MICHIGAN State FACE Program
Fatality Assessment & Control Evaluation

General Industry Fatality Summary

Janitor Dies after Being Pinned to Ground by Cardboard Bale

INCIDENT FACTS

REPORT #:
22MI074

REPORT DATE:
June 4, 2025

INCIDENT DATE:
August 5, 2022

WORKER:
59-year-old

INDUSTRY:
Janitorial Services

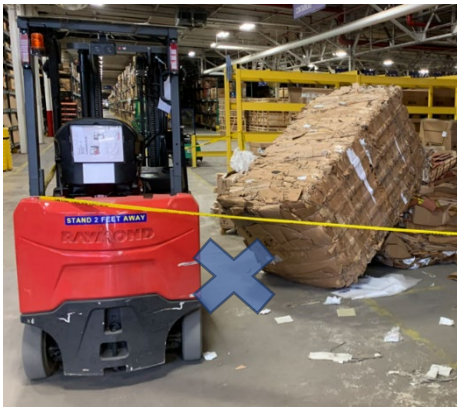
OCCUPATION:
Janitor

EVENT TYPE:
Struck by

Picture Source: EU's Health and Safety Authority publication Safety Alert: Stacking of Baled Recycled Material in the Waste Sector

SUMMARY

A 59-year-old Janitor died from blunt force trauma to his torso after he was struck by a 2000+-pound cardboard bale. The 40+-year-old facilities management company for which the decedent worked was contracted by the facility operator to perform janitorial duties. A designated cardboard bale storage area near the loading dock was marked with yellow tape.



A view of the incident area. The location in which the decedent was pinned is marked with a blue X.

One of the duties of the facility management employees was to use a forklift to stack cardboard bales in the marked area. When a truck arrived, the employees loaded the bales into the truck for shipment. Bale movement into the loading area was variable; as few as 1-2 bales a week to 2-5 bales a day. The bales sat in the loading area for up to 3 days until a truck was available for loading. Due to the truck arrival variability and the available space in the loading area, the facility management employees double stacked the bales. The cardboard bale storage/handling was unorganized with multiple doubled stacked cardboard bales. A supervisor and area manager were very aware of the hazard and the history of the same employee causing poor housekeeping and unbalanced stacks that stacked the bale that fell on the decedent.

At the time of the incident, the decedent was speaking with a facility management forklift driver while standing facing the forklift near a double stacked cardboard bale; this forklift driver was not the operator who stacked the bales. The topmost bale began to slide off the bottom bale toward the forklift and decedent. The bale struck the decedent and pinned his lower body to the ground and his upper body against the forklift. The forklift driver attempted to work with six other coworkers to move the bale by hand. After their initial attempts were unsuccessful, the forklift driver found and piloted another forklift to successfully remove the bale from him. The extrication took at least 7 minutes. When police arrived, the decedent was on the floor on his hands and knees with several flattened carboard boxes on top of him. He complained of difficulty breathing.

After the decedent was freed, EMS was called, assumed care, and transported him to a local hospital where he died 11 days after the incident. Blunt force trauma injuries included a fractured sternum and multiple ribs, lacerated liver and kidneys, and bleeding in the internal cavity between the abdomen wall and organs.

The MIOSHA compliance officer investigating the incident observed three sets of double stacked bales, two of which had fallen over, including the one involved in this incident. Both management and employees informed MIOSHA there was no procedure on how to stack the cardboard bales or how to store the cardboard bales other than to place the cardboard bales inside the yellow tape which outlined the cardboard bale storage area. The facilities management company proposed the following corrective actions: 1) painting pedestrian walkway areas on floor; 2) don't allow foot traffic within 6 feet of stored bales.

REQUIREMENTS

- **Employers must:** Ensure that materials, including scrap and debris, shall be piled, stacked, or placed in a container in a manner that does not create a hazard to an employee.

MIFACE (Michigan Fatality Assessment and Control Evaluation), Michigan State University (MSU) Occupational & Environmental Medicine, 909 Fee Road, 117 West Fee Hall, East Lansing, Michigan 48824-1315.

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RECOMMENDATIONS

MIFACE investigators concluded that, to help prevent similar occurrences, employers should:

- Perform a hazard assessment in the cardboard bale stacking area to develop, implement, and enforce control measures to minimize the identified hazards (See EU's Health and Safety Authority publication Safety Alert: Stacking of Baled Recycled Material in the Waste Sector). Control measures could include, but not be limited to:
  - Loading Area:
    - Expand the loading area to minimize the need for stacking.
    - Schedule more frequent truck pickup of material.
    - Install steel racking system. See ANSI MH16.1-2023: Industrial Steel Storage Racks - ANSI Blog. Consult a qualified professional engineer or manufacturer qualified person to assist in selection/installation of side supports for a safe storage system.
    - Identify and clearly mark pedestrian and vehicular pathways. Ensure pedestrian pathways are not adjacent to stacked bales. Consider traffic management plan to segregate vehicle movements from pedestrians. Plan the stacking operations so that one-way systems can be utilized where possible.
    - Install warning signs/placards.
    - Implement and enforce housekeeping practices to ensure loading area is organized and clutter-controlled
  - Bales: Develop, implement and enforce safe bale handling practices and procedures
    - Construct stacks from bales of similar size and weight; bigger heavier bales should be stacked on the bottom with smaller lighter bales on top. Interlocking the bales as the stack is being constructed will improve stability.
    - Ideally stacked bales should be contained on three sides by a wall or other barrier designed to withstand the weight of the stack if it collapses. Bales on the open side of this stack should be stepped back. See Figure 1. OR
    - Stack bales in a pyramid (Figures 2 and 3). Avoid stacking bales vertically one of top of the other.
    - Place boards between layers to improve the stack stability.
    - The outer layers of the stacks should have lengths of timber placed on the edges so that the bales will lean inward.
    - Control measures to protect the stacks from being struck by moving vehicles.
    - Develop a written procedure to deal with stacks that have become unstable or that are in danger of collapsing.
    - Utilize appropriate vehicles when stacking and moving the bales. Consult load charts. Vehicles should be fitted with falling object protection systems.
  - Employee Training
    - Instruct employees on all control measures implemented. Develop audit procedures to ensure compliance. Re-train employees when necessary.
    - Encourage employees to identify lapses in control practices to minimize future injury occurrences.
    - Instruct employees on how to deal with stacks that have become unstable or are in danger of collapse.
    - Ensure that forklift drivers and other machine operators have appropriate training.

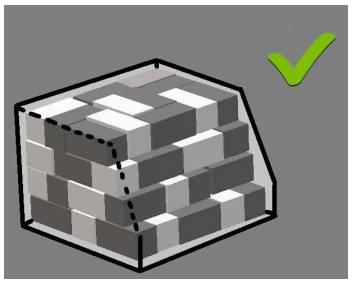

Figure 1. Bales stacked in an area confined on three sides by a concrete wall or other suitably designed and constructed barrier.

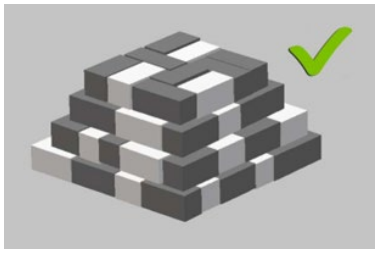

Figure 2. Large free-standing stack. Bales are stacked in a pyramid. NOTE: Interlocked bales to improve stability.

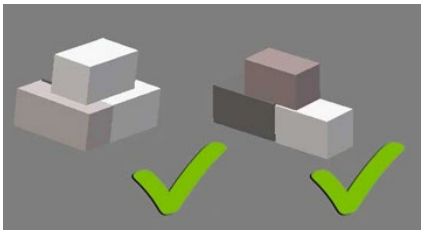

Figure 3. Bales stacked in a simple pyramid formation.

Source for Figures 1-3: EU's Health and Safety Authority publication Safety Alert: Stacking of Baled Recycled Material in the Waste Sector

CITATIONS

MIOSHA General Industry Safety and Health Division issued the following Serious citation at the conclusion of its investigation.

- Serious: 408.10015(1): Act 154 Michigan Occupational Safety and Health Act: Materials, including scrap and debris, shall be piled, stacked, or placed in a container in a manner that does not create a hazard to an employee.

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