

# FLUIDS

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## Silos Loom as Death Traps on American Farms

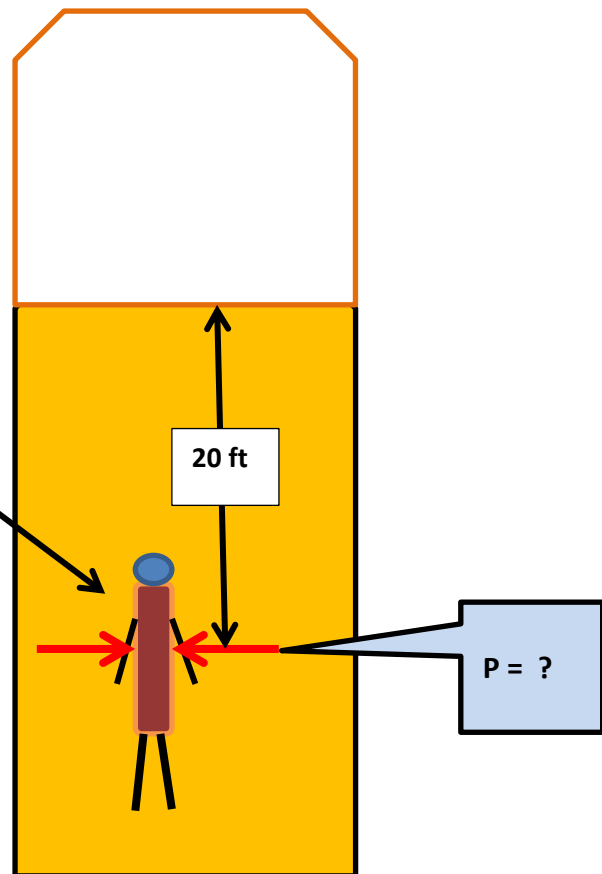


**Death in the Silo:** The United States is producing more grain than ever, for food, feed, and commercial applications like ethanol. But as other farm work has gotten safer, gruesome grain bin accidents persist.

**INTRODUCTION:** Workers get buried sometimes freeing up grain trapped in grain silos. Corn grain has a weight density( $D$ ) = 14 lb/ft<sup>3</sup>. Pressure( $P$ ) due depth( $h$ ) under a fluid(as with grain) =  $D h$  ,  $P=F/A$

**QUESTIONS:** (a) Find the pressure due to corn grain on the trapped silo worker in sketch below? (b) If the surface area of the silo worker's body is about 35 ft<sup>2</sup>( $A$ ), find the net force(in lb.) on silo worker's body at a depth of 20 ft.?

**ANSWERS:** (a) 280 lb./ft.<sup>2</sup> , (b) 9800 lb



STERLING, Mich. — Tommy Osier, 18, a popular but indifferent student, was still a year from graduating from high school, and that was no sure thing. Farm work paid him \$7.40 an hour, taught him discipline and gave him new skills. He had begun talking about making a life in farming. But he hated the chore he drew on Memorial Day of last year, working inside the silo at Pine Grove Farm. The corn was damp and crusted. It tended to hang up on the sides of the old six-story cement bin and had to be busted up with a steel rod before it would cascade to the bottom to be shoveled out. That morning, just after 9, the phone rang in the Osier home. “Tommy’s in the silo,” his sister relayed to their mother, Linda, unsure of what it meant. Ms. Osier grew up on a hog farm and knew right away. “He’s dead,” she said, slumping to the floor. “Tommy’s dead.”