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**National Institutes of Health
Office of Research Services
Division of Occupational
Health and Safety**

Providing a safe and healthy environment for employees, patients and visitors.

“Safe science and good science go hand-in-hand.”

The articles in this Newsletter are intended to provide general summary information to the National Institutes of Health (NIH) community. They are not intended to take the place of either the written law or regulations. It is not NIH's intention to provide specific advice to readers of this Newsletter, but rather general information to help better understand how to prevent or reduce workplace injuries and illnesses. Reference in this Newsletter to any specific commercial products, process, service, manufacturer, or company does not constitute its endorsement or recommendation by the U.S. Government or NIH.



Walking-working surfaces safety

OSHA has rules on the safe design, construction, and use of all types of walking-working surfaces and fall protection systems. Everyone shares walking-working surfaces, and everyone should know how to avoid slip, trip, and fall hazards.

Being unaware of fall hazards is a big mistake if you work on or under elevated platforms, climb ladders, descend stairs, or work in areas where there may be holes in the floor. Even if you have a firm, level working surface to walk on (office floors, factory shop floors, etc.), you can still fall victim to injury. Slips, trips, and falls from any walking-working surface are a leading cause of serious injury and death.

Housekeeping

Any cluttered or wet walking surfaces can easily contribute to an injury. Permanent aisles and passageways are marked to help you recognize areas that must be kept clear for people to walk and exit in an emergency.

The workplace must be kept in a clean, orderly, and sanitary condition. Do your part to recognize, report, and clean up your surroundings that could cause an injury by helping to keep:



- Aisles and passageways clear of obstructions that could create a hazard such as:
 - Protruding nails, splinters, holes; or
 - Loose boards, tiles, or carpeting.
- Floors dry by wiping up rain or snow tracked in at entryways. Stand on available mats, raised flooring, or dry platforms to stay off slippery, wet floors.

Floor loading limits

Part of having safe walking-working surfaces involves the strength of the surface itself. Employers have to evaluate how much weight a floor, platform, or ladder can safely support. The weight of people, materials, and equipment must always remain within this load rating. Staying within load rating limits is especially important when heavy equipment is operated on upper floors of a building or heavy materials are stored on overhead platforms.

Guardrails and covers

Covers and/or guardrails must be used to protect employees from falls into open pits, tanks, vats, ditches, skylights etc. For example, if a manhole cover isn't in place, set up a temporary railing.

Every open-sided floor or platform four feet or more above an adjacent floor or ground level is to be guarded. Every wall opening and chute from which there is a drop of more than four feet must be guarded. Where the bottom of a window opening is less than 3 feet above the platform or landing, it must be guarded if it leads to a drop of more than four feet.

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Walking-working surfaces safety *(continued from page 1)*

A “standard railing” consists of a top rail, intermediate rail, and posts. It has a vertical height of 42 inches to the floor. Railings must be able to withstand a load of at least 200 pounds.

Employees can also be protected from falls by using a travel restraint (positioning device) or personal fall arrest system.

Stair safety

Avoid painful injuries from falling down stairs by paying close attention and:

- Keeping stairs free of any slippery, wet, or icy conditions;
- Removing any clutter from the stairway and landings;
- Using all available lighting in the area;
- Holding the handrail;
- Getting help to carry large or awkward loads on stairs; and
- Never skipping a step.

Ladder safety

Falls from portable ladders (step, straight, combination, and extension) are one of the leading causes of occupational fatalities and injuries.

To use ladders safely, proper setup is essential. You must:

- **Avoid electrical hazards.** Look for overhead power lines before handling a ladder. Don't use a metal ladder near power lines or exposed energized electrical equipment.
- **Follow directions.** Read and follow all labels and markings on the ladder.
- **Inspect the ladder.** Always check the ladder before you use it. If the ladder is damaged, remove it from service and apply a warning tag until it's repaired or discarded.
- **Use ladders only for their designed purposes.** Only use a ladder on stable and level surfaces, unless it's been secured (top or bottom) to prevent displacement. Don't place a ladder on boxes, barrels, or other unstable bases.
- **Secure ladders when necessary.** A ladder placed in any location where it can be displaced by other work activities must be secured to prevent displacement, or a barricade must be set up to keep traffic away from the ladder.
- **Set the locks.** Be sure to lock the spreaders to keep a step ladder open. Don't use a step ladder as a single ladder or in a partially closed position. It isn't designed to be used this way, and it could easily slip and fall. Be sure that all locks on an extension ladder are properly engaged.

- **Place ladder properly.** Set up an extension or straight ladder so that it extends at least three feet above the top point of support. For a straight ladder, place its base one quarter of the working length of the ladderway from the wall. For example, if the climbing face of the ladder is 12 feet from the ground to where it touches the roof, the base of the ladder should be setup three feet out from the wall.
- **Check load ratings.** Don't exceed the maximum load rating of a ladder. Be aware of the ladder's load rating and know the weight it's supporting, including the weight of any tools or equipment you use while you're on the ladder.
- **Clean the ladder.** Ladders must be free of any slippery material on the rungs, steps or feet.



Once you are ready to use the ladder, be sure to:

- Always face the ladder while climbing.
- Maintain a three point (two hands and a foot, or two feet and a hand) contact on the ladder when climbing. Use a rope to raise and lower tools and materials you need when you reach the top.
- Keep your body near the middle of the step, between the rails.
- Don't stand on the three top rungs of a straight, single, or extension ladder.
- Don't use the top step or rung of a ladder as a step or rung unless it was designed for that purpose.
- Don't move or shift a ladder while a person or equipment is on the ladder.

Travel restraint and personal fall arrest systems

Fall protection systems are used when guardrails and other engineering controls can't be used to eliminate the risk of falls. The equipment consists of an anchorage, connectors, and body harness. Personal fall arrest systems also have a lanyard, deceleration device, lifeline, or a suitable combination of these.

The equipment is designed to meet stringent safety requirements. Fall protection systems must be inspected before each use for wear, damage, and other deterioration.

Defective components must be removed from service. Get complete instructions for the system's proper inspection, use, and maintenance from the equipment's manufacturer.

Safety focus: Push, pull, bend, grasp, reach, and twist

How much is too much?

Most job tasks involve movement and physical effort. The key is identifying when they could lead to injuries. To find out which tasks may cause problems and what to do about them, it is critical for employers to identify contributing factors in the workplace.

Contributing factors include:

- Awkward postures;
- Repetitive motions;
- Forceful exertions;
- Pressure points (local contact stress);
- Vibration; and
- Environmental factors.

When identifying contributing factors, keep in mind that no one knows exactly:

- How many repetitions are too many;
- What degree of awkward posture is harmful;
- What duration of a task is too long;
- How much force is too much; or
- What the effects are from combinations of these factors.

Since each person has different physical capabilities, the “safe” exposure level may be different for each worker. What is known is that the more time spent performing physically demanding or repetitive tasks, the more likely an injury will occur.

Both the total time per shift and the duration of each period can be factors. A solid 20 minutes of exposure to vibration might be worse than a series of one minute exposures which are spread throughout the shift, even if the total time per shift exceeds 20 minutes.

As repetitive motions, forceful exertions, and other factors increase, so does the recovery time (the length and frequency of muscle relaxation breaks) needed to help reduce fatigue and prevent injury.

The more contributing factors present, the more likely an injury will occur. Contributing factors should be minimized as much as possible. Identifying them requires evaluating each job.

Job analysis

There are many ways employers can analyze jobs and identify contributing factors. Some methods are relatively simple, and others require detailed analysis and sophisticated equipment. A simple method might involve using checklists, while a more comprehensive method



breaks each job down into specific movements like reach and grasp.

Job analysis methods also vary according to the type of work they address. Some focus on workstation design, while others are specific to types of work, like materials handling. Still others focus on the work environment, like lighting and temperature extremes.

Whatever method is used, identifying potential problems is essential to coming up with improvements. Identifying contributing factors can be done by employers in three simple steps:

- 1. Look for clues.** Employers can identify jobs that may be causing problems by looking around the workplace, talking to employees, and looking for early warning signs.
- 2. Prioritize the tasks in each job.** Employers can ask workers how hard the task is, and how often the task is done. This allows the employer to compare different tasks and prioritize those with the highest risk. Tasks with higher risk should be addressed before looking at tasks with lower risk.
- 3. Observe the work.** Each job task may have contributing factors, and injuries can be caused by a combination of factors in multiple tasks. Also, employers may talk to employees who actually perform the work. They can provide valuable information about how the job might be improved.

This three-step system may not be the best method for evaluating your particular workplace, but it is simple and inexpensive. Different approaches are designed to address specific jobs, tasks, or workstations. If problems seem complicated or widespread, employers may need to contact an ergonomics consultant or other expert.



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Recognizing diabetes symptoms

"An investment in knowledge pays the best interest."

Benjamin Franklin



Many individuals with diabetes, or those at risk of type 2 diabetes are unaware they have or could develop the disease.

It's undeniable that diabetes has a negative impact on a person's health – it can lead to serious problems including kidney failure, lower limb amputations, and blindness.

In addition, a person with diabetes is twice as likely to have heart disease or a stroke as a person without diabetes.

Yet many of those with diabetes, or who are at high risk for type 2 diabetes, are unaware that they have or could develop the disease.

A report from the Centers for Disease Control and Prevention (CDC) points out that 1 out of every 4 people with diabetes do not know they have the condition. A lack of awareness of prediabetes is even more common: 90 percent of people with prediabetes do not realize they have blood sugar levels higher than normal, but not yet high enough to be diagnosed as diabetes.

Symptoms of diabetes include:

- Frequent urination;
- Excessive thirst or hunger;
- Extreme fatigue;
- Sudden vision changes;
- Sores that are slow to heal;
- Very dry skin;
- Tingling, pain, or numbness in the hands or feet; or

- Unexplained weight loss.

A person with type 2 diabetes often develops these symptoms over several years. They may be so mild that they go unnoticed until diabetes-related health problems emerge. A person with Type 1 diabetes, on the other hand, typically develops these symptoms within a matter of weeks.



It is not currently possible to prevent type 1 diabetes, which most often develops in children and young adults. However, type 2 diabetes can often be prevented or delayed through weight management, regular physical activity, and a healthy diet.

Details on the types

Type 1 – The body does not make enough insulin. Type 1 usually is diagnosed in children and young adults, though it can develop at any age. People with type 1 must take insulin every day.

Type 2 – The body does not make or use insulin well. It can develop at any age, although it typically occurs in middle-aged and older people. Many cases can be delayed or prevented through exercise and weight loss.

Prediabetes – The blood sugar level is higher than normal, although it is not high enough to be diagnosed as diabetes. A person who is overweight and not active is at a higher risk of developing prediabetes.