

SAFE TRACTOR OPERATION: DRIVING ON HIGHWAYS

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September 16, 1994. A 63-year-old farmer was fatally injured after being struck by a truck while transporting hay to his farm. After loading five round bales of hay onto a flatbed wagon, the victim drove his tractor down a public roadway to transfer the hay to another pasture for winter storage. Neither the wagon nor the tractor had a slow-moving-vehicle (SMV) emblem, a rollover protective structure, or a seat belt. After driving down the highway about one quarter of a mile, a two-ton truck struck the back of his flatbed wagon. The tractor rolled over and the victim suffered massive skull injuries when he was thrown from the tractor. A witness who was traveling by car in the opposite direction called 911 to summon help. The victim was pronounced dead at the scene by the coroner. *Source: Kentucky FACE*

TRACTOR-VEHICLE COLLISIONS

As the population shifts from urban to rural areas, traffic is increasing on rural roads. This trend stresses the need for farm tractor operators and motorists to become more aware of collision hazards. According to the National Institute for Occupational Safety and Health (NIOSH), approximately 50 tractor-operator fatalities occur each year from collisions with motor vehicles or trains. This does not include nonfatal injuries and fatalities of occupants of other vehicles involved in the collision.

A 2000 report released by the University of North Carolina Highway Safety Research Center summarized *Crashes Involving Farm Tractors and Other Farm Vehicles/Equipment in North Carolina* from 1995 to 1999 and revealed some interesting trends. Crashes followed seasonal trends coinciding with planting and harvesting; most were likely to occur between 3:00 p.m. and 6:00 p.m.; and, most were likely to involve a collision with a 2- or 4-door passenger vehicle or pickup truck. The

study also included that crashes were more likely to occur on secondary routes, or unnumbered highways. This implies that visibility and line-of-sight is a major factor. Also, more than 70 percent of all farm-vehicle collisions occurred on roads with posted speeds in excess of 50 miles per hour. Speed involvement was highest for drivers in the 15- to 20-year-old range and decreased through age 60. Speeding violations accounted for four of the top five non-farm vehicle driver violations.

REQUIRED HIGHWAY SAFETY FEATURES

A tractor operator's best defense to avoid a 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. For example, a car traveling 50 miles per hour approaches a tractor traveling 20 miles per hour in the same direction on the road. 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 be equipped with 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 SMV emblem must be attached at 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 Standard Institute, and the Society of Automotive Engineers have been adopted into law. The emblem shall 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 two feet and not more than 6 feet above the ground.



Lighting and Flashers

Lighting requirements also exist to warn other motorists of farm tractors. 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 operated 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 activated when the vehicle is in operation. On some tractor designs, there is one or two amber flashing lights located on top of the cab that signals approaching vehicles in both directions.

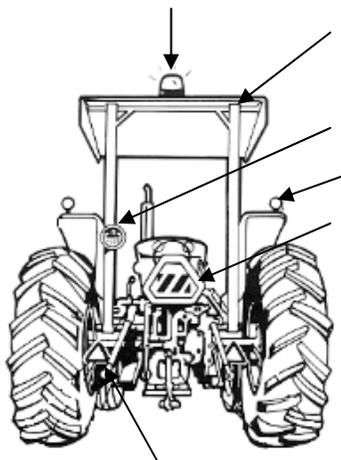


Figure 1. Highway Safety Features

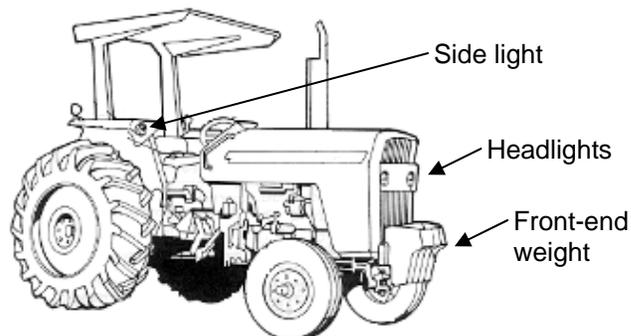


Figure 2. Highway Safety Features

SAFE DRIVING PRACTICES

Though state law does not require tractor operators to have a driver's license, operators must follow all traffic laws, obey all traffic lights and signs, and apply safe driving practices to protect themselves and other highway 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 United States is 25.7 years. Thus, a significant number of tractors are still in use that are not equipped with advanced steering, braking, and shifting technologies that make driving on highways safer.

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 roll over protection structure (or ROPS), make sure to securely fasten the seat belt. This will keep you within the zone of protection in case 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 result in 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 into a highway. Make sure to give motorists advanced 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 presents additional risks for tractor operators and motorists. Before towing machinery on highways, tractor operators should make sure the tractor is large enough to handle the load, and 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 in case it should unhitch from the drawbar.

If the towed equipment blocks the motorist's view of the SMV emblem, then the operator should affix a separate SMV emblem, and 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 potential obstacles, parked vehicles, and other situations that would prohibit safe transport.

If possible, avoid many left turns. Most tractor-motor vehicle collisions occur when the motorist assumes the tractor is pulling to the right, the motorist makes the move 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 poses significant driving hazards that adversely affect the operator's ability to see obstacles, and steer and

brake safely. If you must transport a load with a front-end loader, proceed with caution.

Make sure that the tractor is properly balanced from front to rear using rear counterweights, and widen 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 the tractor more stable. Slow down well before making turns, and don't take a chance on steep inclines or shoulders.

YOUTH TRACTOR OPERATORS

According to the Occupational Safety and Health Administration, employers with more than 10 employees are prohibited from hiring children under 16 years old to operate tractors with greater than 20 horsepower, with an exception for children at least 14 years old who attend an approved Tractor and Machinery Certification Training Program. However, more than 90 percent of all farms employ fewer than 11 employees. Because a driver's license is not required, children on small farms routinely operate farm tractors in the field and on highways.

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 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.

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 safety device, such as a seatbelt, to protect an extra rider, they are particularly vulnerable to falling off and becoming injured by tractor wheels or towed equipment. Data shows that children are substantially more likely to die as a result of falling from a tractor and being run over. According to NIOSH, children under 15 years old account for almost 90 percent of all such fatalities. These accidents can be easily avoided by restricting extra riders, 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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