

Fact Sheet

Agricultural tractor safety

Operating agricultural tractors is one of the most hazardous activities farmers and agricultural workers undertake. Tractors pose numerous hazards, including rollovers and moving parts such as Power Take Offs (PTO). This fact sheet discusses a few of the most important agricultural tractor safety requirements: Roll Over Protective Systems (ROPS)/seatbelts, PTO guarding, and employee training.

Introduction

Farming has always been one of the most hazardous industries because of the number of hazardous activities farm workers perform. These activities include operating or working around agricultural tractors.

Today's tractors are much safer than they have been at any point in history, but some hazards can never be totally eliminated, especially when safety rules and precautions are not followed.

What OSHA regulations apply?

There are two OSHA regulations relevant to agricultural tractor safety:

- 29 CFR 1928.51 emphasizes requirements pertaining to Roll Over Protective Systems (ROPS), seatbelts, and employee training.
- 29 CFR 1928.57 pertains to machine guarding issues related to tractors, including PTO guarding and employee training.

Definition

OSHA defines "agricultural tractor" as "a two or four-wheel drive type vehicle, or track vehicle, of more than 20 engine horsepower, designed to furnish the power to pull, carry, propel, or drive implements that are designed for agriculture. All self-propelled implements are excluded from this definition."

Hazards of agricultural tractors

Agricultural tractors have many significant hazards but some of the most serious are

- Operators being crushed by tractors after rollovers (sideways or rearward).
- Operators and/or ground workers being run over by tractors.
- Contact with moving parts such as the Power Take Off (PTO).
- Exposure to exhaust gases such as carbon monoxide.
- Exposure to other related chemicals such as pesticides, ammonia, etc.

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ROPS and seatbelts

The most common cause of tractor-related fatalities is crushing of the operator when the tractor rolls over sideways or rearwards. The operator may be ejected from the seat to the ground, where the tractor rolls over onto him or her, causing death by crushing or suffocation.

Nearly all of these fatalities may be prevented by the careful application of the aforementioned regulation 29 CFR 1928.51. To summarize this regulation:

- Any agricultural tractor manufactured after October 25, 1976 must have a ROPS that meets the testing and performance requirements of 29 CFR 1928.52, 1928.53, or 1926.1002 as appropriate. A ROPS used on track-type tractors shall meet the test and performance requirements of 29 CFR 1926.1001.
- An approved seatbelt shall be provided and worn on any tractor that has a ROPS.
- The requirements for ROPS and seatbelts do not apply to:
 - “Low profile” tractors while they are used in orchards, vineyards, or hop yards where the vertical clearance requirements would substantially interfere with normal operations, and while their use is incidental to the work performed therein.
 - “Low profile” tractors while used inside a farm building or greenhouse in which the vertical clearance is insufficient to allow a ROPS

equipped tractor to operate, and while their use is incidental to the work performed therein.

- Tractors while used with mounted equipment which is incompatible with ROPS (e.g. cornpickers, cotton strippers, vegetable pickers, and fruit harvesters).

Power Take Off (PTO) and other moving parts

Another common cause of tractor accidents and fatalities is contact with moving parts, especially the Power Take Off (PTO).

OSHA defines a PTO as “the shafts and knuckles between the tractor, or other power source, and the first gear set, pulley, sprocket, or other components on power take-off shaft driven equipment.”

Guarding requirements for PTOs are described in 29 CFR 1928.57(c)(1). To summarize:

- All power take-off shafts, including rear, mid-, or side-mounted shafts, shall be guarded either by a master shield or other equally protective guarding.
- Signs shall be placed at prominent locations on power take-off driven equipment specifying that power drive system safety shields must be kept in place.

Employee training

As mentioned previously, there are two important OSHA regulations that apply to agricultural safety:

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- 29 CFR 1928.51, which deals primarily with ROPS and seatbelts; and
- 29 CFR 1928.57, which deals primarily with guarding of moving parts.

Both of these regulations have clear-cut training requirements that mandate new employee training and annual refresher training.

Fortunately, the required training content is quite brief and the office of Occupational Health and Safety has Toolbox Talk materials available for training on these topics. See:

<http://www.ohs.umn.edu/factsheets/home.html>

Questions

If you have questions on this topic, please contact the Office of Occupational Health and Safety at (612) 626-5008 or uohs@umn.edu, or see the website at <http://www.ohs.umn.edu>.