# Production Employee Crushed To Death By Toppled Metal Coils at Massachusetts Steel Fabrication Facility

**Case #: 95-MA-007-01**

**Release Date: February 15, 1996**

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## SUMMARY

On February 28, 1995, a 25 year old male production employee was fatally injured when he was crushed beneath several coils of metal band stock at a Massachusetts steel fabrication facility. Identifying and tagging coils of 6 ¼" wide band stock at the time of the incident, the victim had his back turned to a stack of materials when they toppled onto him. The 8 foot high stack consisted of fourteen coils, eleven of which fell adjacent to the victim while three, weighing approximately 1,100 pounds each, struck the victim in the lower back inflicting catastrophic pelvic injuries. Co-workers immediately summoned emergency assistance, then removed the heavy coils from the conscious victim and tended to him until Emergency Medical Services arrived. The victim was soon transported to the regional hospital where he was officially pronounced dead approximately one and one-half hours following the incident. The MA FACE Program Director concluded that to prevent similar future occurrences, employers should:

- **ensure that forklift operators properly stack and secure materials to prevent the possibility of collapse.**
- **consider using racks for storage of materials**


## INTRODUCTION

On March 1, 1995, the MA FACE Program was notified by the US Department of Labor - OSHA office and by a Massachusetts medical examiner via the 24 hour hotline, that on February 28, 1995, a 25 year old male production employee was fatally injured when he was crushed beneath several coils of stock at a Massachusetts steel fabrication facility. An investigation was immediately initiated. On March 7, 1995, the MA FACE Program Field Investigator traveled to the incident site where the plant manager, a corporate management

trainee and the victim's co-workers were interviewed. The police report, death certificate,

corporate information, company job safety analysis worksheets, multiple photographs and OSHA information were obtained during the course of the investigation.

The employer was a steel fabricator and supplier of framing materials for the commercial construction industry and was in business approximately 40 years at the time of the incident. Company-wide, it employed more than 1000 persons, 32 of which were employed at the incident location. Of these, 22 were in the same job classification [SS1]as the victim. The company did not employ a designated safety officer, although it did have a safety and health committee which met weekly to develop, review and/or revise company job safety analysis procedures.

The victim was one of 22 unionized production employees at the incident site and was employed by the company for approximately one year and ten months at the time of his death. His training was primarily on the job.[SS2]

**INVESTIGATION**

On the afternoon of February 28, 1995, a freight car containing coils of metal band stock was being unloaded by forklift at the rear of a Massachusetts steel fabrication plant. The plant used the stock to fabricate steel framing products for use in the commercial construction industry. The stock was 6 ¼" wide and was rolled into coils of varying diameters. Each coil was banded and some coils were banded together in twos and threes. The coils were laid flat and blocks of wood of varying lengths were used between some of the coils to accommodate moving them by forklift. The stock was brought inside the building to be identified, tagged and stacked in storage.

A forktruck driver had assembled three stacks of coiled stock and had placed a three-coil banded bundle as the base of the next stack before being called to another part of the plant. Two 4" by 4" wood blocks were also banded into the bottom of this bundle. Using a forklift, the victim completed the stack, placing eleven more coils on top of those already placed.

At approximately 3:00 p.m., the victim was identifying the size and gauge of some stock and tagging each coil with the appropriate inventory slips and gauge tags. While the victim had his back to the above-described stack of fourteen coils, the stack toppled.[SS3] The top eleven of the fourteen coils fell. Eight of the fallen coils landed adjacent to the victim while three, weighing approximately 1,100 pounds each, struck the victim inflicting catastrophic pelvic injuries.[SS4]

Hearing the victim screaming for help, co-workers summoned police emergency medical services and used a forklift and chain to remove the three coils from the victim. The victim was soon transported to the local hospital where, he was officially pronounced dead approximately one and one-half hours following the incident.

The investigation revealed that the base of the toppled stack rocked on the two 4" x 4" wooden blocks. These blocks were placed too close together, and were not parallel. They were between 2 feet and 3 feet long, while the bottom coil was 60" (5 feet) across the face. The two coils on top of that were 42" across the face. All three coils and the two wood blocks were banded together as one unit. Each of the remaining eleven coils measured 6 ¼" high by 38" across. Wood blocks

were placed between some of these coils. [SS5]The height of the stack was approximately 8 feet. It appears that the wood blocks used in the base were poorly positioned and too short to support the width and height of the stack. Other stacks of coiled stock reviewed during the course of the investigation were similar in size and configuration. They were also prone to possible tipping.

The investigating police official also indicated that 45 minutes after the incident, there existed significant frost and ice build-up caused by condensation on the coils brought in from the freight car. The unstable nature of the stack and the ice/frost build up alone, or in tandem, were factors in the incident.

## CAUSE OF DEATH

The medical examiner listed the cause of death as crush injuries to the pelvis.

## RECOMMENDATIONS

**Recommendation #1: Employers should ensure that forklift operators properly stack and secure materials to prevent the possibility of collapse.**

**Discussion**: General industry employers engaged in the stacking or piling of stored materials must comply with the provisions of 29 CFR 1910.176(b). This standard requires that "materials stored in tiers be stacked, blocked, interlocked or limited in height that they are stable and secure against sliding and/or collapse." The 4x4 blocks used in the base of the stack were not long enough nor located far enough apart so that the coils could be stacked on them securely. The coils and wood blocks were also slippery due to condensation on them from being moved from the cold freight car to the warmer storage area. Given these conditions, the stack was too high.

The Job Safety Analysis (JSA) for this job instructed the forklift operators to "use stops and only stack to a safe level" and "put large coils on bottom of stack..." Operators were verbally instructed not to stack over 10 feet high. These instructions were followed. However, the forklift operators did not recognize that the length and location of the wood blocks would destabilize the stacks. Training the operators in the importance of this factor and assuring that proper length wood blocks are available may have prevented this incident.

**Recommendation #2: Employers should consider using racks for storage of materials.**

**Discussion:** As stated above, the Job Safety Analysis (JSA) instructed the forklift operators in the proper procedures for the task of stacking coils. Employers should consider expanding their safety practices to include re-engineering processes to eliminate the hazards presented by unstable stacks of stock. In this situation possible solutions would be to palletize the coils in smaller stacks and place them on racks or to stand the coils in vertical racks. These procedures may also make the coils more accessible to the forktrucks when stock is needed. Employers should analyze their particular storage situation and production needs to create the best all-around system.

## REFERENCES

Office of the Federal Register: Code of Federal Regulations, Labor 29 Part 1910.176(b)