

CSI Country Wide Case Study Safety Strategy Discussion

Construction Safety Investigator



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 should not be limited to the subject above and should pertain to the activities that workers will be involved in that may have the potential for safety related exposures.

Case Day:

June 2008

Accident Type:

Battery Charging Accident - Explosion

Relevant laws, rules and codes may include:

29CFR 1926.20(a)(1), 1926.20(b)(4), 1926.21(b), 1926.441, Battery Charger Mfr's Owners Manual, Battery Mfr's charging instructions

Case:

An equipment maintenance worker was seriously injured and the maintenance building he worked in was severely damaged, when charging vehicle equipment batteries exploded.

Accident Detail:

The worker was employed by a construction company as a mechanic and also responsible for maintaining the batteries for the trucks and heavy equipment. The mechanic would routinely switch out batteries needing maintenance and charging in the "Battery" room.

The battery room was a small room within the maintenance facility located near the rear of the building. The maintenance facility was an older steel building that had previously been renovated.

At the time of the incident, the maintenance worker was working on a piece of equipment near the battery room when the explosion occurred. The explosion caused serious burns and other injuries to the worker, blew a 375 square-foot hole in the roof of the building and caused walls to collapse, significantly damaging the facility.

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?

Accident Scene Conclusion:

The investigation revealed that when the maintenance facility was renovated, the room now used for battery charging was not originally designed for that purpose. Afterwards, when it was decided to use the room for battery charging, vents were cut to the outside but no fans or other safety devices were installed.

The maintenance worker, new to the organization, had not previously performed battery charging and was not familiar with safety precautions and proper charging procedures. Investigators determined by the rate that batteries generate Hydrogen when charging, they had been charging for a long period of time without adequate ventilation. A spark from an ignition source, likely the room light fixture or switch, ignited the gas causing the explosion.

Preventive Safety Measures Include:

- Workers required to perform battery charging are properly trained in the hazards of the work they are to perform, the personal protective equipment and safe work procedures necessary to perform their assigned tasks.
- Only properly trained persons are authorized to enter battery charging rooms, connect and disconnect the charging system and perform any other tasks related to battery room operations.
- Ensure the battery charging room has un-interrupted ventilation or the ventilation is interlocked with a Hydrogen alarm that activates the ventilation when Hydrogen levels reach a pre-determined level.
- Battery room/charging operations are routinely inspected and monitored with periodic inspection of the Hydrogen detection and alarm system.
- Only appropriate electrical lighting fixtures or other devices are installed or used in the battery charging area to prevent the collection and ignition of gasses. In addition, no work should take place, which can give off sparks or otherwise act as an ignition source.

Attendance Roster

Reference: This case is fictitious, and any resemblance to any persons, living or dead, is entirely coincidental. However, the type of accident described in this case summary happens all too often on construction sites.

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