

# Farm Equipment Hazards

## Goal

This program provides information to farm and ranch personnel on farm machinery and equipment operation hazards.

## Objective

Farm and ranch personnel will be able to identify dangers associated with agricultural machines and equipment. Employees will understand how to take safety precautions and follow procedures when using farm machinery and equipment.

## Definitions

Farmstead equipment is defined as equipment that remains in a stationary position. This equipment includes augers, elevators, silo unloaders, and other types of material handling equipment. Agricultural equipment refers to tractors and other nonstationary machinery.

## Background

Machines have contributed to increased productivity on farms and ranches. However, the benefits of modern technology are often offset by the serious and sometimes fatal injuries associated with their use. Farm machinery entanglement accounts for a significant portion 16% of all farm work-related injuries. Most amputations and mangleings are a result of these types of injuries. Operator error is a common factor in nearly all 97% of all farm machinery related accidents.

## OSHA Requirements

OSHA requires machine operators be trained at the time of initial job assignment and receive annually refresher training in the safe operation and servicing of agricultural equipment. The OSHA standards for agriculture, addressed in 29 CFR 1928.57 and sections of 29 CFR 1910, provide the following guidelines in training farm workers to:

- keep guards and shields in place whenever the machine is in operation;
- properly reinstall guards that have been removed for equipment servicing and repair;
- shut off power and wait until all movement has stopped before servicing, cleaning or unclogging any equipment, except when the manufacturer's specifications require otherwise;
- lockout main switches on electrically power operated equipment prior to service, maintenance or repair;
- review the manufacturer's servicing procedures and manuals prior to repairs;
- refuse riders on agricultural equipment; and

- make sure everyone is clear of machinery before starting the engine, engaging power, or setting the machine into operation.

## Machine Guarding

The moving parts of machines are generally guarded in one of two ways:

- guarding by location—the equipment is designed so that moving parts pose no danger of entanglement; and
- guarding with hardware—machines require shields or guards to prevent entanglement.

## Safety Precautions

The power takeoff (PTO) shaft at the rear of the tractor is considered a danger area. An unguarded PTO shaft can cause serious accidents resulting in severe injury, mutilation and/or amputation. Never step over an unguarded PTO shaft or use the PTO shield as a step. The tractor's master shield should be in place whenever the PTO shaft is in operation.

Damaged shields and guards must be repaired or replaced prior to putting the machine back into operation. The operator is best protected when machines are fully guarded, in good repair and properly serviced.

Observe all warning signs and follow the manufacturer's operating instructions.

When performing any maintenance work on the equipment, follow the procedures found in the owner's manual. These procedures are provided by the manufacturer as the safest, most effective and efficient way to work.

Prior to servicing or repairing farmstead equipment, lock out all energy power sources by:

- unplugging electric cords;
- disconnecting the battery;
- draining hydraulic lines;
- bleeding off pneumatic lines;
- releasing tension on springs;
- pulling the circuit breaker; and/or
- disconnecting the fuel line.

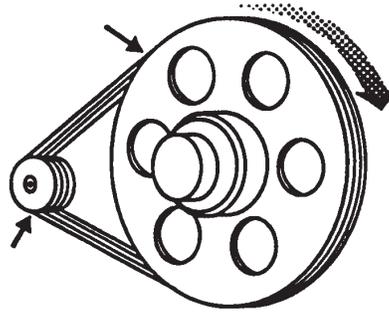
Take all necessary measures to prevent the accidental start-up of equipment while it is being serviced, repaired or adjusted.

All moving parts with nip points must be properly guarded. For example, an exposed auger flight must be guarded with either a grated or a solid baffled cover. A grated guard opening should be no larger than 4<sup>3</sup>/<sub>4</sub>" and the area of each opening no more than 10 square inches.

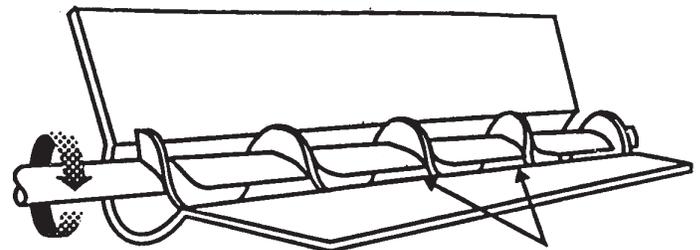
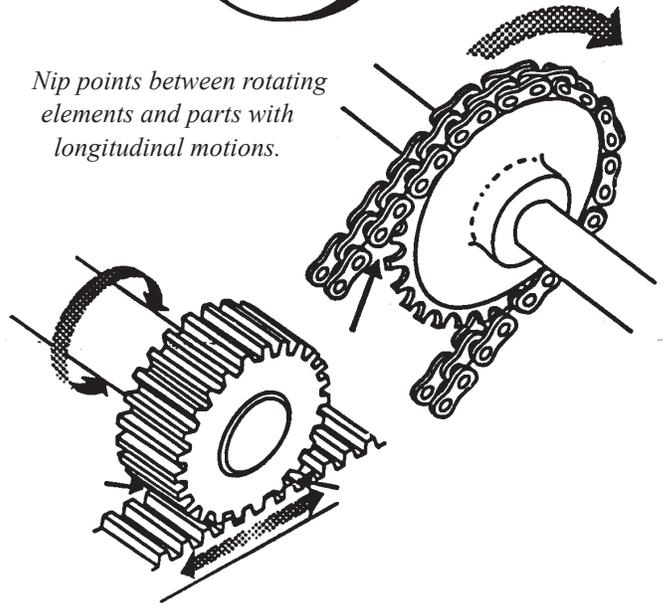
By following safe operating procedures, farm and ranch personnel will find themselves better protected while continuing the trend to increased productivity and a safer working environment.

## Review Questions

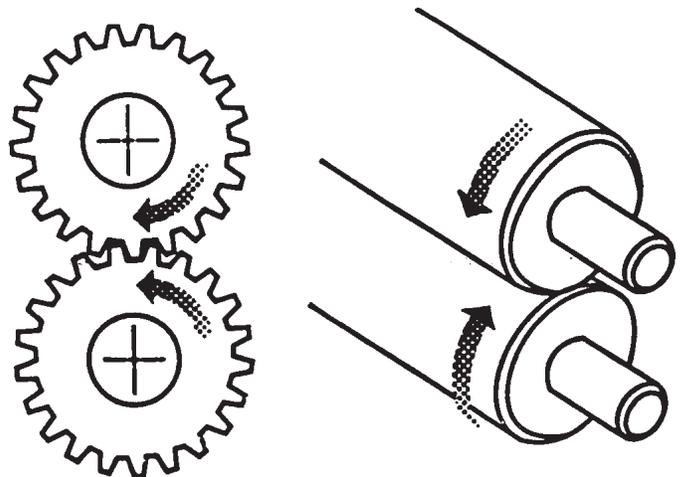
1. The three common operator errors that cause accidents are:  
What are three common operator errors that cause accidents?
  - a. Using unauthorized repair parts, operating equipment below recommended speeds, and failure to use proper personal protective equipment.
  - b. Operating machinery and equipment with the guards removed, failure to operate machinery and equipment according to manufacturer's specifications, and failure to lockout all energy sources prior to servicing.
  - c. Operating machinery and equipment after sunset, operating machinery and equipment in the rain, and playing the radio while operating machinery and equipment.
2. The two methods of machine guarding are: What are the two methods of machine guarding?
  - a. Application of warning signs to dangerous machinery and marking dangerous components with flashing lights.
  - b. Guarding by location and guarding with hardware
  - c. Guarding by fabrication and guarding with software
3. List two common types of injuries that are often caused by exposure to an unguarded PTO shaft. How is a PTO shaft potentially dangerous?
  - a. Fibrillation and lacrimation
  - b. Rumination and eructation
  - c. Amputation and mutilation
4. What are the OSHA training requirements? machine operator's training according to the following schedule:
  - a. At the time of initial assignment and annual refresher
  - b. Quarterly and after a job-related fatality
  - c. At the discretion of the employer
5. What precautions should be taken prior to servicing electrical farmstead equipment?
  - a. Perform the servicing after-hours when no one is around and do it as quickly as possible.
  - b. Disconnect all power sources and lockout the power switches
  - c. Wear rubber boots to prevent electrical shock and barricade the area



*Nip points between rotating elements and parts with longitudinal motions.*



*Nip points between rotating machine components (cover removed for clarity).*



*Common nip points on rotating parts.*

## Answers

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1. b
2. b
3. c
4. a
5. b

Common nip points on rotating parts. V497 19 minutes

## Resources

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For complete information on rules and regulations on agricultural guarding and safety procedures, please consult your Code of Federal Regulations (CFR) 1928.57 and 1910.

The Texas Department of Insurance/Division of Workers' Compensation (DWC) Resource Center offers a workers' health and safety video tape library. Look for these and other safety videos. Call (512) 804-4620 for more information or visit our web site at [www.tdi.state.tx.us](http://www.tdi.state.tx.us).