

DEMOLITION

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Musculoskeletal disorders (MSDs), such as chronic back pain or shoulder problems, often take time to develop. Forceful exertion, awkward positions, hand-arm and whole-body vibration, contact stress, and repetitive tasks can add up over time to produce an MSD.

This profile can help you identify and control MSD hazards in your job. We recommend that you add the best practices outlined here to your company's health and safety program. The hazards in a particular job, however, may be different than the ones on this profile, so evaluate the risks of your particular activities.

In general, when implementing controls, consider the following ergonomic principles:

- 1. Use handling equipment when possible.** The most effective intervention to control the risk of developing an MSD is to eliminate or reduce the frequency of lifting, carrying, pushing, and pulling. Use material-handling equipment such as carts, dollies, pallet jacks, manual forklifts, skid steers, or front-end loaders.
- 2. Don't lift a load from the floor.** Lifting from the floor or below standing knuckle height can expose your back to significant stresses and reduce your lifting capacity. Avoid this procedure by storing objects above standing knuckle height and below standing shoulder level.
- 3. Avoid working on the floor.** Constantly working on the floor can result in injuries to your back, hips, and knees because it usually requires kneeling and bending your back forward. When possible, raise the work height by using a workbench.
- 4. Minimize work above your shoulder.** High lifting or constant reaching above the shoulder level is harmful for three reasons.
 1. Your muscle strength is reduced because most of the muscle work is performed by your shoulders and arms instead of by the bigger muscles in your back and legs.
 2. Your shoulder and arm muscles fatigue more quickly than your back and leg muscles because of reduced blood flow.
 3. Lifting or removing an object from a high shelf can be dangerous because you could drop the object.
- 5. Move smaller weights often or get help.** Smaller weights put less stress on your back than larger weights, even if the frequency of lifting is increased.
- 6. Exercise programs.** Consider exercise programs. They help to prevent MSDs and promote general good health.
- 7. Minimize vibration exposure.** Vibration can be transmitted from work processes—such as operating hand-held power tools (i.e., hammer drills, chipping guns, jackhammers)—into workers' hands and arms. Frequent exposure to moderate- and high-intensity hand-arm vibration can lead to permanent health problems.

Stripping building materials

Tasks	What can happen (Hazards/Risks)	Potential Controls
<p>Working below knee height</p> <ul style="list-style-type: none"> ▶ Removing rugs, carpets, tiles, concrete slabs, roofing materials, and masonry materials 	<ul style="list-style-type: none"> ▶ Lower-back injuries due to static work postures, such as bending forward ▶ Overexertion injuries due to manually handling materials and removing old building materials 	<ul style="list-style-type: none"> ▶ To avoid working on or near the floor, consider using long-handled hand tools to help remove floor coverings. ▶ Whenever possible, use long-handled tools that promote good posture. For example, a long-handled torch can be up to 6' long. Use it when cutting metal materials to avoid an awkward back-bending posture. ▶ Whenever possible, use mechanical stripping tools, such as tile- and carpet-removal machines. ▶ To reduce overexertion injuries when lifting materials such as carpets or built-up roofing, pre-cut the material into more manageable sizes. ▶ Use mechanical lifting, cutting, and removal equipment whenever possible. ▶ Use shovels to lift small items into wheelbarrow or cart. ▶ Use the appropriate shovel size to lift objects. For example, use the small-sized shovel for smaller items and big-sized shovel for larger objects. (Refer to the manufacturers' and distributors' product guides.) ▶ When removing excess concrete, use remote-controlled mechanical equipment. Otherwise, consider using a mechanical arm support to hold the breaker tools. The external arm support can be attached to a scaffold or a pole provided by the manufacturer. An external arm support and mechanical concrete breaker can reduce static forceful exertion and hand-arm vibration when working with hand tools. ▶ Place old building material directly into a cart or garbage bin after removing it. This prevents the double handling of materials and can increase efficiency. ▶ When handling heavy objects, consider using mechanical equipment or getting help from another worker. ▶ Whenever possible, limit your load of multiple pieces of material. ▶ Where possible, use carpet clamps to help pull carpets. Certain carpet clamps allow for two-handed use, which reduces the amount of force exerted on the hands and arms. ▶ Use high-quality kneepads or knee creepers (kneepads with rollers) for easy mobility and to reduce friction between the kneepads and the floor. (Note: kneepads distribute force over a larger area of the knee's surface, but don't reduce the force on the knee joint itself.)

Tasks	What can happen (Hazards/Risks)	Potential Controls
		<ul style="list-style-type: none"> ▶ Wear gloves with anti-vibration properties. These gloves can reduce the vibration being transmitted to the hands and arms from tools such as grinders, needle guns, and sanders. ▶ Select the right tool. Selecting the correct power tool, such as a chipping hammer, can help reduce fatigue and increase productivity. Choose a tool that fits your hand and has the following features: <ul style="list-style-type: none"> • low vibration and weight • a comfortable handle that provides a good grip (e.g., rubber or spongy-type grip) • appropriate-sized grips that are designed to be used by either hand • a power grip for heavy work and a pinch grip for fine work • a neutral wrist posture • a tool with torque reduction or low kickback • clean and non-greasy tools for ease of handling.
<p>Working above shoulder height</p> <ul style="list-style-type: none"> ▶ Removing ceiling tiles, lights, drywall, mechanical systems, wood and metal frames, windows, fireproofing materials, electrical materials, and plumbing materials ▶ Operating high-reach excavators (High-reach excavator operators look up for extended periods of time, which causes neck and shoulder pain) 	<ul style="list-style-type: none"> ▶ Shoulder injuries due to static work postures, such as bending forward, and working with hands above shoulder height ▶ Overexertion injuries due to manually handling materials and removing old building materials ▶ Injuries due to carrying heavy material on your shoulders 	<ul style="list-style-type: none"> ▶ Use mechanical lifting, cutting, and removal equipment whenever possible. ▶ Use gravity to your advantage. For example, when cutting materials, use gravity to help control the drop. ▶ Rotate workers to other tasks if possible. ▶ When stripping materials, such as drywall and wood frames, use a tool that can provide leverage, such as a pry bar. This will help you remove materials without overexerting the shoulders and back. The leverage tool should have a wide blade to provide better contact with the materials. ▶ When handling heavy objects, consider using mechanical equipment or getting help from another worker. ▶ Whenever possible, limit your load of multiple pieces of material. ▶ For workers who have to look up or extend their neck for long periods, consider using a device to support the neck, such as the Impacto Neck Support System.

Tasks	What can happen (Hazards/Risks)	Potential Controls
<p>Working between knee height and shoulder height</p> <ul style="list-style-type: none"> ▶ Removing drywall, wood or steel frames, windows, electrical cables, pipes, ducts, and masonry materials 	<ul style="list-style-type: none"> ▶ Overexertion injuries due to manually handling materials and removing old building materials 	<ul style="list-style-type: none"> ▶ Whenever possible, set up your tasks so that work can be performed between knee height and shoulder height. This is the safest and most productive work height. By using equipment such as skid steers, carts and scaffolds, the work area can be adjusted to a height that promotes good posture. (e.g., When using scaffolds and carts, adjust the work area to the proper height so you're not reaching overhead or bending forward.) Note: If using gas-powered machines, make sure to use them properly and in well-ventilated areas. ▶ Use dollies, wheelbarrows, carts, or buggies to carry materials whenever possible. Using powered wheelbarrows or carts to move materials can further reduce the physical stresses on your muscles. ▶ Use mechanical lifting, cutting, and removal equipment whenever possible. ▶ When stripping materials, such as drywall and wood frames, use a tool that can provide leverage, such as a pry bar. This will help you remove materials without overexerting the shoulders and back. The leverage tool should have a wide blade to provide better contact with the materials.

Manual materials handling

Tasks	What can happen (Hazards/Risks)	Potential Controls
<ul style="list-style-type: none"> ▶ Moving and stacking waste materials ▶ Sweeping and collecting waste materials ▶ Shovelling waste materials into bags ▶ Picking up waste materials and putting it into bins and waste containers 	<ul style="list-style-type: none"> ▶ Overexertion injuries to the back and shoulders from lifting and carrying materials ▶ Back injuries from repeatedly bending at the waist to pick up materials 	<ul style="list-style-type: none"> ▶ To reduce risk of overexertion injuries, do not overload garbage bags. ▶ Use mechanical equipment or get help from another worker if one piece of material is greater than what you can safely handle. Consider the weight of item, lifting location, postures, and ergonomics. ▶ Whenever possible, use shovels to pick up bricks and other such materials to reduce repetitive bending at the waist. ▶ When picking up garbage outdoors, use dollies, carts, or backhoes whenever possible. ▶ Use handles or gripping devices to assist with carry long objects such as wood planks, plywood, and drywall sheets. Use powered wheelbarrows, hand trucks and carts when available. ▶ Use motorized pallet jacks whenever possible, especially when moving material frequently or over long distances.

Tasks	What can happen (Hazards/Risks)	Potential Controls
		<ul style="list-style-type: none"> ▶ When using carts or hand trucks: <ul style="list-style-type: none"> • Select models with appropriate wheels for the ground conditions. • Select models with swivel wheels on the rear and fixed wheels on the front to make pushing easier during long distances. • Maintain wheels in proper condition. • Make sure that handles are located at the rear of the cart and at waist level. • Make sure that the load height on the cart does not obstruct your vision. • Keep loads balanced and under the manufacturers' recommended weight limits. ▶ Push rather than pull because pushing reduces lower-back bone-on-bone compression. ▶ Consider storing all materials in large containers to make transporting easier. This will reduce material handling and improve efficiency. Large quantities of material (e.g., cables, welding units, hoses, rigging equipment) can be transported at one time using a forklift or crane. ▶ Use shoulder pads when a heavy item cannot be transported with a cart or other transport device. Carrying heavy objects on the shoulders often applies excessive pressure to a small area. Wearing shoulder pads can reduce the contact stress on your shoulder. ▶ Use proper lifting techniques (i.e., lift materials with your legs, do not bend over or lift with your back, keep the load close to your body). See the "Back Care" chapter in IHSA's <i>Construction Health and Safety Manual</i> (M029).

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