

Machinery, Tools, & Equipment Safety Tips

Understanding the working parts of farm machinery can help you avoid and reduce hazards (see the glossary below). The following tips can help you reduce the risk for injuries and fatalities as you work with machinery, tools, and other farm or ranch equipment.

- Wear clothing that fits well and is not loose fitting to avoid being caught in [pinch points](#) (e.g., where two pieces of machinery move together with at least one moving in a circle).¹
- Never reach over or work near unguarded rotating parts.¹
- Turn off machinery to work on it.¹
- Always replace shields that were removed for maintenance.¹
- Check all equipment for potential [wrap points](#) (e.g., where clothing or hair could be wrapped around a shaft), and if possible, shield those points that can be shielded.¹
- Replace any damaged manufacturer-installed warning labels, and place warnings on equipment parts not previously labeled (consider painting them a bright color, perhaps with a wide stripe).¹
- Stay alert, and warn others when working with [shear and cutting points](#) (e.g., objects with blades or hard edges used to cut). Some shear and cutting points cannot be guarded, which can result in severe cuts, lost limbs, or injuries from objects thrown by the cutting-type equipment.¹
- Avoid [crushing points](#) (e.g., raised equipment or hitching points of tractors and implements).
 - Wait until a tractor has stopped completely before stepping into the hitching position.
 - To avoid being blocked or pinned, recognize and avoid potentially dangerous situations (talk with your children about these as well).
 - Block all machinery securely if you must work under it.
- If an implement can roll freely, block its wheels firmly so it cannot roll.¹
- Never touch [free-wheeling parts](#) (i.e., parts that continue to spin after the power is shut off) until they have stopped moving. This could take 2-2½ minutes.¹
- Know what direction a spring will move and how it might affect another machine part when released, and stay out of its path. ([Compressed springs](#) will expand with great force when released, and springs that are stretched will contract rapidly when released.)¹



- Be aware of [burn points](#): mufflers, manifolds, and even gear cases under adverse climatic conditions. They may not be severe enough to seriously maim, but they can startle the operator enough to cause him or her to “jump” into more deadly danger.¹
- [Hydraulic systems](#) contain fluid under extreme pressure. Before loosening, tightening, removing, or otherwise working with any fittings or parts, relieve this pressure (shut off the hydraulic pump, lower implements, and follow instructions in the operator’s manual). Jet streams from even pinhole leaks can penetrate flesh, often with hot liquid.¹
- Keep equipment in good repair and safety features up to date.² “Proper machine inspection and maintenance can help prevent accidents.”³ For example, tractors should have lights, seat belts, and roll-over protection structures (ROPs). When it comes to machinery maintenance, a shield and guard to cover spinning parts or blades should be kept in place. Read and follow the directions

in equipment instruction manuals, and conduct routine inspections of equipment so you'll be aware of potential safety hazards that may cause an accident.²

- When operating machinery or other equipment or tools, use appropriate [personal protective equipment](#) (PPE), such as safety gloves, [goggles](#), helmet, face shields, ear protection (from noise), etc. to reduce accidents.³
- Follow the one seat, one rider rule. If there is only one seat on the equipment, there should only be one rider – an adult.²
- Don't allow children to play or ride on equipment or in areas where machinery is used or stored.²
- Vehicles such as motorized dirt bikes, mopeds, and [all-terrain vehicles](#) (ATVs) are often used as transportation on farms. They can cause death and serious injuries (often head and spinal injuries), mostly among teens who use them recklessly and don't wear helmets. Children under the age of 16 should not operate 2-, 3-, and 4-wheeled vehicles.
- Do not allow riders in the back of pickup trucks.²
- Before starting machinery, all operators should know where kids are located. You may be unable to hear or see children, especially behind large wheels or in blind spots.²
- All equipment should be parked and locked with the keys removed when not in use.²
- Keep hand tools out of reach of children, especially those with sharp or hot parts.²



Glossary

- **Pinching points:** When two pieces of machinery move together with at least one piece moving in a circle, clothing or fingers, hands, or other body parts could be caught near a rotating part and severed.²
- **Wrapping points:** If there's a rotating shaft, clothing or hair could be wrapped around the shaft, trapping a child or adult and pulling him or her toward the machinery.²

- **Cutting or shearing points:** Machinery that contains blades or hard edges, such as those found on harvesting equipment, can cut material or skin or even sever limbs.²
- **Thrown-objects:** Machinery such as mowers can throw out stones or other debris while in operation and cause injuries.²
- **Crushing points:** Garage doors, tractors, or raised equipment may fall, roll, or be lowered, causing serious injury or death to someone trapped beneath.²
- **Free-wheeling parts:** Machine parts that continue to spin after the power is shut off, such as cutter heads of forage harvesters, hammer mills of feed grinders, rotary mower blades, fans, and flywheels, can cut or catch one unaware. It can take 2-2½ minutes for these parts to stop rotating.¹
- **Compressed springs:** Compressed springs store energy, while relaxed springs have no energy. A compressed spring can expand with great force; springs that are stretched will contract rapidly when stretched. Either way, injury may result or another part of the machinery could be affected, leaving one unaware of the danger.¹
- **Burn points:** Mufflers, manifolds, and gear cases under adverse climate conditions can become hot and result in burns or startle the operator to jump into a more deadly danger.¹
- **Hydraulic systems:** Equipment that contains liquid under pressure can be very dangerous if the pressure is not relieved appropriately. Jet streams of hot liquid can come through even a pinhole leak, penetrating skin.¹

Sources

1. Ohio State University Extension (2008). Preventing farm machine hazards [online]. Retrieved October 22, 2009. From http://ohioline.osu.edu/aex-fact/pdf/AEX_593_08.pdf.
2. Nemours Foundation (2008). Farm safety [online]. Retrieved October 21, 2009. From http://kidshealth.org/parent/firstaid_safe/home/farm_safety.html#.
3. U.S. National Library of Medicine (2009). Farm health and safety [online]. Retrieved October 21, 2009. From <http://www.nlm.nih.gov/medlineplus/farmhealthandsafety.html>.

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