CSI Country-Wide Case Study Safety Strategy Discussion

Construction Safety Investigator

CHUBB

Instructions:

Instructions. The objective of this tool is to provide field supervisors with information to proactively engage workers and discuss safety related concerns that they may encounter. Safety discussions typically pertain to all activities that workers will be involved in that may have the potential for safety related exposures. This case study is based on facts and materials developed and first published by the agency/organization identified in the section below entitled Source of Case Study Investigative Information.

Case Day:

June 2020

Accident Type:

Excavator Quick Coupler Bucket Accident — Operator Struck By

Relevant Laws, Rules, and Codes May Include:

29CFR 1926.20(a)(1); 29 CFR 1926.20(b)(2); 1926.20(f)(2); 1926.21.

California Division of Occupational Safety and Health — Title 8 regulations — Subchapter 7. General Industry Safety, Group 2. Safe Practices and Personal Protection. Article 7. Miscellaneous Safe Practices.

California Division of Occupational Safety and Health — Title 8 regulations - Subchapter 4. Construction Safety Orders. Article 4. §1504. Definitions. Article 6. Excavations -§1541. General Requirements.

Preventing Injuries When Working with Hydraulic Excavators and Backhoe Loaders (NIOSH Publication No. 2004-107)

Case:

A heavy equipment operator dies when he was struck by an excavator bucket that detached from a quick coupler

Accident Detail:

A heavy equipment operator died after being struck by an excavation bucket that became detached from the quick coupling device attached to the end of a boom. The operator worked for a general engineering contractor that specialized in water, sewer, and storm drain installation.

The job was located at a construction site for new homes. The victim was operating an excavator and digging trenches for the sewer system.
On the day of the incident, the victim arrived at the jobsite and began operating the excavator to dig trenches for a concrete pipe drain system. When the supervisor arrived at the work location, he observed the victim maneuver the excavator as he pulled out two buckets of dirt from the trench and dumped it to the side. After removing a few loads of dirt from the trench, the victim swung the excavator boom away from the trench, stopped the boom in an elevated position and exited the cab.

Per the investigation report, it is not known why the victim stopped the excavator boom and exited the cab. It is possible that the quick coupler locking mechanism did not fully engage and the victim was alerted by an alarm on the control panel. The victim may have exited the cab to check on the bucket.

The supervisor witnessed the victim approach the elevated bucket from underneath, and then the bucket detached, striking the victim.

Reconstructive Safety Evaluation:

- What are some of the possible causes of the accident being discussed?
- What actions could have been taken that might have prevented this accident from occurring?

Agency's Accident Scene Conclusion:

The CA/FACE investigator determined that:

- Never walk/traverse beneath an excavator boom swing radius or elevated load. In this incident, the victim exited the cab and walked underneath the elevated bucket
- The employer had a written injury and illness prevention program (IIPP) with all the required elements. Safety meetings were held weekly at the job site and were documented. Periodic training was also provided on topics directly relating to the work in progress such as confined space, shoring, and rigging. Excavator operator training was provided by experienced operators and was mostly on-the-job training (OJT).
- There was no written evidence that safety training included struck-by incidents, falling objects, or safety issues related to quick disconnects
- Employers should train hydraulic excavator operators in the proper procedures for engaging excavation attachments and incorporate these procedures into the company's safety and health program
- In this incident, the victim left the cab while the boom and bucket were still elevated
- In this incident, the victim had received OJT training on how to operate the excavator. There was no documentation that he received specific instruction on the operation of quick couplers. If the victim had received increased training on excavator operations, he may have had greater knowledge about how quick couplers function and the proper safety procedures to follow

Preventive Safety Measures Identified by the Investigating Agency Include:

- Maintain and inspect quick couplers to prevent malfunctions that may cause an unintended release of the excavator's bucket. Employers using hydraulic excavators with quick couplers can prevent release of attachments by:
    - Inspecting all quick couplers to determine if they are subject to unexpected release hazards
- Use newer models of quick couplers that have been specifically designed to prevent the unintended release of attachments
- Following the manufacturer's recommendations for maintenance and inspection of quick couplers
- Training workers in the proper use of quick couplers, including making visual inspections, proper procedures for engaging attachments, and methods for testing connections
- Requiring workers to use proper procedures for engaging excavator attachments and incorporating the procedures into the company's safety and health program
- Always lower the bucket to the ground before exiting the cab. In this incident, the victim left the cab while the boom and bucket were still elevated. If operators become aware that the bucket is not operating properly, they should always lower the bucket to the ground before inspecting. If the bucket had been lowered to the ground, it would not have disconnected and fallen on the victim

- All heavy equipment poses serious—even potentially fatal—risks to operators and others working in the vicinity. The relatively quick and far-reaching motion of the boom and bucket on an excavator is a particular source of danger. Manufacturers of excavators advise that no one should walk below an elevated load or work within the boom swing radius during operation. If the victim had not walked under the elevated load, he may not have been struck by the bucket

Additional Commentary on Preventive Safety Measures from Chubb Include:

- Complete a Job Safety Task Analysis that includes scope of work, anticipated exposures, and safety equipment and/or procedures needed to ensure the task is completed successfully and safely
- Conduct a pre-work meeting to review the JSTA and ensure workers understand the task to be completed, any safe working procedures and have the necessary safety equipment
- Employees should have adequate training on job-specific tasks. Proper training must extend to all workers, including day laborers. Language barriers and communication should also be considered during training

Attendance Roster

Source of Case Study Investigative Information:

This case study is based on facts and materials developed and first published by the following agencies during their investigation of the applicable incident:

- U.S. Centers for Disease Control and Prevention (CDC) and National Institute for Occupational Safety and Health Office of the Director (NIOSH)

The source material is otherwise available on the agency website for no charge. Chubb's use of information sourced from these or any other governmental agency does not constitute endorsement or recommendation of Chubb by these governmental agencies.

Source and Links to Relevant Material:

California State FACE Program Case Report 20CA001;
https://www.cdc.gov/niosh/face/stateface/ca/20ca001.html

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8/2023