Standing Operating Procedure (SOP) for
Basic Body Mechanics: Proper Lifting Techniques

1. PURPOSE. The purpose of this SOP is to outline steps to maximize personnel safety while conducting work related activities.

2. SCOPE. Includes proper lifting techniques.

3. RESPONSIBILITIES.
   a. Natural Resource Management Supervisors: Review procedures with Natural Resource Management Staff to ensure understanding and compliance. Ensure staff has completed all training necessary for the fieldwork being conducted. Ensure that risk assessment and safety plans are completed incorporating procedures.
   b. Natural Resource Management Staff: Execute fieldwork in accordance with SOP.
   c. Failure to comply with this SOP may result in disciplinary action.

4. PROCEDURES.

Preventing back injuries is a major challenge to employers and workers. According to the Bureau of Labor Statistics (BLS), more than one million workers suffer back injuries each year, with back injuries accounting for one out of every five workplace injuries and illnesses. One fourth of all workers’ compensation indemnity claims are a result of back injuries. Back injuries produce pain and discomfort to workers, and can have a dramatic change in their productivity and lifestyles.

Body mechanics refers to the way we move our body. Using good body mechanics at work and at home can prevent many of the causes of back pain. To minimize injury to your spine, you need to be proactive and learn some basic "preventive" body activities. As we age our spines change. Trauma, wear and tear, disease and poor body mechanics can alter the structural integrity of the spine.

**Minimize bending and twisting. Avoid reaching out when lifting.**

One movement that tends to aggravate back pain, more than others, is bending and twisting simultaneously. Reaching out over an obstruction to lift, hold, or lower an object is also especially bad for the back.

**Store at waist height, or tilt the load.**
The heaviest and most frequently used items should be stored at waist height. This can help make it easier to face the object, get close, and pull it toward your body, while maintaining good posture. Lighter and less frequently used items can be stored on higher, or lower, shelves. Lifting which occurs below knee height or above shoulder height is more strenuous. For a long lift, such as floor to shoulder height, consider resting the load mid-way on a table or bench to change your grip. Obstructions which prevent body contact with the object being lifted increase the risk of injury. When practical, it is often quite helpful to tilt the item on edge with its long axis straight up, so that the center of the weight is as high as possible above the ground.

**Push, instead of pull.**

Always push, not pull, the object when possible. When you push an object you use the muscles in your legs and back. When pulling, some people have the tendency to use their back muscles to yank and pull. It is easier to keep your back straight while pushing. Lean into the object using your body weight to help push the object. Of course, some items (such as hoses, chains, ropes, and cables) can’t be pushed. When you need to pull things manually think of it as a "sideways lift." Adopt a wide stance, try to keep your back straight, and use leg power to do the pulling.

A BLS survey has shown that four out of five of back injuries were to the lower back, and that three out of four occurred while lifting. This shows the importance of reducing back injuries caused by lifting. Although no approach has completely eliminated such injuries, a substantial portion could be prevented, by incorporating an effective control program along with an ergonomic analysis and design of work tasks.

In considering ways to help prevent lifting injuries, there are two major categories to examine: Engineering Controls and Administrative Controls.

Engineering Controls are used to redesign the workstation, work area, or job task, to minimize lifting hazards. Some possible examples of engineering controls may include:

- Raising, lowering or providing an adjustable working surface
- Using various types of material handling equipment to move items, i.e. hand-trucks, carts, hoists, conveyors, etc.
- Reducing the size and weight of items handled, by packaging in smaller quantities, or in less awkwardly shaped containers.

Administrative Controls include carefully selecting, training, and observing workers so that they can perform their jobs safely. Suggested administrative controls include:

- Strength testing of existing workers, to prevent the assignment of workers to jobs that exceed their strength capacities.
- Physical conditioning or pre-shift stretching programs, to reduce the risk of muscle strain.
- Training employees to utilize lifting techniques that place minimum stress on the lower back.
How to Lift Safely

Before lifting, take a moment to think about what you're about to do. Examine the object for
sharp corners, slippery spots or other potential hazards. Size up the weight and balance of the
load, know your lifting limit, and don't try to exceed it. Ask for help, if needed, to conduct a
“team” lift, or if possible, divide the load to make it lighter. Know where you are going to set
the item down. Make sure the location and your path of travel are free of obstructions. Then
follow these safe-lifting steps:

1. Stand close to the load with your feet spread
   apart, about shoulder width, with one foot
   slightly in front of the other, to maintain your
   balance.

2. Squat down, bending at the knees (not at
   your waist), keeping your back straight. Tuck
   your chin while keeping your back as vertical
   as possible.
3. Get a firm grasp of the object before beginning the lift. The best grasp is a “palm grip” under the bottom edges of the object. Grasping the sides may allow the object to slip while being lifted or carried.

4. Begin slowly lifting with your LEGS by straightening them. Keeping your head up and looking forward will help keep your back straight while lifting. Always lift straight up, keeping the object close to your body, and never twist your body during this step.
5. Once the lift is complete, keep the object as close to the body as possible and maintain a firm palm grip. As the load's center of gravity moves away from the body, there is a dramatic increase in stress to the lower (lumbar) region of the back.

If you must turn while carrying the load, turn or pivot using your feet. This will keep your back and torso aligned with your hips, which will avoid strains from twisting while carrying a heavy load. **Lead with your hips** as you change direction. Keep your shoulders in line with your hips as you move.

To place or set the object down at a level below your waist, follow the same procedures in reverse order. Remember to keep your back as straight as possible, and bend at the knees.
Conclusion

Using proper lifting techniques can help prevent back injuries. With a little practice, precautionary methods such as these can become good daily habits that can help prevent back injuries, both on and off the job.

Remember, no approach will completely eliminate back injuries. However, a majority of injuries can be prevented by incorporating effective Administrative and Engineering controls.

To evaluate a worker's lifting habits, consider the following variables: frequency of lifting, amount of weight lifted, duration of such activities, and type of lifting, as well as the worker's state of health, body size, age and general physical fitness.

To help in the evaluation process, consider using the Applications Manual for the Revised NIOSH Lifting Equation, which gives an equation that you can use to factor all of these variables. You can download this right from the NIOSH website by clicking the hyperlink above.

Have supervisors and managers conduct periodic observations of worker’s lifting techniques. Observing workers performance and providing positive feedback is an excellent way to reinforce safe work habits.

Safe Lifting Basics

Plan the Lift

Check the Load

Bend at the Knees – Not at the Waist

Get a Firm Grip

Keep the Load Close

Keep Head Up

Lift with the Legs – Not the Back

To Turn, Pivot the Feet – Not the Spine