II. Electrical and Mechanical Stored Energy

The video illustrates various scenes in receiving areas, such as dock plates, trucks, railcars and forklifts moving product. Viewers are invited to identify the stored energy hazards in the scenes.

B. Ocean Containers and Trucks

Ocean containers and trucks that unload product through rear doors are another source of hazards. When opening the doors, the weight of the material can cause it to suddenly spill out, or force a door open and cause an injury. Trucks that raise their hopper to unload material also present a stored energy hazard. If a hydraulic or mechanical failure happened while the hopper was raised, it could suddenly drop. Bottom dumping hopper trucks, which are much safer because the hopper remains stationary while the material unloads from the underside.

C. Rail Car Safety

Rail cars are another potential source of stored energy hazards.

1. Car Pullers - Some locations move cars into position using car pullers. As the winch pulls the car, huge amounts of elastic stored energy builds up in the cable. If the cable broke or came loose, the energy in the cable would be released with explosive force. The video illustrates a series of guards that help protect the operator from a broken cable.

The video also explains the following car puller safety procedures.

- When attaching the hook to the car, be careful to avoid pinch points.
- Inspect the anchor point, hook, clamps, sheaves, for any loose, frayed, or damaged conditions.
- Make sure the tracks are clear of obstructions, including snow or ice.
- Check that the deadhead pulley and the winch are in good operating condition.
- Make sure that all personnel are clear from the cable’s line of fire.
- Turn on the alarm or warning light 10 seconds before moving the car. Some car puller systems have an automatic alarm system that sounds an alarm when the puller is activated. A timer then delays operation of the puller for 10-15 seconds while the alarm sounds.
2. Boxcar Doors
Before opening doors, be sure the boxcar wheel is chocked and set the manual brake. Place a blue flag in front of the car; indicating work is taking place inside the car. Then check the door rail system for damage.

Boxcar door handles may contain stored energy that could cause it to quickly turn on its own, possibly injuring an operator. To manage this hazard, the video illustrates the following procedures:

- One person should open the latch while another person maintains a firm grip on the handle.
- When using a come-along or chain puller, hook the lever end to a sturdy anchor point near the ladder, but not to the ladder. Inspect for wear or damage before using it. Connect the hook to a strong anchor point on the door. Keep personnel away from the “fall area” of the door. Position your body away from the line of fire of the cable.

3. Bulkhead Doors
Some boxcars may have bulkhead doors inside that slide on rails. The hazard occurs if someone tries rocking a jammed door to dislodge it. Doors have come off their rails and fallen on people, causing serious injuries and deaths. It’s important to follow the safety procedures for inspecting and moving doors. If a door jams or is difficult to move, contact the railroad service crew or reject the car.

VII. Bulk Storage
The video illustrates several bulk storage areas, including flat storage grain, grain in large bins and salt in large mounds.

A. Weight of Bulk Product
At first glance, the products stored in bins or large mounds don’t look especially dangerous. But think about the amount of weight—the stored energy—in the material. Just one cubic yard of salt or grain weighs about 1,300 – 2,000 pounds, or about 600 - 900 kilograms. This is an approximate amount for some types of salt and grain.

Note: Different types of salt and grain have varying weights, some of which are greater than the weights described in the video. For example, the Salt Institute explains that de-icing salt weighs 72-84 pounds per cubic foot. That equals 1,944 – 2,268 pounds per cubic yard. (1,153 – 1,345 Kg/cubic meter)

B. Salt Mound Collapse
A worker is walking past a large salt mound with a steep wall of salt where it has been excavated. Suddenly a section of the face collapses, knocking down and burying the worker. The narrator explains the importance of staying a safe distance from the face of a storage mound or bin. If the product appears unstable, notify your supervisor so the problem can be corrected.

C. Grain Bins
Grain bins are another place where stored energy can turn deadly. Tragedy most often strikes when someone enters a bin and attempts to dislodge grain that’s bridged or caked. Grain can fall on the person and bury them, or they can break through the bridged grain and get buried or pulled into the flowing grain. If it becomes necessary to enter a bin, carefully follow the confined space entry procedures for bin entry.

The video includes graphic depictions of bridged and caked grain in bins. Also included is a scene of a person entering a bin while following the correct confined space entry procedures.

VIII. Warehouses
The video illustrates a variety of warehouse scenes, including forklifts moving and stacking pallet loads of product. Viewers are asked how many stored energy hazards they can see.

A. Loaded Pallets
Pallets loaded with product can be a serious stored energy hazard. What makes them a potential hazard is their weight; combined with the height they’re stacked. For example, a pallet load of 50-pound (23 kilogram) bags can easily weigh 2,500 pounds (1,134 kilograms) – about the weight of a small car. The higher the pallet is from the floor, the more stored energy it contains.

B. Identifying and Correcting Pallet Hazard
The scene of the unstable pallet from the opening of the video is replayed. The person walking in the aisle is looking around the warehouse is being observant of his surroundings and he notices the leaning pallet. He calls to a forklift operator who drives up and adjusts the unstable pallet.

C. Moving Heavy Equipment
Another common stored energy hazard involves transporting heavy equipment or parts. To transport this material safely, use equipment that can safely handle the weight.

IX. Maintenance Areas
The video illustrates a variety of scenes in a maintenance area, such as a worker using a hoist to lift a motor, shelves holding boxes of equipment, a large hammer resting on the top of a ladder, steel beams and rods on a rack, a big wood box on top of a rack, and a TV monitor sitting on a mezzanine above a desk. Viewers are asked to see how many stored energy hazards they can identify.

A. Computer Monitor Falls
A person on the mezzanine is moving some equipment. Nearby is the computer monitor sitting close to the edge of the mezzanine. A woman begins doing some work at the desk below. The worker on the mezzanine bumps the monitor while moving a pallet, sending the monitor crashing to the floor within inches of the woman working at the desk. Next, the correct procedures are illustrated, as the person working on the mezzanine sees the monitor and moves it to a safer location.