SAFE OPERATION OF UTILITY TYPE VEHICLES (UTVS)

S. Dee Jepsen, Assistant Professor, State Safety Leader, Agricultural Safety and Health
Kathy Henwood, Program Coordinator, Agricultural Safety and Health
Food, Agricultural and Biological Engineering

Utility type vehicles are prominent pieces of equipment utilized in a variety of settings. The hauling features offered by UTVs have increased their popularity, availability, and use in work-related tasks in rural, suburban, and urban areas. Because of their hauling capabilities, they are helpful vehicles in residential, agricultural, construction, and industrial settings. There is a category of vehicles related to UTVs, with similar features and appearance, which is designed primarily for recreational use and known as recreational off-highway vehicle (ROVs). Both UTVs and ROVs have also been referred to as "Side-by-Side" vehicles.

Description of UTV

These vehicles can have four or six wheels and are powered by diesel, gasoline engines, electric or a hydrogen fuel cell. UTVs were designed for work purposes. Most models include a bed to enable the hauling of feed, mulch, or other supplies, which makes them convenient transport for small jobs. These utility type vehicles are available from multiple manufacturers and in a variety of models.

Utility type vehicles have a steering wheel, acceleration foot pedal, and a brake foot pedal. In addition, these vehicles are designed to carry passengers. Most UTVs have side-by-side or bench seating and are equipped with a seat belt for the operator and passenger. An occupant protective structure, which commonly includes a system of tubular bars, surrounds the space where the operator and/or passenger are seated. Other protective features could include: hard plastic doors, sturdy canvas netting, or handholds. Utility type vehicles by design are to be "driven" while ATVs are to be "ridden."

In accordance with the Ohio Revised Code [(4501.01 (B) & (VV)], a utility type vehicle is not a motor vehicle but a self-propelled vehicle designed with a bed for the primary purpose of transporting cargo. The utility type vehicle is also not classified as an All-Purpose Vehicle (APV), which are required to be titled in the state of Ohio.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>UTV/ROV</th>
<th>ATV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tire pressure</td>
<td>20 psi or less</td>
<td>2.7 to 10 psi</td>
</tr>
<tr>
<td>Steering</td>
<td>Steering wheel</td>
<td>Handlebar</td>
</tr>
<tr>
<td>PPE recommended</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Designed for public roads/highways</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Operation age</td>
<td>16 years old</td>
<td>Varies upon model</td>
</tr>
<tr>
<td>Seating</td>
<td>Non-straddle seat</td>
<td>Straddle</td>
</tr>
<tr>
<td>Passenger</td>
<td>Yes</td>
<td>No, unless it is a 2-up</td>
</tr>
<tr>
<td>Seat belt</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Safe Operation**

To safely operate a utility type vehicle, the operator must use similar safe work habits as used with tractors, skid steer loaders, and ATVs. A safe, successful driver should become familiar with the machine before using it. This can be done by reading the owner's manual and following safety labels found on the vehicle. A qualified operator (sales person) can also demonstrate the correct operation.

Here are additional safety practices to follow when driving a UTV:

- Keep legs and arms inside the vehicle at all times.
- Drive slowly and turn smoothly to avoid an overturn.
- When hauling cargo the vehicle's center of gravity is raised, increasing the chance of overturning.
- Drive completely up or down a slope or hill before making a turn. Do not turn the vehicle in mid-slope or hill as this increases the probability of overturning.
- Use the appropriate speed on rough terrain.
- Operators and passengers have been thrown from vehicles.
- Stay clear of ditches and embankments.
- Passengers must be tall enough to reach handhold while their backs are against the seat and their feet are flat on the floorboards.
- Each passenger must ride in his/her own seat, not anywhere else on the UTV.
- Operators must back up carefully. Look especially for children before backing.
- Operators should be free from the influence of drugs or alcohol.
- Due to the hauling purpose of a UTV, special attention should be paid to making sure cargo or material is properly secured during transport.

Since UTVs are often used to tow implements, it is important to follow safety practices when towing a load. When towing a load, make sure the cargo box is loaded to assume good traction for driving and stopping. Be sure to tow load at a speed slow enough to maintain control. Remember, the stopping distance increases with speed and weight of a towed load. Follow the manufacturer's recommendations for weight limits for towed equipment.
The safety practices, listed above, are recommendations of how to safely operate a UTV. As with all machinery, use the UTV as designed. Utility vehicles are tools, not toys and following the recommended safety practices will help ensure an enjoyable experience for both driver and passenger.

Additional Note for ROVs

ROVs are the recreational variant of Side-by-Sides. The same operational instructions and safety rules apply in a general sense. But since recreational use may occur at higher speeds and on more challenging terrain than utility use, the operator must be especially cautious and operate the vehicle at speeds appropriate for the terrain, use extra care in turning and crossing hills, avoid stunt-riding, and never operate under the influence of alcohol. Recreational use requires operators and passengers to wear a helmet and other protective gear, use the seat belts, and keep all parts of their bodies inside the ROV. A number of crashes, rollovers, injuries, and fatalities have occurred because ROV drivers have violated these common sense rules and driven aggressively.

Acknowledgments

This fact sheet was reviewed by Randall Reeder, P.E., Assoc. Prof. and Extension Ag. Engineer, The Ohio State University; Kent McGuire, Program Coordinator, Agricultural Safety and Health, The Ohio State University; Doug Morris, Ohio 4-H ATV Safety ASI Instructor; Tom Yager, Vice President Safety Programs SVIA/ROHVA; and Ken Glaser, Director, Special Projects, SVIA/ROHVA.

References

- Ohio Revised Code (4501.01 (B) & (VV))
Introduction
They look like fun. They can go fast. They can travel in the woods. They can kill and injure. What are they? They are ATVs and utility vehicles.

In a recent year, 90,000 injuries and 120 deaths were reported due to use of these fun vehicles. The U.S. Consumer Product Safety Commission reports that 4 of every 10 people treated in hospital emergency rooms are younger than age 16. Why would this be the case?

This task sheet discusses safe use of ATVs and utility vehicles as they are used for work and recreational purposes.

All-Terrain Vehicles
As the name implies, all-terrain vehicles (ATVs) can travel almost anywhere. Rough terrain, steep slopes, rutted mountain roads, and muddy conditions make ATV use appealing. Sportsmen, leisure time enthusiasts, and workers use ATVs. ATVs have become a valuable tool for farm and ranch tasks.

ATVs are designed for work. Other task sheets discuss tractor and skid steer stability. Review Task Sheets 4.12, 4.13, and 7.1. Then consider these ATV design features.

- stability
- suspension
- drive lines
- power and speed

Stability: A four-wheel ATV is more stable than a three-wheel ATV. Heavy loads, steep slopes, and “popping the clutch” can cause the ATV to roll or flip backward. Overturns occur with operator actions that change the center of gravity.

Note: Three-wheeler sales have been banned for several years.

Suspension: ATV suspension systems vary with the machine. Less expensive models may use only balloon tires for suspension. These ATVs can bounce and pitch sideways at high speeds. More expensive models use coil springs and shock absorbers to improve traction and steering control.

Drive lines: ATV drive mechanisms vary greatly. Several combinations of clutches, driveshafts, and differential locks are used. Higher speeds and sharp turns can increase the risk of side overturns if the drive wheels are locked together for traction.

Power and Speed: ATV engines vary in size from 100 cc to 700 cc or greater. Transmission gear ratios vary also. Some ATVs can travel over 50 mph. High-speed operation of the ATV increases the risk of loss of control and rollovers.

Remember, ATVs are not toys. They are powerful machines.
ATV Operation and Safety

Safety training for ATV use is the first step in being a qualified ATV operator. Local ATV dealers, ATV clubs, and safety professionals from Cooperative Extension, state Departments of Conservation and Natural Resources and farm organizations may offer safe ATV operation programs. The Specialty Vehicle Institute of America (SVIA) provides training as well. Visit them on the Internet at www.svia.org. At a minimum, use the operator’s manual and the safety signs on the ATV to help educate yourself before using the machine.

Here are some guidelines for safe ATV use:

• Manufacturers recommend that ATVs with engine sizes greater than 70cc be sold only for children 12 and older and that ATVs with engines greater than 90cc be sold only for individuals 16 and older. The child’s strength, skills, and maturity determine readiness to operate an ATV.
• Carrying passengers increases the risk of overturn injury and death. A second person changes the center of gravity of the machine and the machine’s steering ability.
• Know the machine’s limitations. Operating on steep terrain, pulling heavy loads, excessive speed, and “wheelie” type starts can result in ATV turnover.
• Wear a full-face shield helmet. The helmet should fit snugly and securely. It should be labeled with the American National Standards Institute (ANSI) Z90.1 label.
• Over-the-ankle shoes with sturdy heels and soles are necessary.
• Gloves and long sleeves are needed for specific jobs.
• Use lights, reflectors, and highly visible flags to increase the ATV’s visibility.
• Avoid public roads. Paved and unpaved roads are designed for truck and automotive traffic. ATVs are designed for off-road use. Increased risk for rollovers of ATVs on road surfaces has been shown.
• Check your state’s vehicle code for use of the ATV as an agricultural machine. Use of the ATV for agricultural purposes and only incidental road travel may be permitted in your state.
Utility Vehicles

Utility vehicles are similar to golf carts except they are fitted with cargo boxes to carry work material. The utility vehicle can have four, five, or six wheels depending upon its use. The UV weighs about 1,000 pounds and can carry several hundred pounds of cargo. The machine can be diesel, gasoline, electric, or hydrogen fuel cell powered.

Like other farm machines, the utility vehicle is made for work purposes. Hauling feed, mulch materials, and supplies makes it a convenient transport for small jobs. Like an ATV, the utility vehicle is a tool and not a toy.

Safe operation of the utility vehicle requires the same safe work habits as used with tractors, skid steer loaders, and ATVs.

Safe Utility Vehicle Use

Use the operator’s manual and safety signs/decals found on the machine to learn how the utility vehicle operates and what safety practices to observe. A successful operator becomes familiar with a machine before attempting to use it. Ask a qualified operator to show you what to do if no training materials can be found.

The following safety practices should be followed in operating a utility vehicle:

- Some manufacturer’s specifications suggest that no operator younger than age 16 should be permitted to operate a utility vehicle.
- With increased amounts of cargo, the utility vehicle’s center of gravity is raised. Risk of an overturn increases. Drive slowly and turn smoothly.
- To prevent over-turns, secure the load from shifting sideways.
- Avoid driving on steep slopes. It is safer to drive uphill or downhill rather than across a slope. Avoid sharp turns to prevent over-turns. Drive to the top or bottom of a slope to make a turn. When approaching a downhill slope, reduce speed before you reach the slope. This will help reduce wear on the brakes.
- Reduce speed over rough terrain to prevent the utility vehicle from bouncing. Operator and riders have been thrown from utility vehicles.
- A second rider should occupy the passenger seat. Do not permit extra riders to ride in the cargo box. Use the handholds. If the utility vehicle has a roll-bar, buckle the seat belt.
- Do not drive near ditches or embankments. Remember if the ditch is 6 feet deep, stay back from the edge by at least 6 feet.
- Use your tractor, skid steer loader, and ATV knowledge to safely operate a utility vehicle.

As with all machinery, use the device as it was designed. Utility vehicles are tools, not toys.
**Safety Activities**

1. Use the Internet website www.atvsafety.org to solve crossword puzzles or to play word search games related to all-terrain vehicle (ATV) safety.


3. Collect newspaper, magazine, or Internet news articles about ATV and utility vehicle injuries and deaths. Create a poster presentation to display at a local ATV or utility vehicle dealership.

4. What does the designation “100cc engine” represent? Using the math formula for volume of a cylinder (ask your teacher), calculate the diameter and height of the cylinder that would represent a 100cc engine cylinder. Use a sheet of paper to construct the cylinder. Answer the same question for a 500cc engine cylinder.

**References**

1. Safety Management for Landscapers, Grounds-Care Businesses, and Golf Courses, John Deere Publishing, 2001. Illustrations reproduced by permission. All rights reserved.

2. www.cdc.gov/nasd/ Search the National Ag Safety Database site by topic for ATV information.

3. www.atvsafety.org/Search site for interactive quizzes, word searches, and puzzles.