PURPOSE/APPLICATION

This Safe Work Practice is to provide instruction, tools, and appropriate equipment to perform all manual material handling tasks in a safe manner.

PPE	▪ Canadian Plains Energy Services (CPE) minimum requirements
TRAINING	▪ Back Injury Prevention
HAZARDS & CONCERNS	▪ Personal injury (sprains/strains, falls, etc.) ▪ Property damage

Canadian Plains Energy Services' (CPES) work involves significant amounts of manual labour. This exposes workers to the risk of acute and chronic physical injuries.

Training will be provided to workers on lifting, carrying and handling loads, how to identify circumstances where there is a risk of developing a musculoskeletal disorder, the early signs and symptoms of musculoskeletal disorders and their potential health effects.

When work demands physical effort, new or newly returning workers may require an adjustment period to get used to the physical demands. Adjustment periods vary from person to person and task to task.

Lifting and Carrying

Mechanized equipment should be used for material handling whenever practical. When mechanical means is not available, a person may be required to perform a manual lifting task. To ensure a safe lift, follow the following steps:

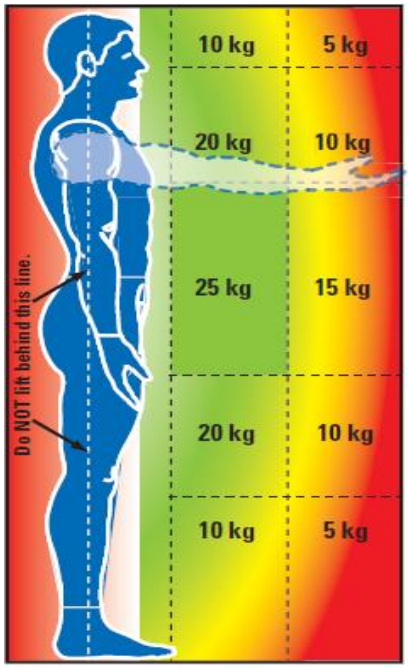
1. HIAC, Plan the lift.
   - Can mechanical means be utilized?
   - What is the shape of the load?
   - What is the weight of the load?
   - Is the load awkward?
   - How many times will the load have to be moved?
   - What is the size of the load?
   - Can the load be divided into smaller loads?
2. Ensure the path is clear.
   - Ensure that any tripping hazards, doorways, tight areas are all identified, and any issues dealt with.
3. Test the load.
   - Testing the load can consist of grabbing a corner of the box or item and giving it a push or grabbing it lightly with both hands and applying a little force.

This exercise will provide you with information you will need to determine if an additional person is needed to perform the lift, if the load is balanced and if there are any good hand holds.

4. Get a good grip on the item.
5. Keep abdominal and lower back muscles tight throughout the lift.
    - Use a straight back, which will ensure that the load is as close to your body as possible and will assist in ensuring that the back muscles work as stabilizers.
6. Keep the load as close to your body as possible.
    - This reduces the force on your back during the lift.
7. Don't twist, pivot your entire body.

The amount which a person can lift varies on an individual level. Figure 1 illustrates how the weight a person can lift will decrease as the distance from the body increases. Lift ability is also influenced by distance travelled, load awkwardness, the number of lifts and starting and finishing heights.

Figure 1: Power Zone



Note: The effective power zone is between shoulder height and knee height.

Carrying a load is a more difficult task than lifting as the body requires movement which can lead to decreased stabilization. As a result, the acceptable weight that a person can carry will be less than the acceptable weight in which that same person can lift.

Pushing & Pulling Loads

Factors that go into pushing or pulling material are force, intensity, distance traveled, handle height, frequency and velocity.

- Pushing is the preferred method as it engages large muscle groups and aligns with the natural motion of the body.
- Heavier loads require higher forces to move them. If breaking up the load into smaller and lighter components is not an option, the load should be moved by a mechanical alternative.
- Handles on carts, pallet jacks, etc. should be navel height on the worker in order to allow full body muscle engagement.

Warm Up/Stretching

Warming up and stretching prepares your body for the work it has to do. If you are doing an activity that involves bending and twisting, then stretches should be done to warm up those muscles and joints and simulate those activities.

- At the beginning of the work day, take time to warm-up and stretch as required.
- Stretches should be held for 30 seconds or less.
- Stretches should be eased into gradually, don't force into the stretch.
- Stretching should be done throughout the day to counter the effects of awkward or static postures.

Tools/ Equipment

- Select the appropriate tool for the job. Using the wrong tool for the task may lead to a greater force being exerted than necessary, awkward positioning, pressure points and increasing task duration.
- The type of tool used for the task will determine the upper extremity and neck posture. In addition, tools that require the elbow or shoulder to be away from the body to do the task, contribute to static muscle fatigue and limit the time the task can be sustained.
- Two-handled tools present the possibility of pinch points for the hand or finger.
- Tools should be maintained to reduce the amount of force required (sharp tools, greased tools, etc.)
- Ensure that the tool can be stabilized by the operator during work and that the hand and forearm are in non-awkward postures; allowing for the strongest muscle groups to do the work.
- Position tasks so that work may be performed between shoulder height and waist height.
- Use extension wrenches/multipliers/high torques to reduce exertion.

Vibration

- Vibration is present while operating equipment, using drills, impact wrenches, chainsaws, etc. Impacts vary based on the amplitude and frequency of the vibration.
- Body parts vary in the amount of vibration in which it can be exposed to without exerting large amounts of energy to oppose the vibration.
- When the vibration has the same frequency as the body, the impact felt by the body part is amplified and the body part will have to exert more energy to oppose the vibration. Resulting in those muscles tiring considerably faster.
- If vibration is applied with force and for long durations, physical damage to the body tissues which can result in injury.

REFERENCES / ADDITIONAL INFORMATION

→ Canadian Centre for Occupational Health and Safety

→ The Eastman Kodak Company (2004). *Kodak's Ergonomic Design for People at Work* (2nd ed). Hoboken, New Jersey: John Wiley & Sons Inc.

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Table 1: Warm Up Routine

Exercise		Repetitions
<u>Forward Leg Swings</u> • Stand on one leg and swing the other leg forwards and backwards. • Try to keep your torso stable, as the movement should come from the hips		10/leg
<u>Lateral Leg Swings</u> • Stand on one leg and swing the other leg from side to side. • Try to keep your torso stable, as the movement should come from the hips		10/leg
<u>Hip Circles</u> • Start with your hands on your hips and rotate your hips around in a big circle. • Repeat the hip circles in both directions.		6/direction
<u>Diagonal Hand Crossovers</u> • Start with your top hand externally rotated and your bottom hand internally rotated. • Cross them in front of your body as you reverse each arm rotation. • Reverse the movement back to the start position.		6/direction
<u>Arm Circles</u> • Swing your arms around in big circles forwards and backwards. • Start slowly and gradually increase speed.		10/direction