Safety Training Topic
FIELD ERGONOMICS: Back Care

Purpose of Meeting

- To remind workers that improper ergonomics can result in a serious injury.
- To educate workers about field ergonomics with a focus on back safety.
- To consider ways to protect yourself from injuries.

Materials and Preparation

- A copy of the written ergonomics safety rules or policy.

Note to Trainer

- Enter your name and the training date on the Training Sign In Sheet.
- Have each attendee sign the Training Sign In Sheet next to their name.
- Use this page for your reference and give attendees copies of the remaining pages.
Introduction

Due to the nature of field work, you probably find yourself lifting, shoveling, pushing, pulling, stretching and otherwise putting a strain on your back throughout the day.

If you don’t take care, you can put too much wear and tear on your back and you may end up with an injury. Prevention is the key. Knowledge, and application of that knowledge, is the most important part of preventing back injuries.

This training has been developed to educate workers about how to take appropriate precautions in order to prevent back injuries.
Back Structure

Your back is composed of 24 bony structures known as vertebrae or back bones. These bones have been categorized into four distinct groups or curvatures:

- Cervical
- Thoracic
- Lumbar
- Sacral

The lumbar area is the most subject to injury. The function of the spine is to protect the spinal cord from injury. The spine functions to provide support for our muscles and ligaments, which in turn allows us to walk and function.

Discs

Discs are located between the bones to act as shock absorbers. They are made up of fiber bands around a jelly-like center. Discs are strong enough to withstand over 2000 pounds per square inch of pressure, but injury and age take their toll.

Injury causes the elastic bands of the disc to break down and that allows the jelly like center to leak out and press on the spinal nerve. Some people call it a slipped disc. But it doesn’t slip; the pain is caused by a bulging disc, pressing on a nerve.
Basic Lifting

You have probably seen the demonstrations showing how to pick up a nice clean box and put it on a shelf or desk. But that doesn’t help you much, does it?

Out in the field, workers handle things that are heavy, odd size, awkward, or just too big. The material is usually wet, muddy or the footing is very poor.

You can take a lesson from the simple box lifting technique though: Use leg power and not back power when lifting. Your legs are the strongest muscles in your body.

When preparing to lift anything, you must be familiar with the power zone. That's the area between your knees and abdomen. Keeping loads in the power zones allows you to avoid carrying a load out and away from your body.

Weight/Pressure Ratio

There's about a 10-to-1 ratio when lifting. That means a 10-pound object creates 100 pounds of pressure on your back.

The pressure increases with the size of the load and is increased more if the object is away from your body.

Keep the load in the power zone. Use your leg power. Keep your spine as straight or its natural curvature as possible.
Shoveling is a job everyone performs from time to time. **Most back injuries associated with shoveling are caused by twisting while lifting the loaded shovel.**

Twisting while shoveling is equivalent to twisting while lifting a load in your arms, which causes many back injuries. The correct method is to make a good use of the power zone.

- Hold the shovel with a firm grip on the handle, placing your power arm about 1/2 to 2/3 of the way down the handle.
- Place the opposite hand about 4 to 6 inches from the end.
- When preparing to shovel, avoid the urge to throw the blade into the soil. This adds stress to the spine. Simply place the blade on the soil and use your foot to push it in.
- Take care to avoid overloading the shovel, particularly in sticky or wet soil.

When preparing to pick up the loaded shovel, use your legs as a fulcrum to balance the load and provide power. **Never twist while shoveling.** To avoid twisting, place a foot in the direction you intend to throw the load.

Shoveling overhead can be hard on the back and shoulders. Avoid it whenever possible. Try shoveling into a loader bucket or into an area where a backhoe can easily pick it up. Maybe you can't do that, but you can keep the load in the power zone. Try to reduce the height you must shovel to if possible.
Breakers

Breakers are designed to save a lot of labor—they quickly break out pavement, rock or concrete into manageable pieces. The problem is that they are often misused and so they can cause back injuries.

The weight of the tool is a factor, but the most common misuse is when storing the tool. Breakers are commonly stored in low baskets, or within a compressor storage bin, or possibly within the bed of a truck covered with debris. You have to get the breaker out and it's usually on the bottom.

Start with storing heavy tools in a manner where they won't be hazard when you try to unload them.

When operating breakers, breaker gads will become embedded in asphalt or concrete. Human nature tells you to just jerk the unit out. Unfortunately that's when you have back injuries. The correct technique for removing embedded gads is to simply release the tool from the breaker and replace it with another gad. You can then dig out the embedded tool.

Spades can become briefly stuck while working, particularly if you drive the spade too deeply into the material you're cutting. When this occurs, avoid hoisting or jerking the breaker out. Use the breakers' own weight to tilt back and forth to free the spade.
Awkward and/or Heavy Loads: Cement

Sacks of cement are always difficult to handle. Not only are they heavy, but they don’t have firm sides to grip the bag.

If possible don’t carry heavy bags alone. Use a wheelbarrow or slide it off the back of the truck. Keep the bag in your power zone. The best way to handle heavy objects is with help or instead of lifting the bag into the mixer.... use a shovel.

If that can’t be done, squat over the bag, tuck in your chin and get a good firm grip on the bottom and side of the bag. Use your legs, keeping the bag in the power zone, while keeping your back as vertical as possible. When setting the bag down, use the reverse process.

Awkward and/or Heavy Loads: Pipes

Pipe, such as sewer and water pipe are usually much too heavy and awkward to handle alone. A 6-inch asbestos cement pipe weighs about 13.3 pounds per foot. A 13-foot pipe weighs 172.9 pounds. 8-inch cast iron weighs 20.7 pounds per foot.

Safety requires teamwork. So be sure the person handling the pipe at the other end knows when you’re ready to lift or set it down. Use a backhoe or hoist if available. If not, try using a rope to lower the pipe into the trench or other area.
Other Activities

Construction or maintenance activities require a certain amount of other handwork, such as digging bars and picks.

The key to back injury prevention is to keep them in your power zone. Even though you may not be lifting in the strict sense of the word, the action of using a digging bar, pick or sledge hammer requires the same principles we've just discussed.

Keep the load close to your body and power zone.

Conclusion

A basic understanding of how your back works and how to protect it can go a long way reducing your risk of back injury.

Remember these basic concepts:

- The power zone is generally located between your knees and waist.
- Keep your back as straight as possible when lifting.
- Shoveling is no different than lifting—you're still handling a load.

And most importantly: Think about the job you're performing. Take the time to perform the job safely.