# Grain Bin Engulfment Stats and Facts



## FACTS

1. An “engulfment” often happens when “bridged” grain and vertical piles of stored grain collapse unexpectedly. Engulfments may occur when employees work on or near the pile or when bin augers whirl causing the grain to buckle and fall onto the worker. The density, weight and unpredictable behavior of flowing grains make it nearly impossible for workers to rescue themselves without help.
2. Every employee working in the grain industry must be trained on grain-handling hazards and given the tools to ensure they do not enter a bin or silo without required safety equipment.
3. Grain entrapments and engulfments are one of most common hazards associated with grain storage facilities.
4. Suffocation from engulfment is a leading cause of death in grain bins.
5. Flowing grain behaves like quicksand. An adult can be completely buried (engulfed) in 20 seconds. Most engulfed victims do not survive.
6. Most entrapment and engulfment events occur because workers enter a bin or storage structure to check on condition of grain or to address problems with grain flow due to spoiled grain or equipment malfunction.
7. The best ways to prevent engulfment incidents are to eliminate the reasons for entering a bin in the first place, and to restrict unauthorized access by youth or other individuals who may be unaware of hazards.

## STATS

- In the past 50 years, more than 900 cases of grain engulfment have been reported with a fatality rate of 62 %, according to researchers at Purdue University in Indiana.
- Around 80% of reported engulfments involve a person inside a bin or storage structure when grain-unloading equipment is running. Engulfments in flowing grain also occur in outdoor grain storage piles, grain wagons, rail cars, and semi-trailers that unload from the bottom.
- The best strategy to prevent or reduce the severity of injuries associated with grain entrapments remains prevention through compliance with accepted best workplace practices and current workplace safety regulations. It was determined that 94% of all grain entrapment and engulfment incidents were preventable.
- The number of reported grain entrapments across the country rose by 27% from 2018 to 2019, and deaths rose by 53% that year
- In recent years, grain entrapments and fatalities have risen. In 2017, 23 grain entrapments and 12 deaths were recorded; in 2018, 30 grain entrapments and 15

deaths were recorded; and in 2019, 38 grain entrapments led to 23 deaths. Total grain entrapments rose by 65% over that 3-year period.