

Grain Entrapment Stats

Summary by Wayne Bauer, Director of Safety & Security at Star of the West Milling Co. and (Ch.) of the Grain Entrapment Prevention Initiative ... prepared on March 25, 2012.

Note: We appreciate the work that Purdue University does in tracking most of the data attached, which I have just attempted to summarize.

1). Number of “Reported Entrapments” & Fatalities:

	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>Change from 2010 to 2011:</u>
# of Reported Entrapments >	34	38	51	<u>27</u>	<u>> 47 % decrease</u>
# of Fatalities >	15	16	26	<u>8</u>	<u>> 69 % decrease</u>

2). How many incidents happen on farms?

Historically, 70% of grain entrapments have been ON-FARM, when the incident location was known. This was clearly not the case in 2011, when only 26% of the total number of entrapments took place on farms, and 74% took place OFF-FARM in commercial facilities.

Where are they happening?	<u>ON – FARM</u>	<u>OFF – FARM</u>
2011 >	26%	74 %
2010 >	69 %	31 %
2009 >	63 %	37 %

3). What type of storage is generally involved?

Steel / Concrete / Flat storage or piles / Vehicles ?? Over the course of 47 years (1964 – 2011), **68 % of the incidents happen around steel bins**, where the locations are known.

4). What commodity is generally involved? Historically, 45% of the incidents where known, involve out-of-condition CORN. In 2011, **63% of incidents involved CORN**.

5). Successful Rescue – or – simple Body Recovery:

Over the course of 41 years (1964- 2005), 74 % of all “Reported Entrapments” ended in death and the incident was a simple “Body Recovery”, not a successful rescue. During the last four years (2008 – 2011), the number of fatalities as a (%) of the “Reported Entrapments” was reduced to 42 %. **(%) of Incidents ending in DEATHS:**

2011 > 30 % Historically, this has been 74 %

2010 > 51 %

2009 > 42 %

2008 > 45 %

6). Exposure to Dust Explosions – versus – Grain Engulfments:

Grain Engulfments have killed more people in the past 40 years than dust explosions.

Dust Explosions (between 1970 – 2010)

- > 600 – Explosions
- > 1,000 – Injuries
- > 250 – Fatalities

Avg. of 6.25 deaths / Year

Grain Engulfments (between 1964 – 2011)

- > 900+ - “Reported Entrapments”
- > 550 – Fatalities

Avg. of 12 deaths / Year

Questions that are largely unanswered relative to grain entrapments:

What (%) of these grain entrapment victims

- > had access to a lifeline that was secured properly?
- > had an attendant or observer watching outside of the bin?
- > had any type of meaningful – “Hands-On” training in the 12 months, prior to the incident?

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- > where actually killed or injured by a sweep auger?
 - > was toxic air an issue?
 - > was a rescue responder killed in the incident?

The top three issues above are critical , in terms of reducing fatalities in this area. We tend to find information on the last three items that are shared by many government agencies to be inaccurate and misleading.

The following comments are not necessarily felt or supported by Purdue University , nor OSHA. However, many in the grain industry itself feel that:

- 1). Over 95 % of the cases in the past 40 years, involved an incident where no use of a lifeline was in fact used that was secured properly.**
- 2). Over 65 % of the cases involved no attendant or observer.**
- 3). Over 65 % of the victims had no meaningful “hands-on” training in the 12 months prior to the incident.**
- 4). Fewer than 1 – 4 % of the 900 cases involved anyone killed directly by a sweep auger.**

5). **Fewer than 4 - 6%** of the 900 cases **involved toxic air** in a dry grain bin. The vast majority of these incidents were basically akin to a **“Trench Collapse”** in a grain bin, where the victim suffocated under grain.

The grain industry in the future needs to focus upon the following- Best Management Practices:

- 1). **Stay out of the bin**, if at all possible, by developing a “Zero Entry” Mentality.
- 2). **Never enter alone**. Always use the “buddy system.
- 3). **Never enter untrained**. No one should be allowed to work in a grain bin, unless they have received meaningful – “Hands-On” training in the 12 months prior to bin entry.
- 4). **Follow Entry Permit**. Employees must be trained to utilize a check-list suitable for site in question and know how to identify & address hazards identified.
- 5). **Shut Down and Lockout Equipment**. We must design safer Reclaim systems in the future for any grain handling facilities that will be built . However, the 300,000+ bins that were built in the past 40 years require us to : Adopt **appropriate safe-guards**, if a sweep auger is operating. The procedures and written instructions must **keep the employees out of the “point of operation”**, as defined by OSHA. The procedures must be written and employees trained accordingly. The SOP regarding the sweep auger must state that it remains locked out, until the employee entering the bin, is at the **“safe point”** before the power is restored.
- 6). **Secure Lifelines Properly**. Provide suitable anchor points that will handle 1,000 – 1,800 pounds of force. The **Restraint System** must incorporate a **Belay System** that will limit slack in the lifeline to **18 – 24”** and be able to handle 500 – 800 pound jerks on the line.
- 7). **Emergency Preparedness**. Identify an appropriate emergency response group for possible rescues. Train with response group and evaluate their performance and capabilities. Are rescue equipment and trained responders available in a timely manner?

Following the practices above will dramatically reduce the odds of any of your employees (or family members on a farm) from becoming a “Statistic”.

Please take time to recognize hazards and perform your task safely. Have a safe day.