



# Maine Farm Safety Program

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## *Dangers of Agricultural Machinery*

**F**arm machinery uses power to do work. This creates many possible hazards for both operators and bystanders. Even though manufacturers take many steps to make machinery safe, all hazards cannot be removed. Minor and serious injuries can occur when workers are not paying close attention, taking shortcuts, ignoring warnings or failing to follow safety rules. The wide variety of warning, caution and instructional decals placed on machinery are there for your safety.

There are many different types of farm machinery, but they all have similar characteristics and hazards. Not all these hazards can be completely shielded, so farmers must use caution when operating them.

### **Shear Points**

Shear points exist when the edges of two objects move toward or next to

each other closely enough to cut relatively soft material. Cutting points happen when a single object moves forcefully or rapidly enough to cut. They can be found on many types of crop cutting equipment, such as forage harvester heads and sickle bars, and grain augers. Shear and cutting points are hazards because of their cutting force.

### **Dangers of Agricultural Machinery**

- **Be aware of farm machinery hazards.**
- **Know shear, pinch, wrap, crush and pull-in points since these are the most common places farm injuries occur.**
- **Use caution with hydraulic system leaks. They can directly penetrate the skin.**

They often move so rapidly that they may not be visible, so it is easy to forget that they are there.

### **Pinch Points**

Pinch points exist when two objects move together, with at least one of them moving in a circle. They are common in power transmission devices, such as belt and chain drives, feed rolls and gear drives. Fingers, hands and feet can be caught directly in pinch points or they may be drawn into the pinch points by loose clothing that becomes entangled. Contact may be made by brushing against unshielded parts or by falling against them. Shields cover most of these areas to prevent accidents, but once caught, these machines move too fast for someone caught to get out of a pinch point. Be aware of these hazards and wear clothing that cannot be caught. Never reach over or work near rotating parts. Turn off machinery to work on it and replace any missing shields.

### **Wrap Points**

Any exposed, rotating machine component is a potential wrap point. Protruding shaft ends can also become

wrap points. A cuff, sleeve, pant leg or just a thread can catch on a rotating part and result in serious injury. Entanglement with a wrap point can pull

a person into the machine or wrap their clothing so tightly the person is crushed or suffocated. A person can even lose their balance and fall into other machine parts.

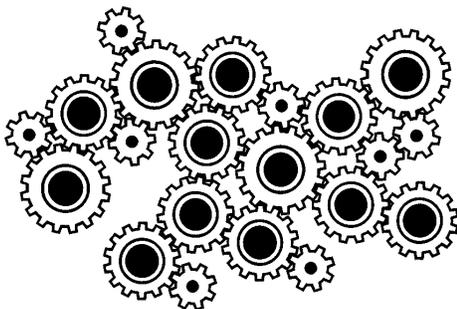
Even a perfectly round shaft can be a hazard if there is enough pressure to hold clothing against the shaft. Shafts that are not round increase the hazard significantly. Universal joints, keys and fastening devices also can snag clothing.

Be aware of potential wrap points and shield those that can be shielded. Place warnings on those that cannot be covered or paint them a bright color.

### **Crush Points**

Crush points exist when two objects move toward each other, or when one object moves toward a stationary object. Hitching tractors to implements may create a potential crush point. Failure to block up equipment safely can result in a fatal crushing injury. Workers need to be careful so they do not get caught in crush point areas.

Crushing injuries most commonly occur to fingers at the hitching point. Wait until the tractor has stopped before stepping into the hitching position. The head or chest of an operator may be crushed between the equipment and a low beam or other part of a farm building. Usually, these accidents occur when the machine is operating in reverse. Tree limbs are also potential hazards.



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## Free-Wheeling Parts

The heavier a revolving part, the longer it will continue to rotate after power is shut off. Rotary mower blades, baler flywheels and various other farm machinery components will continue to move after power stops. Workers must allow time for these wheels or blades to stop before approaching them. This may take as long as two and a half minutes.

## Pull-In Points

Pull-in points usually occur when someone tries to remove plant material or other obstacles that have become stuck in feed rolls or other machinery parts. Always shut off the power before attempting to clear plugged equipment.

## Springs

Springs are commonly used to help lift equipment, such as shock absorbers, and to keep belts tight. Springs may harbor potentially dangerous stored energy. Know what direction a spring will move and how it might affect another machine part when released, and stay out of its path.

## Hydraulic Systems

Hydraulic systems store considerable energy. They lift implements, such as plows, change the position of implement components, such as a combine header or bulldozer blade, operate hydraulic motors and assist in steering and braking. Careless servicing, adjustment or replacement of parts can result in serious injury. High-pressure blasts of hydraulic oil can injure eyes or other

body parts by burning or penetrating the tissue.

Leaks are a serious hazard. Never inspect hydraulic hoses with your hands because a fine jet of hydraulic fluid can pierce the skin. Get medical attention quickly, or you could lose that part of the body that was injected. Use a piece of cardboard to test the hose for leaks.

Follow the instructor's manual when servicing hydraulic systems. Make certain the hydraulic pump is turned off. Lower the attached equipment to the ground and confirm that load pressure is off the system. Treat hydraulic fluid as flammable liquid. Avoid open flames and sparks if hydraulic fluid has been spilled.

Being aware of these machinery hazards is the first step to prevent accidents. Following manufacturer's guidelines and working cautiously will help to produce a safer working environment for everyone.

**Crushing injuries most commonly occur to fingers at the hitching point.**



This Maine Farm Safety fact sheet is part of an educational fact sheet series produced by University of Maine Cooperative Extension. For more information on farm safety, contact your county Extension office.

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