

BACKHOE SAFETY...

HOW THEY WORK AND THEIR HAZARDS

COURSE OUTLINE

- **It's important to fully understand the machines that you're working with before you operate them.**
 - The more you know about how they function, the better you can identify the hazards that you can encounter when using them.
- **Backhoes are often used for digging and backfilling, transporting materials, cleaning worksites, breaking up pavement, and other small demolition tasks.**
- **You can also use them for...**
 - Snow removal.
 - Dumping.
 - Rigging.
- **This machine's versatility is what makes it an important part of many construction projects.**
- **If you are going to use one, it's important to understand the major components that make up a backhoe.**
 - The tractor.
 - The front loader.
 - The backhoe attachment that gives the machine its name.
 - Its stabilizer legs.
- **The “front loader” is at the front of the machine and scoops up materials.**
- **The “tractor” consists of the...**
 - Cab.
 - Operator controls.
 - Accelerator.
 - Brake pedal and lights.
 - Steering wheel.
 - Roll Over Protective System (ROPS).
 - Falling Object Protective System (FOPS).

- **ROPS and FOPS are reinforcements that are built into the cab.**
 - They provide you with protection from falling objects or the impact of a rollover accident.
 - Most are made from steel or aluminum.
- **The “backhoe attachment” is an excavating arm at the back.**
 - It consists of a boom, a dipper stick or “arm”, and a bucket.
- **The “stabilizer legs” are behind the back wheels.**
 - When you engage them, they prevent the machine from tipping over by raising the back wheels slightly off the ground to provide a level platform while you dig.
- **But that’s not all there is to backhoes. Backhoes are versatile because you can use them with various other attachments as well, including...**
 - Pallet forks.
 - Rakes.
 - Snowplows.
 - Rippers.
 - And more.
- **Each of these has a specific function and can be helpful in a number of different ways.**
 - But remember, using each type of attachment requires its own training.
- **You can’t assume that just because you know how to use a basic backhoe, you will know how to work all of its attachments.**
 - So take the time to read the operator’s manual before using any new attachment you are going to work with.
- **You also need to remember that there can be many types of equipment on a jobsite.**
 - You don’t want to get them “mixed up”.
- **For example, many people mistake backhoes for excavators, since they both have booms with a bucket and are used for digging.**
 - Excavators are generally bigger, which can make them better for mining and large industrial projects.
 - Backhoes, on the other hand, are ideal for small and medium-sized construction and excavation projects, snow removal, and transporting materials on a jobsite.

- **Knowing the difference between backhoes and excavators, as well as other equipment on your jobsite is important.**
 - All construction equipment has unique hazards.
 - So you should always know what you're working with.
- **Some of the most common backhoe accidents on construction sites are “tip overs”.**
 - When a backhoe falls over, it doesn't just put the operator in danger, but any workers who are in the vicinity as well.
- **To prevent these accidents, you need to pay attention to...**
 - The “ground conditions” you're working on.
 - The backhoe's movement and capacity.
- **Potholes, debris, and uneven surfaces can jeopardize a backhoe's stability.**
 - So you should always survey your site before you start working on it, and do what you can to avoid poor conditions.
 - If you must operate a backhoe on uneven ground, move slowly and with extra caution.
- **Even if the ground conditions seem “perfect”, be careful not to move too fast or suddenly.**
 - Slow, consistent movements are the safest way to operate a backhoe.
- **It's also important to keep a backhoe's limitations in mind.**
 - To make sure you don't overload a backhoe, you need to know both its “tipping capacity”, and its “rated operating capacity”.
- **The “tipping capacity” is the weight of the load that will cause the backhoe to tip over in perfect conditions.**
 - But since the conditions on a construction site are rarely perfect, the “rated operating capacity” is really the heaviest load you should try to lift.
 - Typically, it's about half of the “tipping capacity”.
- **You can find this information in the operator's manual and on labels inside your backhoe's cab.**
 - Make sure you're familiar with the weight limits before you start operating it.

- **Operating a backhoe on a slope is especially difficult and puts its stability at risk.**
 - If you need to use one on a slope, leave at least one backhoe's length between you and the edge.
- **Even when you're working on level ground, you should never rush.**
 - Moving too fast or suddenly can also cause your backhoe to become unstable, especially when it's loaded.
- **If your backhoe does start to tip, do not try to jump from the cab.**
 - More people are killed trying to escape tipping accidents than from the accidents themselves.
 - Instead, make sure your seatbelt is still securely fastened, and stay where you are until help arrives.
- **Like any kind of heavy equipment, using backhoes can be dangerous.**
 - So the more familiar you are with the hazards of operating a backhoe, the better you can avoid them.
- **Some of the most common hazards associated with operating backhoes include...**
 - "Struck-by" accidents.
 - "Collisions" with other vehicles.
 - Hitting overhead and underground utilities.
- **"Struck-by" accidents occur when a backhoe or its load hits you or a coworker.**
 - This can lead to serious injuries, and in some cases even be fatal.
- **When you are operating a backhoe, you always need to be aware of your surroundings.**
 - If you spot someone in your path, stop immediately.
 - Don't start moving again until they are completely out of your way.
- **If you are working anywhere near a backhoe, you should...**
 - Wear a high visibility vest.
 - Know where the backhoe is at all times.

- **Similarly, when a backhoe operator isn't paying attention or doesn't have a clear view of their path, it can lead to collisions with other vehicles or structures.**
 - So when you're operating a backhoe move slowly and carefully around the jobsite.
 - Remember that loaded equipment always has the right of way.
- **While you're traveling with a backhoe, keep your front loader or other attachments low, so you have a clear view of the path in front of you.**
- **But it's not just what's straight ahead of you that you need to be aware of.**
 - There can be things above and below the backhoe that can pose serious hazards.
- **Striking overhead power lines can damage both the wires and the backhoe.**
 - If the backhoe you're operating does come in contact with power lines, stay inside.
 - As long as you remain in the cab, the wires can't touch you, so the current will flow through the backhoe itself.
- **Getting out of the cab could cause the current to change course and flow through you instead.**
 - So stay put, stay calm, and call for help.
 - The only time you should try and get out of the cab is if the backhoe catches fire.
- **If you see a backhoe come in contact with power lines while you're on the ground, do not approach it.**
 - This will only put you at risk, too.
 - Instead, talk to the driver by phone or radio if you can and tell them to stay where they are.
 - Then, call for help.
- **Remember, overhead utilities aren't the only thing you have to look out for, there can be hazards below you, too.**
 - If you're digging a trench with a backhoe, you can run the risk of hitting underground gas or water lines, pipes, or an electric line.
 - So before you dig, survey the site and mark any possible hazards.

- **You can consult databases like the Department of Transportation’s National Pipeline Mapping System (NPMS) as well, to find information about gas, water, and hazardous liquid lines around your jobsite before you start a project.**

*** * * SUMMARY * * ***

- **Backhoes are made up of a tractor, front loader and backhoe attachments, and stabilizer legs. They are typically used for digging, small demolition projects and transporting materials on a jobsite.**
- **You can add various attachments like pallet forks, rakes, snowplows, and rippers to backhoes... but they each require their own training.**
- **You need to know your backhoe’s capacity, keep it stable, and remain alert at all times while you’re operating it.**
- **The most common backhoe hazards are “struck-by accidents”, collisions with other vehicles as well as overhead structures, and hitting underground utility lines.**
- **When you are operating a backhoe, always keep aware of your surroundings, and look out for any pedestrians or obstructions in your path. Move slowly and cautiously through the jobsite.**
- **Now that you know how a backhoe works, how to keep it stable, and the hazards that are associated with working with it, you can get a lot done... while making sure that you and your coworkers go home safe... every day!**