



ENVIRONMENTAL  
HEALTH AND SAFETY  
VIRGINIA TECH.



## Farm & Agricultural Safety Training Program

### Module 5 Farm Machinery Safety

# WHAT IS FARM MACHINERY?

Farm machinery includes agricultural and industrial tractors, as well as the implements and attachments tractors use.

Riding mowers are not farm machinery, but are subject to many of the same safety principles.



Tractor overturns are responsible for roughly 96 fatalities annually according to the National Tractor Safety Coalition.

Most farmworker injuries and deaths are caused by tractor incidents such as overturns, runovers, power take-off (PTO) systems, and unintended contact with tractor attachments or implements. When operated properly, tractors and farming implements are safe.

Children are especially susceptible to injury or death around farm machinery. A child is killed in an agricultural incident every three days in the U.S. Of those, 67% are related to transportation or contact with farm machinery.

2020 Fact Sheet, National Children's Center for Rural and Agricultural Health & Safety

# OSHA STANDARDS

Two OSHA standards directly relate to the operation of farm machinery. When there is no specific standard, then the General Duty Clause applies.

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## 29 CFR 1928.51: Rollover Protection

All tractors made after 1976, over 20 horsepower, and used in agriculture must have an approved Rollover Protection System (ROPS).



ROPS do not prevent rollovers, but can limit overturns to 90 degrees. This prevents the operator from being crushed, but only if the seat belt is being worn.



## 29 CFR 1928.21(a)(4): Slow Moving Vehicles

The SMV emblem is a unique identifier for vehicles which by design move slowly (25 m.p.h. or less) on public roads.



The emblem is not a clearance marker nor does it replace other lighting or marking. The material, location, mounting, etc. of the emblem must be in accordance with ASAE R276, 1967 or ASAE S276.2.



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**Safety, not compliance, is the goal.**

# CONTROLLING HAZARDS

## 1

### **OVERTURNS**

Overturns are the leading cause of death with farm machinery.

- Drive down and back up slopes.
- Keep loads (pulled or carried) low.
- Ensure your ROPS is in good condition.
- Wear your seat belt.
- Control your speed.



## 2

### **OPERATOR RUNOVERS**

Operators are routinely struck by or run over by machinery they are operating.

- Turn the engine off and secure the brakes before dismounting the tractor.
- Keep the transmission and brakes in good working order.
- Wear your seat belt.

# CONTROLLING HAZARDS

## POWER TAKE-OFFS (PTOs)

PTOs operate at 540 or 1000 rotations per minute and can pull you into equipment.

- Make sure all PTO guards are in place.
- Disengage the PTO and stop the engine when working in the danger zone.
- Avoid loose clothing and secure long hair with a hat.

# 3



## BYSTANDER RUNOVERS

Runovers of bystanders, including children, are a major hazard.

- Perform a visual check of the area before mounting the equipment.
- Provide a safe, supervised play area for children away from equipment.
- Reduce speed in areas with people.

# 4

# CONTROLLING HAZARDS

## 5

### STUCK VEHICLES

Trying to recover a stuck piece of equipment is a very dangerous task.

- Use only a properly rated recovery strap, not a chain.
- Call a recovery service if you do not have the proper equipment or training.



## 6

### EQUIPMENT

Poorly maintained equipment increases your risk of injury or death.

- Inspect equipment daily.
- Follow the manufacturer's guidelines for servicing, maintenance and repair.
- Follow manufacturer guidelines for making changes or modifications.

# TRACTOR SAFETY CHECKLIST



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## Farm & Agricultural Safety Tractor Safety Checklist

Date \_\_\_\_\_ By \_\_\_\_\_

Tractor Make / Model / ID \_\_\_\_\_

Do a Safety Inspection daily, prior to use. Use the checklist provided by the manufacturer if possible, otherwise check (at a minimum):

- Is the Operator's Manual available? Location \_\_\_\_\_
- Are steps, handrails and grab bars in good condition?
- Walk-around check performed.
  - ROPS and seat belt
  - Batteries, belts, hoses, lines, hydraulic pump, oil cooler, radiator
  - Tires, rims, lug nuts/bolts, hubs, ballast/wheel weights, inflation pressure
  - Sheet metal, body panels, and frame
  - Door operation, windshield / windows, wipers and mirrors
  - Drawbar, draft links, top link, sway chains / blocks
  - Axles, spindles, tie rods, universal joints, driveline shaft
  - Lights, reflectors, signals, SMV sign, safety labels
  - Gauges, warning lights, switches, horn, cameras, GPS
  - Parking / emergency brake, steering wheel, controls
- If equipped, check loader frame, cylinders, valves, hoses and attachments.
- Fluids and filters checked.
  - Coolant  Engine oil  Hydraulic fluid  Transmission fluid  Brake fluid
  - Fuel level and cap  Diesel Exhaust Fluid (DEF)
  - Fuel filter  Oil filter  Engine air filter  Cabin air filters

### Operator Checks

- Are you familiar with the tractor? \_\_\_\_ Maximum Slope/Incline
- Are you familiar with the terrain and potential obstacles?
- Do you have a check-in procedure and a means of calling for help?

When you identify hazards, use the hierarchy of controls to reduce the risk of injury, illness or death. Scan the QR code for more information.

**INSPECT** your equipment so you can **EXPECT** it to perform.

# FOR MORE INFORMATION

OSHA  
1-800-321-OSHA  
[www.osha.gov](http://www.osha.gov)

Managing the risks associated with your work is a shared responsibility. Laws, training and workplace policies are only a small part of what makes a workplace safe. We encourage each of you to be innovative as you work with each other, your supervisors, and senior managers to create a safe and healthful workplace. Ask questions, talk openly, and share your ideas and solutions with each other.

“We are all interested in one thing - that is, improving the present condition. The answer lies in our group right here today to do it.” -- Bill France, Sr.



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**Health & Safety Building**  
**575 Beamer Way, Blacksburg, Virginia 24061**  
**(540) 231-3600**

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