

# Zero Entry Mentality

DEALING WITH THREE ISSUES CAN MINIMIZE THE NEED FOR EMPLOYEES TO ENTER BINS

One thing we need to focus on more seriously, if we hope to reduce the number of fatalities that the grain industry has experienced from grain entrapments in the past five to seven years, is to *strongly discourage people from entering spaces that have grain in them*, unless it is absolutely necessary. This is referred to simply as developing a “zero entry mentality.”

We need to focus on three fundamental areas more seriously in the future, so people are not inclined or tempted to jump hastily into a bin:

1. Grain conditioning.
2. Reclaim systems.
3. Discharge sump holes.

## Grain Conditioning

Most grain entrapment incidents develop around some type of grain spoilage issue. The spoilage caused the grain to stop flowing freely out of the bin during the unloading process, which provoked someone to enter the space hastily.

We need to make sure that our people understand how to condition stored grain and monitor its quality effectively, utilizing the aeration and temperature systems that have been designed and installed.

The president of an aeration system control manufacturing company tells me that “proper aeration is uniform airflow through all of the grain in the bin, at the correct temperature and humidity.”

Are they moving the “fronts” through on a timely basis?

Are they sensitive to convection currents that will be created with temperature differentials between the grain temperature and outside ambient temperatures.

How are they dealing with the

**BIN ENTRY**  
Wayne Bauer



moisture on the under-side surface of the roof?

How often are they monitoring the temperature in these spaces?

I would like to share a comment in this area made by a manufacturer of grain temperature monitoring systems:

“When grain goes out of condition, regardless of the cause, there is *always* a corresponding increase in the

temperature of the grain.

“If the operator is monitoring the grain temperature, he or she probably mitigated the problem in the first place. If the operator is not monitoring the grain temperature, he or she probably has no clue about what is going on inside the grain storage and is setting the facility up for failure.”

## Reclaim System

What type of reclaim or unloading system are you using? Is it adequate for the size of bin and commodity involved? Is it user-friendly?

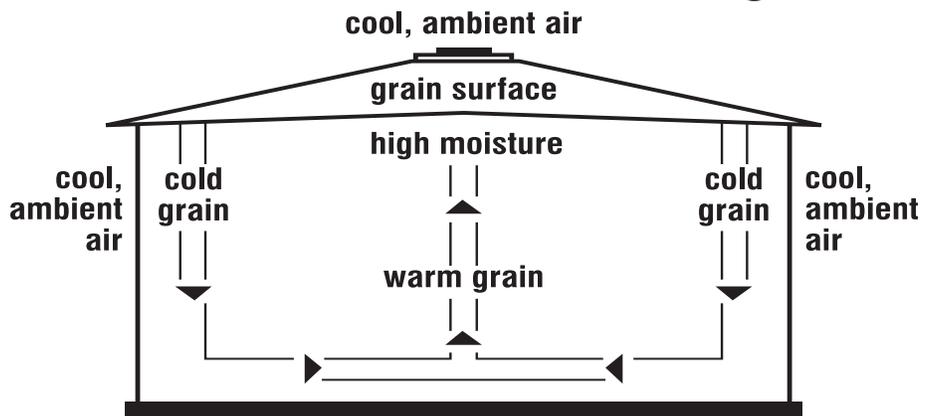
*Most grain entrapment incidents develop around some type of grain spoilage issue. The spoilage caused the grain to stop flowing freely out of the bin during the unloading process, which provoked someone to enter the space hastily.*

The sales manager for a manufacturer of sweep augers and reclaim systems shares a few comments on the importance of properly designed reclaim systems and discharge sump holes:

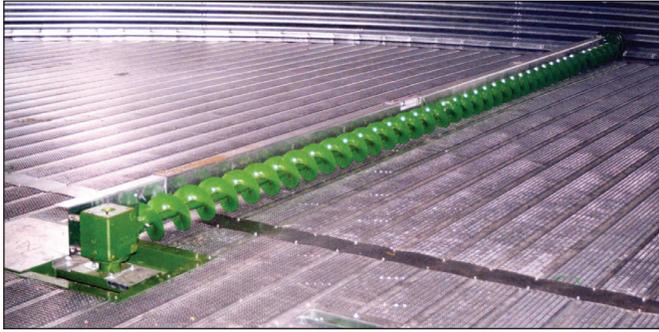
“Grain that contains excessive moisture, dust, or other foreign materials tends to clump and harden. In addition to increased temperature, such grain no longer free flows properly, which typically causes problems including inhibited gravity flow, cascading, and plugging of the discharge sumps.

“It also creates a very hazardous breathing environment, which usually

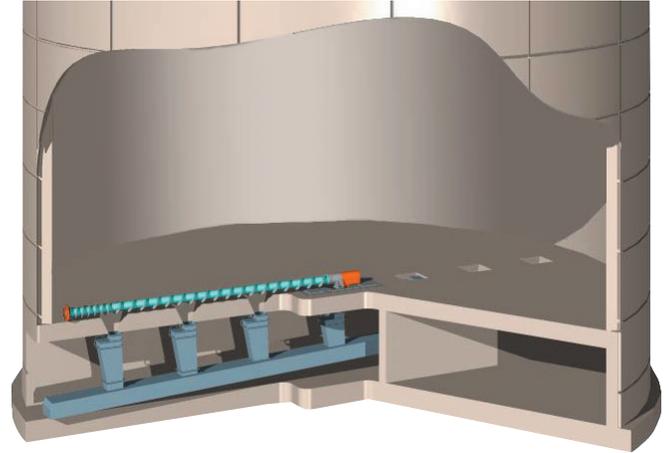
## Movement of Air in a Grain Storage Tank



*Understanding the convection currents that result from the interaction of warm grain and cold ambient air inside grain storage is a key to preventing under-roof condensation that can lead to spoilage. Illustration courtesy of the Canadian Grains Commission.*



*These two types of sweep auger systems, commonly available on the market, can be an important part of a reclaim system designed to keep workers out of grain storage tanks.*



causes some illness to employees who must enter the bin.

“The goal we should strive for in the future is the inclusion of a ruggedly-designed sweep auger, as part of a reclaim system that does not require operator entry into the bin and will completely empty the bin while keeping operators totally outside of the bin and, thus, out of harm’s way.”

### **Discharge Sump Holes**

What are the dimensions and design

characteristics of these holes in your bins? How far apart are they spaced? What options have you provided for your employees, if one of the sump holes plugs?

Too often, only simple 12-x-12-inch openings every 10 to 12 feet across the bin floor are provided. This is not adequate. We must make a more serious investment in safety and handling efficiencies in this area of reclaim systems and discharge sump holes in the future. The holes need to be much larger and

spaced only 8 feet apart or closer.

In a future article, we will address issues such as suggested spacings and sizes of discharge sump holes, dimensions of service tunnels, slide gate designs, capacities of takeaway drags, and other issues that have been ignored too long.

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