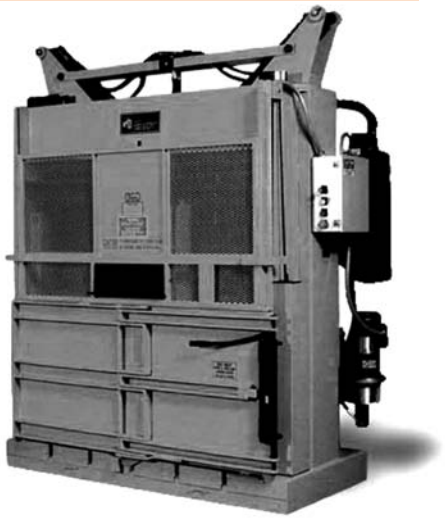
Compacting and baling equipment

Compacting and baling equipment reduces large amounts of solid waste to smaller, more manageable units by means of powered rams. In general, compactors compress refuse into containers for transport. Baling equipment is designed to compress material (e.g., cardboard boxes) and produce a bale (bound or unbound) that is handled as a unit.

A wide range of hazards exist simply due to the size, configuration, and operation of compactors and balers. Some machines allow direct access to the compression chamber, while others have a hopper or chute through which material feeds into the machine. Machines may operate in a manual, semiautomatic, or automatic mode. The rams may move vertically or horizontally.



Pacific Compactor Corporation

Hazard

Workers can be crushed by the ram motion if guarding is missing or bypassed, or if lockout procedures are not followed during maintenance activities. Older compacting equipment may not have appropriate interlock guarding or may not have enough guarding to enclose the chamber or point-of-operation area completely.

Severe injury and death can also occur during service or maintenance tasks on or inside an energized or jammed machine if the machine cycles automatically, or if the machine is activated by another worker who is unaware that someone is inside the chamber. Furthermore, because ram motion ceases during a jam, workers may not recognize that the machine remains energized and that the ram could activate unexpectedly. Similarly, if conveyors are used to feed material into a compactor or baler, workers may mistakenly believe that shutting down the conveyor also prevents the compactor or baler from operating.

In addition to the hazardous-energy potential, working inside these machines may also present confined-space hazards such as hazardous atmospheres and engulfment.

Solution

Access covers and point-of-operation guarding must be interlocked in such a manner that the compactor cannot be operated if the guard or loading door is removed or opened. Most compactors and balers today prevent workers from reaching into the point of operation by configuration, cycling controls, and interlock guarding that interrupt or reverse the ram's motion if the compression chamber doors are opened. However, older equipment may not have these features and it would be wise to consult with the manufacturer for possible retrofits or upgrades.

Whenever unjamming, adjusting, cleaning, repairing, or performing other maintenance tasks, the machine must be isolated from all its energy sources and "locked out." If conveyors are used, they should be interconnected so that a single, lockable device can de-energize and isolate the power to both machines. *Lockout procedures are further explained on Page 64.*

Follow permit-required confined space entry procedures whenever working inside these machines.

Also, refer to Oregon OSHA's rules for *Stationary Compactors*, *Self Contained Compactors and Balers* for specific control, marking, and signage requirements.

References

- **General Industry**

  Oregon OSHA Division 2/Subdivision O OAR 437-002-0256 — Stationary Compactors, Self-Contained Compactors, and Balers

  Oregon OSHA Division 2/Subdivision J 29 CFR 1910.147 — The Control of Hazardous Energy (Lockout/Tagout)

- *Oregon OSHA Division 2/Subdivision J 29 CFR 1910.146 — Permit-Required Confined Spaces*
- ANSI Z245.2 *Stationary Compactors — Safety Requirements*
- ANSI Z245.5 *Baling Equipment — Safety Requirements*
- NIOSH Publication No. 2003-124 *Preventing Deaths and Injuries While Compacting or Baling Refuse Material*

Sixteen-year-old produce-market worker dies from crushing injuries

Caught in a vertical downstroke baler

A 16-year-old male produce-market worker died from crushing injuries after being caught in the vertical downstroke baling machine that he was operating. The victim, working alone in the basement of a small produce market, was crushing cardboard boxes when at some point in the compacting process he was caught by the machine's hydraulic ram. The victim was discovered by an exterminator spraying the basement, who told the store manager to call police and emergency medical services (EMS).

Subsequent examination by investigators revealed that the safety interlock had been by-passed, allowing the machine to operate with the loading door in the open position. The victim may have reached into the baling chamber during a compression cycle to adjust a tie wire or a liner box and was caught by the ram platen.

NIOSH investigators concluded that, to help prevent similar incidents, employers should:

- Ensure that all safety devices on baling machines are functioning correctly and enforce proper operation.
- Ensure that employees, including management personnel, know and understand the importance of the machine's safety features.
- Comply with child labor laws which prohibit youths younger than 18 from operating or assisting in operation of paper balers.
- Develop and implement a comprehensive employee safety program that includes training in the safe operation of machinery and the importance of the machine's safety devices.

Source: NIOSH FACE Report 2000