GRAIN SAFETY

Grain Type Affects Breathing

Objectives:

- To comprehend the inability of breathing if trapped under grain
- To determine the differences in grain type that influences a person's ability to breathe

You will need:

- Various types of dried grains (corn, soybeans, rice, flax, canola, etc.)
- Paper tubes (toilet paper, paper towel, etc.) cut 2” and 6” lengths
- Nylon mesh or tooling
- Masking tape
- Large candle (not birthday candles)
- Matches

Activity:

Cut mesh or tooling an inch bigger than the opening of the tubes. Tape the mesh over one end of the tubes. Fill each tube with grain. Tubes need to be full. Cover other end with mesh and tape in place.

Light a candle and place it in a candle holder. Give the students a quick warning about the dangers of fire. Have the students try to put out the candle by blowing through both the long and short tubes. Try the same demonstration using the same length of tube and compare two different types of grain. Talk about the differences in the grain types.

Questions:

Q: What are the differences in size and shape of each grain kernel?
A: Soybeans and canola are round, while all the others have some flat surfaces. Flax kernels are very small and slick.

Q: How do the kernel differences affect the way the grain flows when released in a gravity flow wagon?
A: The smaller and slicker the grain, the faster it will flow.

Q: Why was it more difficult to blow out the candle with more grain?
A: Some air can get between the kernels of grain if it doesn’t go very far. The longer the tube, the more air is required to extinguish the flame.

Q: How does this demonstration relate to danger of being submerged in grain?
A: Grain influences the speed that it flows from the wagon, bin, or truck. This principle in turn influences how quickly you can become trapped in the grain. The shape and size of the grain also influences how difficult it is to breathe if caught in the grain. Generally, the smaller the size of the kernel the less oxygen is trapped to breathe. This is why air is sometimes forced into stored grain if a person is trapped.