Warehouse Supervisor Crushed by Pallet Stacking Machine

Victim

A 40-year-old experienced warehouse supervisor died when he was struck by a pallet stacking machine and crushed against a storage rack support.

Location

The incident occurred at a finished goods warehouse for a cigarette manufacturing plant. The warehouse was used to store cases of cigarette products awaiting shipment and was arranged with nine aisles having storage bins on either side.

Each aisle contained a computerized pallet stacking machine which could be operated automatically or manually. The machines traveled up and down the aisles retrieving cases of cigarettes and delivering them to a conveyor belt, where they were forwarded to the loading dock for shipment.

The clearance between the storage bins' vertical 4-inch I-beam supports and the stacking machine's metal frame was approximately 7 inches. The stacking machine was approximately 17-feet 6-inches long by 50-inches wide and weighed 36,000 pounds. The travel speed was about 300-feet per minute or 3½-miles per hour as it traveled in an east and west direction between the storage bins.

https://www.cdc.gov/niosh/face/In-house/full9226.html

What Happened

On the day of the incident, the victim had been working the 8 a.m. to 4 p.m. shift at the finished goods warehouse. The incident was unwitnessed, but evidence suggests the victim had walked down aisle number 7 to an area around bin number 15. At that area, the bin was arranged such that a person could stand in the bin area

while the stacking machine passed by.

For unknown reasons the victim was in the aisle and had his back to the approaching stacking machine. It struck and crushed him between the stacking machine's frame and the storage rack's vertical support I-beam. His body was dragged several feet until some part of the victim's body contacted the bumper, causing the machine to stop.

The medical examiner pronounced the victim dead at the scene. The cause of death was mechanical asphyxia due to crushing chest injuries.

Fatality Factors and Prevention

The pallet stacking machine, which could be operated automatically or manually, was equipped with a switch that could have been locked out prior to entry into the aisles. Lockout was not performed in this case.

Investigators recommended:

- Creation of specific procedures to follow prior to any work being performed in the aisles. Including:
    - Locking and tagging the machine in the off position when personnel are in the aisles.
    - Retaining the key until all work is completed and the aisles are clear of personnel.
- Consider using two workers to perform any work in the aisles. One worker would be responsible for monitoring the movement of the machine while the other worker performs the task.
    - If the victim hadn't been working alone it is possible the second employee could have used the emergency stop which may have saved the victim's life.
- Consider installing stationary aisle warning lights and redesigning the stacking machine's pressure-sensitive stop bumpers.
    - Although the pallet stacking machine had green travel warning lights and pressure-sensitive stop bumpers located on the front and rear ends of the machine, the

incident still occurred.
    - The warning lights may be effective when an employee is facing the machine, but in this incident the victim had his back turned toward the machine, apparently did not hear its approach and was struck and killed.

Investigators further recommended engineers should consider the:

- Installation of stationary travel warning lights at conspicuous areas within the aisles.
    - Any time the machine is in operation, the stationary travel warning lights would illuminate to warn any worker in the area that the machine is in operation and to be alert to its location and movement.
- Redesigning the pressure-sensitive stop bumpers so an object located laterally, or adjacent to the machine, would contact the bumper causing it to stop.
    - The pressure-sensitive stop bumpers located on the front and rear ends of the machine, could only be activated by direct forward or rearward pressure on the bumpers.
    - An object which was positioned laterally, or adjacent to the direct line of travel (as was the case in this incident), would not engage the bumpers and stop the machine.