

Machinery Safety

Overview

Shows common machinery hazards, such as belt/pulley drives, chain/sprocket drives, pinch points, etc. Illustrates the need for shields. May be used with the “Wheel of Misfortune” to illustrate the speed of equipment compared to a person’s reaction time.

Objective

Show different hazards that are present when working with various types of machinery.

Introduction

1. Introduce yourself to the students; let them know your name, background, and anything else that may interest them and ties into the presentation.
2. Make the students aware that the information you will present to them is important and that they need to pay attention.
3. Inform the students that they will participate in an activity as time allows and they must be responsible during this activity. Stressing responsibility is especially important if you deal with a younger group of students.

Introduce the Machinery Safety Topic

- . Students all have their own stories and experiences to tell.
- . Introduce the “Crank It” display and ask the students if they know what some of the hazards might be when dealing with machinery.
- . Ask the students if they have ever played on or around machinery and if they know anyone that has been injured by machinery.

Activity

Materials Needed

- . “Crank It” demonstration display model
- . Machinery safety display posters

Conducting the Demonstration

- . Place the T-handle in the hole in the face of the display.
- . Check to see that the spring come in contact with and catch on the gear teeth.
- . Ask the students where belts, gears, etc. are found in farm machinery.
- . Slowly turn the T-handle to rotate the display components.

- As time allows, let each student turn the handle and feel the resistance when the spring catches/releases.
- Explain the following areas where most machinery injuries occur; encourage students to think of examples of each of them.
 - Pinch points: exist where two parts move together with at least one part turning in a circle (chain drive, belt drive, gear drive, feeder rolls, etc.)
 - Pull-in accidents: happen when a person tries to unclog or feed material by hand into an operating machine (combine head, feed rolls, etc.)
 - Wrap points: exist wherever there is an exposed, rotating shaft (PTO shaft, shaft ends which protrude beyond bearings, etc.)
 - Shear points: exist where the edges of two components move across each other (scissors, rotary mower, sickle bar, etc.)
 - Thrown objects: some farm machines propel objects great distances with great force (lawnmower, rotary mowers, combine straw choppers, etc.)
 - Freewheeling parts on farm equipment: may continue to rotate for two minutes or more after disengaging power (forage harvester cutterheads, hammermills, blower fans, etc.)
 - Crush points: created when two objects move toward each other, or when one object moves toward a stationary item (between an implement tongue and a tractor drawbar, jacked-up equipment, raised hydraulic components, overhead garage doors, etc.)
 - Stored energy hazards: exist where an object stores energy to release at a later time (springs, hydraulics, or raised equipment components)

Wrap Up

After the activity, discuss with students what could happen if they came into contact with the components found in the “Crank It” display. Use the following discussion questions:

1. How machinery injure you?
2. How could you be caught in gears, pulleys, etc.?
3. How can you remain safe when using machinery?
4. What type of clothing should you wear when working around machinery?

Re-discuss the safety rules when working with machinery. Go though the following list with the students and make sure they understand why the importance of these rules.

- Never reach into any part of an operating machine.

- . All guards and shields must be in place and properly maintained.
- . When hitching equipment, stand clear until the tractor is backed into position.
- . Keep bystanders away from areas where they could be struck by thrown objects.
- . Identify hazardous areas on equipment and make sure you stay away from moving parts.
Beware of pinch points, shear points, wrap points, pull-in areas, thrown objects, crush points, stored energy hazards and freewheeling parts.
- . Make sure everyone who operates the equipment has the appropriate training and is physically, mentally and emotionally able to operate it safely.
- . Shut down equipment, turn off the engine, remove the key and wait for moving parts to stop before dismounting and servicing or adjusting equipment.
 - Keep children, bystanders and others away from the equipment operation area. Do not allow extra riders, especially children, on any equipment.