

# Safe Tractor Operation: Driving on Highways

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**September 16, 1994.** A 63-year-old farmer was fatally injured when the tractor he was driving down a public roadway was struck by a truck. The victim was hauling hay on a flatbed wagon pulled by the tractor. Neither the wagon nor the tractor had a slow-moving vehicle (SMV) emblem. The tractor did not have a roll-over protective structure or a seat belt. A 2-ton truck struck the back of the wagon. The victim suffered massive head injuries when he was thrown from the tractor.

Source: Kentucky FACE 94KY111

As the population shifts from urban to rural areas, traffic on rural roads is increasing. According to the National Institute for Occupational Safety and Health (NIOSH), approximately 50 tractor drivers are killed each year in collisions with motor vehicles or trains. This does not include fatalities among occupants of other vehicles involved.

A study of tractor accidents in North Carolina from 1995 to 1999 revealed that crashes follow seasonal trends coinciding with planting and harvesting; these are the seasons when tractors are most likely to be on roads. Most accidents occurred between 3:00 p.m. and 6:00 p.m. and most involved a collision with a car or pick-up truck. The study also found that crashes were more likely to occur on secondary routes or unnumbered highways where visibility and line-of-sight may be a major factor. More than 70 percent of all tractor collisions occurred on roads with posted speed limits of more than 50 miles per hour. Excessive speed of the other vehicle was the reason for most tractor accidents, especially when the other driver was 15 to 20 years old.

## Highway Safety Features

A tractor operator's best defense against collision with a motor vehicle on public roads is to make the tractor as visible as possible. This is critical because of the difference in travel speed. If a car traveling 50 miles per hour approaches a tractor traveling 20 miles per hour in the same direction, and if the driver of the car first notices the tractor while still 400 feet behind it, the driver has less than 10 seconds to avoid a collision with the tractor. In this time, the driver of the car must recognize the danger, determine the speed the tractor is traveling, and decide what action to take.

### SMV emblem

Texas traffic law requires that farm tractors with a maximum speed of 25 miles per hour have a slow-moving-vehicle (SMV) emblem on the rear of the tractor. When towing a trailer or other equipment that blocks the SMV emblem, another emblem must be attached to the rear of the towed equipment.

Standards for shape, color and placement of the SMV emblem established by the American Society of Agricultural Engineers, the American National Standards Institute, and the Society of Automotive Engineers have been adopted into law. The emblem must be an equilateral triangle at least 13.8 inches high (plus or minus 0.3 inches) and must be a fluorescent, red-orange material with a border of red retro-reflective material. The fluorescent material is visible in daylight and the reflective border shines when illuminated by headlights at night.

The SMV emblem must be mounted at the rear and as close to the center of the tractor or equipment as possible. It must be mounted with the point up; the lower edge of the emblem must be at least 2 feet and not more than 6 feet above the ground.



## Lighting and flashers

Tractors are required to have two forward-facing headlights and a red taillight that burns continuously. This taillight must be visible for 500 feet under normal circumstances and be mounted on the far left side of the tractor. All towed equipment must have two rear-mounted red reflectors positioned at the extreme left and right.

When farm tractors are driven on public roads, they must also have white or amber flashers mounted on the front and red or amber flashers mounted on the rear. These lights must be on when the vehicle is in operation. Some tractors have one or two amber flashing lights on top of the cab to signal approaching vehicles in both directions.

## Safe Driving Practices

Though state law does not require tractor operators to have driver's licenses, they must follow all traffic laws, obey all traffic lights and signs, and use safe driving practices to protect themselves and other drivers.

The first aspect of safe tractor operation on highways is to ensure that the tractor itself is safe to drive. According to NIOSH, the average age of tractors in operation in the U. S. is nearly 26 years. Thus, a significant number of tractors are still in use that do not have the advanced steering, braking and shifting technologies that make driving on highways safer.

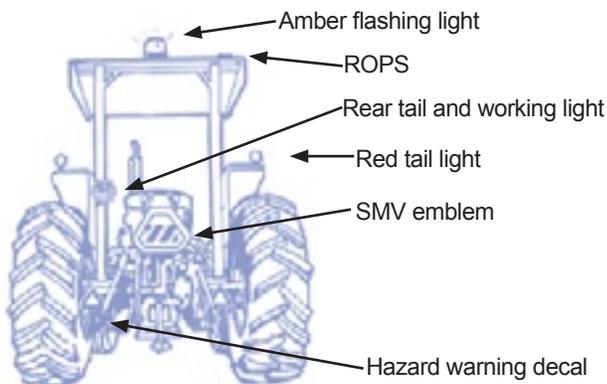


Figure 1. Highway safety features.

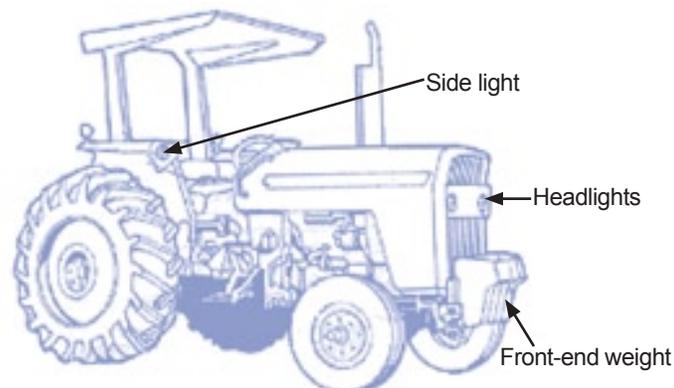


Figure 2. Highway safety features.

## Before you operate a tractor on a highway, be sure to:

- Lock brake pedals together.
- Adjust the seat position so you are able to safely reach the steering wheel, pedals and gear shifts.
- Adjust mirrors for good vision.
- Make sure all lights and flashers work properly.
- Check tire pressure and make sure wheel bolts are tight.
- Add weights, if necessary, to balance the tractor, especially if you are pulling or hauling a load.

## Highway Driving

If the tractor is equipped with a rollover protection structure (or ROPS), make sure to securely fasten the seat belt. This will keep you within the protected zone if the tractor overturns. Remember to turn on headlights and flashers to warn other drivers of your presence. When driving on the highway, stay as far to the right as possible, but avoid driving on uneven road surfaces at high speeds (i.e., driving with the left wheels on smooth pavement and right wheels on rough, loose shoulders). This could cause erratic steering, uneven braking, loss of control, and tractor overturns. If it is necessary to let cars pass you, slow down, pull to a secure shoulder, stop, and let them pass. Avoid driving on steep inclines and be careful when re-entering the highway.

Use turn signals and/or hand signals to warn other motorists of your intent to change lanes, slow down to stop, make a turn, or pull onto a highway. Make sure to give motorists advance warning by signaling at least 100 feet before you change speed or direction.

## Towing Implements

Farmers often must use highways to tow large machinery and implements from one field to another. Towed machinery is an additional risk for tractor operators and motorists. Before towing machinery on highways, be sure the tractor is large enough to handle the load and that the machinery is securely attached to the drawbar or three-point hitch system. Safety chains should be attached from the equipment to the tractor to keep the equipment from veering away if it should unhitch from the drawbar.

If the towed equipment blocks the motorist's view of the SMV emblem, put another emblem on the rear of the equipment. Also add lights, reflectors and reflective tape to the rear of the equipment. For extremely wide loads, check with your local Department of Transportation concerning special tow regulations. You may be required to have an escort vehicle traveling in front of the tractor and equipment to warn oncoming traffic. Even if it isn't required by law, it is still a good idea to have an escort vehicle to watch out for obstacles, parked vehicles, and other potential problems.

If possible, avoid making many left turns. Most tractor-motor vehicle collisions occur when the motorist

assumes the tractor is pulling to the right, the motorist begins to drive around the tractor, and instead the tractor makes a wide left turn.

### Front-end loaders

If at all possible, do not travel on a highway with a loaded front-end loader. This extra weight is a significant driving hazard because it makes it harder for the driver to see obstacles and steer and brake safely. If you must transport a load with a front-end loader, proceed with caution.

Make sure the tractor is properly balanced from front to rear using rear counterweights, and widen the front wheel spacing. Drive slowly and travel with the bucket low to the ground. This will lower the tractor's center of gravity and make it more stable. Slow down well before making turns and don't take a chance on steep inclines or shoulders.

## Children Operating Tractors

In 1968, The U.S. Department of Labor Fair Labor Standards Act, Hazardous Occupations Order in Agriculture (HOAA), declared it illegal to employ children younger than 16 to operate tractors with more than 20 horsepower. Children younger than 16 years who are employed, either with or without compensation, by their parents or legal guardian are exempt from this

regulation. There is a second exemption for children who are at least 14 years old and who attend an approved Tractor and Machinery Certification Training Program. Tractor operators are not required to have driver's licenses.

Children often lack the maturity to recognize hazardous situations and avoid them, especially when operating tractors on public highways with other motorists. Children also lack the size and strength to reach the brakes, clutch and steering mechanisms, and often cannot see everything around them while sitting in the tractor seat. Don't put your child in this dangerous situation. Children should never drive tractors on public roads.

## Extra Riders

Except for tractors equipped with an instructor seat, tractors are designed for only one operator and absolutely no riders. Because there is no seat belt to protect an extra rider, the danger of falling off and being injured by tractor wheels or towed equipment is especially great. Data show that children are much more likely than adults to die as a result of falling from a tractor and being run over. According to NIOSH, almost 90 percent of all such fatalities happen with children under 15 years old. These accidents can be easily avoided by not allowing extra riders on tractors, especially children. Yet, up to 80 percent of farm children routinely ride along on tractors with family members, and often on public highways.

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