

**Case 467. 56-year-old grain elevator laborer died when he was asphyxiated due to being engulfed in corn dust during clean-out of a dust collector.**

A 56-year-old male grain elevator laborer died when he was asphyxiated due to being engulfed in corn dust during clean-out of a dust collector. The milling operation was on the first floor and the dust collector was located on the second floor. The second floor was accessed by stairs. The dust bin had two fans feeding into it which created a cyclone state within the bin. This caused the very fine dust to be blown out the screens at the top of the bin. The heavier dust settled at the bottom of the bin. As the dust bin collected dust, the dust slowly filtered down the chute to the ground level dust collector which was situated in a connected structure outside the calf plant. The second floor dust bin was approximately 12 feet and 4 inches tall, 8 feet 6 inches by 8 feet 5 inches wide. At approximately 9'4" from the top of the bin, the bin tapered toward an exit chute external to the building to allow corn dust to accumulate by gravity in the clean-out area at the ground level dust collector. A 12-foot fixed ladder was used to access the top of the bin. There was a 3-foot by 2-foot wide hatchway on the top of the bin to gain access to inside of the bin. A 12-foot fixed ladder on the exterior wall was affixed within the bin itself; a 2-foot gap was present between the top of the bin/access hatchway and the first top step of the ladder inside of the bin. The decedent drove a loader to the incident site. It appeared he climbed the ladder external to the bin with a shovel and portable lights. The incident was unwitnessed. It is unknown if he was attempting to access the ladder inside of the bin or if he slipped on the floor. A divot in the corn dust on the floor was observed. Another worker noticed the loader but did not see the decedent. He climbed the ladder to the access door and did not see him. He returned to ground level, entered the clean-out area and looked up. He saw the decedent's legs hanging out from the location where the dust exits the building. The coworker called for emergency response. Emergency responders cut three holes in the bin to drain the approximately 5 feet of corn dust that had accumulated above the decedent. The fourth cut located the decedent. Emergency responders found the decedent facing the outside wall where the interior ladder was located. They removed him from the bin. He was declared dead at the scene.

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

SERIOUS: GRAIN HANDLING FACILITIES, GI PART 77:

- RULE 408.17707(2): All of the following actions shall be taken before employees enter bins, silos, tanks, or other grain storage structures:
  - (a) An employer shall issue a permit for entering bins, silos, tanks, or other grain storage structures unless the employer or representative of the employer who would otherwise authorize the permit is present during the entire operation.
  - (b) All mechanical, electrical, hydraulic, and pneumatic equipment that presents a danger to employees inside grain storage structures shall be deenergized, disconnected, locked out and tagged, blocked off, or prevented from operating by other equally effective means or methods.
  - (c) The atmosphere within a bin, silo, tank, or other grain storage structures shall be tested for the presence of combustible gases, vapors, and toxic agents when an employer has reason to believe they may be present.

a. There was no permit or another employee representative present when the corn dust bin on the second level of the *plant* was entered. *(MIFACE removed identifiers)*

b. Oxygen level was not tested, and there was no natural air movement or continuous forced air ventilation in the corn dust bin on the second level of the *plant*. *(MIFACE removed identifiers)*

- RULE 408.17707(4): An observer who is equipped to provide assistance shall be stationed outside the bin, silo, tank, or other grain storage structure being entered by an employee. Visual, voice, or signal line communications shall be maintained between the observer and the employee entering the bin, silo, tank, or other grain storage structure.

Firm did not have an observer when the employee was entering the corn dust bin on the second level of the *plant* to knock loose the corn dust from the walls. *(MIFACE removed identifiers)*

- RULE 408.17707(3): If an employee enters a grain storage structure from a level at or above the level of the stored grain or grain products, or if an employee walks or stands on or in stored grain that is deep enough to pose an engulfment hazard, then the employer shall provide the employee with a body harness that has a lifeline or a boatswain's chair.

Employee was not wearing a body harness or using a boatswain's chair when entering the corn dust bin on the second level of the *plant* to knock loose the corn dust. *(MIFACE removed identifiers)*

- RULE 408.17707(5): An employer shall provide equipment for rescue operations that is specifically suited for the bin, silo, tank, or other grain storage structure being entered.

Firm did not provide equipment for rescue operations, when the corn dust bin on the second level of the *plant* has to be entered and cleaned. *(MIFACE removed identifiers)*