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# Ten Commandments of Tractor Safety

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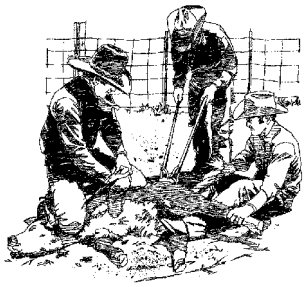
Agricultural Health and Safety
Fact Sheet AHS-03



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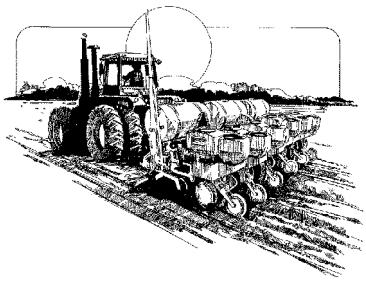

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## First Commandment

**Know your tractor**. Most farmers know their machines well, but what about new farm help, or a neighbor's tractor? Always look at the operators manual before operating an unfamiliar machine. Know the location of each control. Locations of important items, PTO levers for example, vary from one manufacturer to another. Be sure you can stop the tractor and its implements quickly if needed. It is important to perform a daily maintenance check on a tractor every time it is used. This will ensure that the tractor is in a safe and useable condition at all times.

### Daily Equipment Checks

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| 1) Check fuel tank (is there enough fuel to complete the task). |
| 2) Check coolant level in the radiator, or inspect cooling fins on air cooled models. |
| 3) Check tire pressure (refer to owners manual for the proper inflation for each job). |
| 4) Check the condition of the tires. Look for cuts, cracks, and checking. |
| 5) Check the battery, cables, and terminals. |
| 6) Check the transmission and hydraulic oil levels. |
| 7) Check air filter elements, or the oil level in an oil bath air cleaner. |
| 8) Check the guards and shields to see that they are correctly installed and in good condition. |
| 9) Check operator's station. Be sure it is clear of spilled fuel, oil, grease, crop residue, or loose objects. |
| 10) Check the lighting system, and "Slow Moving Vehicle" placard. |
| 11) Do a walk around check of the tractor and implement. Look for loose or worn parts (king pins & lug nuts for example). Check to see if the attached implement is hitched correctly, and that electric, mechanical, and hydraulic connections are secure. |
| 12) Check owners manual for other checks particular to your tractor and implements. |

Quick attendance to problems discovered during the daily checks will keep your safe and serviceable over a longer period of time. An added benefit is a savings of time and money as a result of good maintenance.

## Second Commandment

**Roll Over Protective Structures (ROPS).** Most tractor fatalities are the result of

an overturn. The use of ROPS in conjunction with a seat belt saves lives. ROPS works by limiting the roll to 90 degrees, and protecting the operator's station from being crushed under the weight of the machine. However ROPS are useless unless the seatbelt is used. If your tractor is not equipped with ROPS, we strongly recommend that you retrofit approved ROPS to your machine. If for some reason, a ROPS is not practical (overhead clearance problems for example), then take special care when operating that tractor, and limit its use to less risky tasks. Don't use a non-ROPS tractor for pulling stumps for example.

## Third Commandment

**Drive Safely.** Not only should tractor operators know their machines, they should know the terrain and local hazards. Avoid operating a tractor near ditches, holes, and embankments. If you must do so, then allow a six foot clearance between the edge and the machine. This is the shear line. The ground closer to the edge may be unstable and can sluff off causing the tractor to roll.

Avoid steep slopes. They reduce a tractor's stability, even more so when crossing a slope. If you must operate on a slope, set your wheel spacing as wide as possible and reduce ground speed. Always keep side mounted implements on the uphill side of the tractor. When traveling up a hill drive slowly and avoid quick turns, keep an eye out for anything that could cause a loss of traction or upset the tractor. When traveling down hill keep the tractor in low gear to help control its speed.

Reduce speed when turning on the road, or at row ends. Slow down and avoid high speed turns. Remember, tractors do not handle like automobiles or pick-up trucks. They can and will overturn if turned too sharply for the speed of travel. Think ahead, consider not only the tractor but towed implements, or wagons, and other factors, such as loader bucket position and weight. All of these things should be considered when determining a safe speed and turning radius.

Though highway operation should be avoided as much as possible, at some point a tractor will have to use a public road. There are some special considerations to remember in these situations. Slow Moving Vehicle (SMV) emblems and safety clearance flags must be visible on the tractor and implement. Independent brakes must be locked together to avoid uneven braking in panic stop situations. Tires should be rechecked for defects that could cause a blowout, resulting in a loss of control. Lights and signals should be checked for proper operation. Safety chains are required in some locales, and should be used while towing, in case the main hitch fails. Also check hitch pins and replace them if they are worn. Check the load to see that it is properly secured and evenly distributed. If an implement is towed then it should be locked in the travel/transport position. Equip your tractor for road emergencies. Road flairs, a fire extinguisher, a first aid kit, and tools for minor repairs should be securely stowed on the machine. Avoid traveling on the shoulder, stay completely on the road surface at all times. Shoulders can have soft spots and other hazards that can cause the tractor to roll. When traveling on a public roads other vehicles become a major concern. Be courteous to other drivers, but do not count on them to return the favor. Other motorists seldom understand the limitations of farm equipment, and are often inattentive to your signals. Be prepared to have a car pass when you attempt to turn, or at other inappropriate times. There is little one can do to prevent other motorists from doing something risky, but by being vigilant you may avoid becoming involved in the accident they create.

## Fourth Commandment

**Never start a tractor inside a closed structure.** Always open the doors before starting the tractor, or other internal combustion engines. A closed space can quickly fill with deadly Carbon Monoxide (CO), turning it into a gas chamber. Always ensure there is adequate ventilation.

## Fifth Commandment

**Power Take Off (PTO) shields**. Your tractor's PTO is a serious hazard. A PTO running at 1000 rpm, will pull in clothing at a rate of 8 feet per second. A person can't react that fast, and the PTO can't be stopped. Most tractors come from the factory with a shield. If your PTO has a damaged or missing shield, replace it before operating the tractor.

## Sixth Commandment

**Hitches and Drawbars.** Always hitch towed loads to the drawbar. This is the only safe place to attach a load. Hitching to the seat bracket or the axle, or anything else higher than the drawbar, can cause the tractor to backflip in less than a second. This happens because the rear tire becomes a fulcrum, and the weight of the load overcomes the weight of the front of the tractor.

## Seventh Commandment

**Never leave a running tractor unattended.** Always shutdown your equipment if you are going to leave the work area. The risks of fire or unauthorized or unintended operation far out weigh any possible benefit. If you have children on your farm take the keys with you. The proper shutdown procedure includes putting the PTO lever in neutral, setting the parking brake, killing the engine (note: some models require a cool down period before shutting off the engine), and leaving the transmission in low gear. Do not jump down from the operator's station. Use the steps and handholds provided, and check them regularly to keep them free of dirt, grease, and oil.

## Eighth Commandment

**Fuel when cool.** Never refuel a tractor when it is running, or when the engine is hot. This is of special importance on older gasoline powered equipment. Gasoline is not just highly flammable, it can be explosive in vapor form. It is true that the best time to refuel your machines is at night after the days work is done. (Fueling at night helps prevent condensation that would otherwise occur over night in a partially full or empty tank.) But allow enough time for the engine to cool down to the point were any spilled fuel will not be ignited.

## Ninth Commandment

**NO RIDERS!!!** On most tractors, there is only one seat. (Some newer models have an additional seat with a seatbelt.) On an older tractor or one with only one seat, there is no safe place for anyone other than the operator. If your tractor is equipped with a ROPS it is not designed to protect anyone outside the operator's station. No one other than the operator has any business riding on a tractor, or worse yet an implement being towed by a tractor. DON'T RIDE ON A TRACTOR AND DON'T ALLOW OTHERS TO RIDE!!!

## Tenth Commandment

**Speed and carelessness kill**. Never rush while operating a tractor. There is only one acceptable speed for tractor operation "safe speed." Allow plenty of time to get to and from the work area. The job won't get done at all if there is a wreck on the way. Always allow more time to complete a task than it will actually take. Allow time to rest. A tractor does not get tired but its operator does. An overly fatigued operator is liable to make mistakes, or become inattentive. Operating a tractor and implement in the field is both mentally taxing, and monotonous. Get off the machine and stretch every so often, it really helps.

## Pertinent Literature

Cooperative Extension Service Employee Occupational Safety and Health Training. (1974). Safe Tractor Operation. Author: Baker, David. E.

Farm Safety Association Fact Sheet. Farm Equipment on Public Roadways Guelf, Ontario, Canada. (April 1998).

Rollover Protective Structures (ROPS) Work Safe. [On Line] www.gov.mb.ca/Labour/Safety/bulletins/bltn100.html