

WALKING AND WORKING SURFACES **IN INDUSTRIAL ENVIRONMENTS**

COURSE OUTLINE

- **A floor can be dangerous to walk on if it is coated with a slippery substance, such as...**
 - Water and other liquids.
 - Grease, oil and process wastes.
 - Dry materials, like sawdust, metal shavings and everyday dirt.
- **In fact, just about anything that comes between your shoe and the floor could make you slip.**
 - This can include simple litter like scraps of paper, cardboard or discarded packing material.
- **Trips are caused by objects that get in front of your feet unexpectedly, like...**
 - Pallets that people leave on the floor.
 - Extension cords that are stretched across a walkway.
 - Building materials scattered around a construction site.
- **Trips and falls can be avoided by practicing good housekeeping.**
 - An orderly workplace with clean walking and working surfaces will create a safer environment for everyone.
- **Some hazards such as tanks, vats and other equipment can't be cleaned up or put away.**
 - These should be covered, or surrounded by a railing.
- **"Guarding" is the process of using actual physical barriers to reduce the risk of a slip, trip or fall.**
 - It's another effective way to keep you and your coworkers safe.
- **If you're installing large equipment, storing heavy materials, or driving a loaded forklift across a floor, you need to know its load-bearing capacity, or "load rating limit".**
 - Where "floor-stressing" activities such as these take place, the load rating limit should be clearly marked and posted conspicuously.

- **It's important for aisles and passageways to be clearly marked so everyone knows where it's safe to walk.**
 - Marking off these areas also indicates where there shouldn't be any clutter or other obstacles, and makes it a lot easier to ensure things that "don't belong" are cleaned up or moved out.
- **Guarding large openings with a "standard" railing will help to keep people safe.**
 - This consists of a top rail 42 inches high, with a midrail half that height, and vertical uprights to support them.
- **Tools and materials can also fall through holes or other openings and injure the people below.**
 - Falling objects that land in machinery or on energized equipment can also become secondary hazards.
- **"Toe boards" should be added to railings wherever falling objects could be a problem.**
 - These four-inch tall barriers along the floor guard the edges of openings, so that tools and materials can't go "overboard".
- **Openings in walls can pose just as great a hazard as those in floors.**
 - In fact, OSHA requires that wall openings which are big enough for someone to fall through and drop more than four feet must have barriers installed across them.
- **"Catwalks" and other open-sided platforms are another potential fall hazard.**
 - Regulations require standard railings to be installed whenever platforms and catwalks are four feet or more off the ground.
 - To protect people or equipment beneath these platforms, toe boards must also be installed.
 - Regardless of their height, all platforms must be fully guarded when they are above or next to dangerous equipment.
- **Slipping, tripping and falling down or off of stairs is always a serious problem.**
 - It can be especially dangerous in the workplace, where you may be carrying tools or materials, or where there might be hazardous equipment operating nearby.
- **90% of stairway falls result from the unsafe behavior of the people who use them.**
 - If you run on stairs, skip steps or carry things that are so big you can't see where you're putting your feet, you're likely to fall sooner or later.

- **There are some requirements stairs must meet that minimize the risk of a slip, trip or fall.**
 - For example, because most accidents are likely to occur on stairs with uneven steps or other irregularities, riser height and tread depth must be uniform.
- **To help people keep their balance, all stairways with four or more vertical risers must be guarded with handrails fastened to a wall, or stairway rails supported by uprights.**
 - To be effective, these railings must be 30 to 34 inches above the surface of the stair tread.
 - They must also have at least 3 inches of clearance around them, so you can get a good grip.
- **"Heavy duty" permanent stairways have their own safety requirements.**
 - These types of stairways are used routinely by workers in spaces where machinery is installed and other "heavy duty" environments.
 - They have to be able to carry at least 5 times their expected load, with a minimum of 1,000 pounds.
 - Metal stairs can bend if they can't carry the weight of the load, which can create the kind of situation that can cause falls.
- **Stairs with damaged treads need to be fixed before they cause any problems.**
 - If you notice stairs that have been damaged, tell your supervisor so that repairs can be made before there is an accident.
- **"Fixed ladders" are permanently attached to equipment, buildings or other structures... and have special safety requirements of their own.**
 - Fixed ladders that are more than 20 feet in length are required to be guarded by "wells", or "cages".
- **To really be safe on fixed ladders, a climber should use a form of personal fall protection called a "ladder safety device".**
 - These typically consist of a body harness linked to a ladder-mounted braking mechanism or a self-retracting lifeline.
 - If your job requires you to climb fixed ladders, you need to know how to inspect and maintain your fall protection, as well as how to put it on correctly and use it safely.
- **When you can't access a stairway or a fixed ladder, a portable ladder can get you where you need to go.**
 - You can carry it to the job and climb right up to get it done.

- **You must inspect a portable ladder before you use it to ensure that it is in good condition.**
 - Look it over thoroughly for defects, such as sharp edges or splinters.
 - Make sure that there are no broken, loose or missing steps, rungs, cleats or other components.
 - Check that the feet are in good shape, so the ladder won't slip.
 - Clean off any grease, oil or other materials that may have accumulated on the rungs or rails.
 - If a ladder fails your inspection, it should be taken out of service and marked or tagged with "Dangerous, Do Not Use".
- **You need to pay attention to setting up a ladder safely as well.**
 - First, make sure that both ends are firmly positioned.
 - The feet should be level.
 - If the ground is uneven, use boards or a ladder jack to even out the ladder's base.
- **Power lines or energized equipment can be very dangerous when you're using a ladder.**
 - If you're working near these hazards, make sure to use a ladder made of fiberglass or wood to reduce the risk of an electric shock.
 - Never use a metal ladder around electricity.
- **"Traffic" around your ladder can also be an issue.**
 - A ladder that's set up in a busy area is in danger of being run into and knocked over by passing people or equipment.
 - To prevent this, put up warning cones, caution tape or other barriers to keep people clear.
- **Never set up a ladder in front of a door that opens outward, unless that door is locked, blocked or guarded.**
- **You can't always measure to find the most stable angle for a ladder, but you can get into the right "ballpark" by using the "four-to-one" ratio.**
 - For every four feet of vertical height, place the bottom of the ladder one foot "out" from whatever it's leaning against.
- **If you're setting up your ladder to climb up to a roof, make sure the top of the ladder extends at least 3 feet above the roof's edge.**
 - This gives you something to hold onto so you don't lose your balance as you get on and off.

- **Never use a ladder in a way that wasn't intended.**
 - This includes using it horizontally, as a makeshift scaffold or as a work platform.
- **A scaffold is a temporary raised platform that can support you and the tools that you need when you're doing a job off the ground.**
 - You should always be very careful when you're working on them.
- **Scaffolds usually fall into two main categories: "supporting" scaffolds and "suspended" scaffolds.**
 - Supporting scaffolds have the work platform supported from underneath.
 - Suspended scaffolds are hung from above.
- **When you're working on any type of scaffold, you must use "fall protection".**
- **"Guarding" is one type of fall protection that is used on scaffold work platforms.**
 - Scaffolds more than 10 feet off the ground are required to have their open sides protected by railings with midrails and toeboards.
 - If people work or pass underneath the scaffold, wire mesh must be installed between the toeboard and guardrail as well, to provide added protection from falling objects.
- **Another form of fall protection that is used on scaffolds is "personal" equipment that you wear.**
 - This usually consists of a full-body harness that is connected to a lanyard.
 - In some situations the lanyard can be anchored to a structural member of the scaffold, but the harness can also be connected to a lifeline or deceleration device.
- **If your personal fall protection equipment is connected to a lifeline or deceleration device, it must be secured directly to an anchor point on the structure that is being worked on, or to a "vertical lifeline" that connects to the anchor point.**
 - To safely support the weight of a falling worker, OSHA requires that these anchor points be something like a girder or an I-beam.
 - Anchor points must be able to support a minimum deadweight of 5,000 pounds.

- **If you do wear personal fall protection on a scaffold, make sure that you know how to...**
 - Inspect it.
 - Put it on.
 - Work with it safely.
- **In certain weather conditions, it is sometimes safer to stay off a scaffold altogether.**
 - Rain increases your chances of slipping or falling.
 - A strong wind can knock you off balance, especially when you're carrying materials.
 - If there's snow or ice on a platform, stay off until it has been cleared away and the planking is sprinkled with sand for better footing.
- **Never remain on the platform of a scaffold that is going to be moved, altered, loaded or unloaded.**
 - Remember to replace any opened guardrails after these processes are complete.
- **Never climb the frame or braces to get to the platform of a supported scaffold.**
 - Use the internal stairs or a ladder instead.

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- **Many slips, trips and falls can be prevented simply by "good housekeeping".**
- **Hazards such as holes in the floor, open-sided platforms and walkways can be guarded effectively with standard railings and toeboards.**
- **Inspect ladders every time you use them. Be sure you know how to set them up properly and use them safely.**
- **Know how to use personal fall protection equipment if you need it when you're working up high.**
- **Never work on a scaffold during stormy or windy weather... or remain on it if it's being moved or altered in any way.**
- **Avoiding slips, trips and falls begins when you stop taking walking and working surfaces for granted!**