

HOMEBUILDING: CONCRETE FLOORS AND DRAINS

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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, or manual forklifts.
- 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 height.
- 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.

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Tasks	Description	What can happen (Hazards/Risks)	Potential Controls
<ul style="list-style-type: none"> ▶ Extending drain lines from property line to the building ▶ Installing underground interior drainage systems 	<ul style="list-style-type: none"> ▶ Manual excavation using shovels, picks, and/or electric demolition hammers to prepare grade for installing pipe ▶ Measuring, cutting and gluing PVC pipes ▶ Backfilling with gravel using a shovel and/or stone slinger for bedding and covering PVC pipes 	<ul style="list-style-type: none"> ▶ Back, knee, and arm/wrist injuries due to extended periods of bending at the waist and squatting while sawing and installing PVC pipes 	<ul style="list-style-type: none"> ▶ If possible, cut materials on a work bench or table to reduce squatting and bending forward. ▶ As an alternative, use a powered hand saw to cut PVC pipes, which decreases the amount of repetitive forceful exertion of the upper arms. ▶ Use proper shoveling techniques: <ol style="list-style-type: none"> 1) Lift with your legs, not your back. 2) Do not twist your body. 3) Do not throw dirt, place it. See the chapter on “Back Care” in IHSA’s <i>Construction Health and Safety Manual</i>.
<ul style="list-style-type: none"> ▶ Construction of concrete basement floors, garages, and porches ▶ Spreading granular base 	<ul style="list-style-type: none"> ▶ Using wheelbarrows, powered equipment, and work tools ▶ Transferring concrete from truck to work area ▶ Leveling and finishing poured concrete using hand trowels and powered equipment 	<ul style="list-style-type: none"> ▶ Overexertion injuries due to pushing/pulling wheelbarrows containing concrete or granular material ▶ Back, knee, and arm/wrist injuries due to prolonged bending at the waist, squatting, and kneeling when finishing concrete with hand trowels ▶ Overexertion injuries from moving powered equipment into and out of the house 	<ul style="list-style-type: none"> ▶ When moving equipment, use a ramp to allow easy handling on stairs and uneven walkways. ▶ Do not overload wheelbarrows with concrete and gravel. Make sure wheels are in good condition. ▶ Consider using a powered screed whenever possible when spreading or distributing (floating) the concrete. It will help you reduce awkward postures (e.g., bending at the waist, squatting, and kneeling). Make sure that you have proper ventilation to prevent carbon monoxide poisoning. ▶ Use a lifting tool to pull up the wire mesh when spreading concrete. ▶ If possible, use a powered edge trowel to reduce bending over. Use a manual hand trowel around the edges and inner corners. ▶ Ask a co-worker for help unloading and moving heavy equipment and tools such as power trowels and power screeds.

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Tasks	Description	What can happen (Hazards/Risks)	Potential Controls
			<ul style="list-style-type: none"> ▶ When spreading concrete manually, floating, or finishing, rotate the job among members of the crew. ▶ Stretch regularly. ▶ When cutting rebar with quick-cut saws or manual rebar cutters, limit the amount of squatting and bending over.

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