for operators and employees and make sure that relevant employees understand what they mean.
* Make sure that the load rating for slings, chains or straps is adequate for the rating of the crane, forklift or bucket. If you do not know, it is not safe to use! Always limit the load to the lowest rated part of the lifting system. Assure all slings, hoist, crane and machinery components are inspected before use and in adherence with your preventive maintenance and manufacturer's requirements.
* Always place the forklift forks, equipment buckets, or slings on the ground when not in use, even when they are not carrying a load.
* Guard against "shock loading" (activating lifting controls abruptly by placing excessive forces on the lifting components) by taking up the slack in the load slowly. Apply power cautiously to prevent jerking at the beginning of the lift, and accelerate or decelerate slowly.
* Check for proper balance and that all items are clear of the path of travel. Never allow anyone to ride on a load.
* Keep all personnel clear while the load is being raised, moved, or lowered. Operators must watch the load at all times when it is in motion and, as needed, have a signal person.
* NEVER allow more than one person to control a lift or give signals to a crane or hoist operator except to warn of a hazardous situation.
* Never raise the load more than necessary, or leave the load suspended in the air.
* Never allow anyone to work under a suspended load.