

## Material identification – the first link in the process safety system

January 2021



### Chemical containers often look very similar

An operator was adding a raw material from many drums. All the drums were black with white ends and had blue & white labels. After adding ~20 drums, the operator noticed a drum that had a different name on it. Same black and white drum, same blue and white label. It was a different material than specified. He called the engineer who told him not to add the drum and isolate it until proper handling could be determined.

What would have happened had he blindly added that material? That is unknown, but at a minimum, it would have been a major quality problem, cost the company a lot of money and perhaps a missed order.

What safeguards failed? The supplier made an error when loading drums onto the pallets. The person receiving the material at the company warehouse also missed the one odd drum among many were received in that shipment. All these systems are based on people following their procedures and paying attention to what was being handled.

Like this example, many chemical handling operations are highly reliant on people performing their jobs correctly. Many process safety systems the chemical rely on materials are properly labeled when received. Electronic scanning of incoming materials can improve accuracy of receiving chemicals IF they are properly labelled by the supplier.

## Did You Know?

- Chemical receiving systems, whether containers or bulk, are based on administrative controls. People need to follow their procedures and be attentive to details all the time. A brief lapse in attention can result in a serious event.
- Humans make mistakes despite the focusing their attention on the task being performed. Even highly trained personnel like pilots and astronauts are only 99% correct.
- Some companies use the “four-eyes principle.” This means having another person observe the set-up or operation to verify the procedure is being followed and all. There have been many incidents where a bulk material was pumped into the wrong tank with serious consequences. Some of the impacts were overfilling and a spill. Other errors resulted in reactions, fatal toxic releases or contamination of the tank and financial loss.
- Many containers look the same – drums, IBCs, and railcars. That makes proper labeling very critical.
- Many bulk loading/off-loading events have been caused by using incorrect equipment – wrong hose material or using the wrong fork truck to move semi-bulk containers like Intermediate Bulk Containers (IBCs) for liquids and Flexible Bulk Intermediate Containers (FIBCs) for solids.

## What Can You Do?

- Always follow the procedure for handling materials in bulk or in containers and whether using the containers of material as a customer or filling them as a supplier. If there are errors in the procedure, mark-up the errors and give them to your supervisor for editing.
- Use only approved equipment for chemical transfer whether in containers or in bulk.
- Pay extra attention to the labels both those that are on the container from the vendor and those being applied for internal use. Even very small containers like lab samples need to be properly labelled
- Bulk shipments have a different types of labeling, when receiving these verify the contents BEFORE off-loading. Some companies sample the shipment for lab analysis to verify the contents vs accepting shipping paperwork. When shipping bulk containers verify all the documentation is complete and correct.

**Properly receiving chemicals is a critical step that protects all processes downstream.**