MATERIALS HANDLING SAFETY IN TRANSPORTATION AND WAREHOUSE ENVIRONMENTS

COURSE OUTLINE

- **"Materials handling" involves moving a load from one place to another.**
  - Sometimes you can do it manually, other times you need to use mechanical equipment to help you do the "heavy lifting".

- **It might seem pretty straightforward, but don't be fooled.**
  - Lifting and moving any type of material can be dangerous if you don't know what you're doing.

- **You can prevent accidents and injuries by preparing before you begin any materials handling task.**
  - Start by "checking in" with yourself.
  - If you're feeling the effects of drugs or alcohol, never try to lift or move a load.
  - Anything like this that might affect your balance or your judgment could get you or someone else hurt… even killed.

- **You're also not ready to work safely if you're in pain.**
  - An injured body is a weaker body, and it's an accident waiting to happen.

- **If you feel that you're mentally and physically ready to take on a materials handling job, you also need to make sure that you're "dressed for success".**
  - Putting on appropriate personal protective equipment can be the difference between walking away from an incident and ending up in the emergency room.

- **At a minimum, you will probably want to wear gloves and work boots with non-slip soles and steel toes.**
  - You might need other types of PPE as well, depending on the environment you are in.

- **For instance, if you're working around flying or falling objects, you'll want to wear a hard hat or helmet.**
  - Not sure what PPE you should use for the jobs that you do?
  - Don't guess… ask your supervisor.

- **Once you're "outfitted" correctly, you need to assess what it will take to move your load.**
  - How heavy is it?
  - Can you safely lift it on your own, or do you need the help of a coworker or some type of equipment?

- **When in doubt, get help!**
  - You don't want to over-extend yourself… that's how injuries occur.

- **Take a moment to inspect the load itself.**
  - Some loads have "handholds" that make lifting and carrying them easier.
  - Use them if you can.

- **You should also check to see if there are any warning labels on the load.**
  - They'll tell you about any special handling requirements or hazards you need to be aware of.

- **The last thing you need to do to prepare for a materials handling task is to survey the path you'll be taking if you're moving the load any distance.**
  - Even if you're ready and the load is manageable, your route could pose risks.

- **You need to identify any "obstacles" ahead of time.**
  - Remove any clutter from your path.
  - Watch out for puddles or spills.
  - If you can't remove an obstruction, change your route to avoid it.
  - Never try to carry a load through a cluttered or blocked area.

- **When you're working, no one expects you to have "super-human" strength.**
  - So to avoid hurting yourself, you need to understand your body's capabilities… and its limitations.

- **That's where "ergonomics" comes in.**
  - Ergonomics is all about designing tasks to fit your body, so you can get the job done easily and efficiently without putting yourself at risk.

- **"Ergonomic injuries" happen when you push your body to move in ways it's not designed or strong enough to move.**

- **So you should avoid working with your body in "unnatural" or extreme positions, such as…**
  - Leaning to the side while lifting a box onto a stack.
  - Turning at the waist and reaching back to grab a heavy tool behind you.
  - Reaching too far to pick something up.

- **Any time you feel like you're forcing yourself into a stressful position, stop.**
  - Then think about how you can get the task done without straining yourself.

- **For instance, you could…**
  - Shift your position so you can push a box without leaning.
  - Move your feet so you can grab something without turning.
  - Get as close to an object as possible before you lift it.

- **If you can't create a "stress-free" solution on your own, don't be afraid to ask for help from a coworker.**

- **How you position your body isn't the only thing that matters when you're moving materials.**
  - Another big risk is overexertion… when you try to do more than your body can handle.
  - This often happens when you're working with especially heavy materials.

- **Why are they dangerous?**
  - Because the heavier the load, the more stress it puts on your muscles, discs, and spine.
  - The more force you use, the harder it is to stay in control of a load as well.

- **So be realistic about your abilities. Don't try to take on jobs you can't handle. Remember…**
  - Pushing is usually safer than pulling.
  - Always use "handholds" if the item that you're lifting has them.
  - Stand up straight with the object close to your body when you lift.

- **Even if you are dealing with loads that you think you can handle, there's another potential problem to look out for… "repetitive motions".**
  - Some jobs involve making the same lifting, turning, stepping or lowering movements over and over again.

- **While each movement might feel easy initially, the repetition can wear your body down over time.**
  - You can guard against this by alternating tasks that use different types of movements and taking periodic rest breaks.

- **Every year, more than a million workers injure their backs, and it usually happens because they are trying to lift something the wrong way.**
  - Materials handling involves a lot of lifting, so you need to know and follow safe lifting protocols to avoid accidents and injuries.

- **First and foremost, think before you lift. Before you try to pick something up, ask yourself…**
  - Is it too heavy to lift easily?
  - Is it too bulky or oddly shaped to grip securely?
  - Will it be too large to see over after you pick it up?

- **If you answer "yes" to any of these questions, you shouldn't try to lift the object by yourself.**
  - Get help or use appropriate materials handling equipment to assist you.

- **Even when you can lift an object on your own, there are specific steps that you should take to ensure a safe lift.**
  - Stand close to the object, with your feet shoulder-width apart.
  - Lower yourself to grasp the object by bending your knees (do not bend at the waist… Keep your back straight).
  - Get a firm grip.
  - Lift the load with your legs by straightening your knees.
  - As you make a lift, hold the object close to your body.

- **But lifting is only half the job. Next, you need to carry your load to its destination.**
  - Keep your back straight, continuing to hold the object close to you.
  - Proceed carefully, with your head up and your eyes on your path.
  - Don’t try to carry anything that interferes with your field of vision.

- **As you move out with your load, remember twisting can hurt your muscles.**
  - So if you have to change direction while you're carrying it, don't twist at the waist.
  - Walk through the turn instead by moving your feet.

- **If something is too heavy to carry alone, ask a coworker to help you with it.**
  - Performing a safe "team lift" relies on the same principles that you use when lifting alone, but with teamwork.

- **To maintain control of the load, you and your coworker need to coordinate your actions.**
  - So agree on the direction you'll be moving in, how fast you'll go, and where your destination is before you lift anything.

- **You also need to pay attention to where you're putting the load.**
  - OSHA's Materials Handling Safety Regulations require you to stack and store materials in a way that doesn't create new hazards.
  - So anything stored in tiers *"... shall be stacked, blocked, interlocked and limited in height so that they are stable and secure against sliding or collapse"*.

- **When it's time to put the load down, go through the same steps you did to lift it, but in reverse.**
  - Keep your back straight.
  - Bend at the knees if necessary.
  - Use your legs.

- **You should avoid lifting a load over your head. That puts a severe strain on your neck and shoulders.**
  - Instead, use a step stool, ladder or platform to reach the height you need, so you won't have to lift the object above chest level.

- **Materials handling tasks can be very physically demanding.**
  - Fortunately, you don't have to take on all of the "weight" yourself.

- **There are several types of tools and equipment that can help you move things more easily... and safely.**
  - Two common examples of these "lifting and carrying aids" are two-wheel "hand trucks", and "dollies".

- **This equipment can be helpful.**
  - But it can also be dangerous if you don't know how to use it safely.

- **You should begin by putting on personal protective equipment.**
  - When you're working with hand trucks and dollies, at minimum, you should wear work gloves and steel-toed boots.

- **Then thoroughly inspect the equipment, looking for damaged, worn or missing parts.**
  - Check the tires to make sure they are in good condition.
  - Examine hard rubber wheels to make sure they don't have any "chunks" out of them that would cause them to wobble.
  - If you find problems and can't repair them, tag the equipment "Out-of-Service" and report it to your supervisor.

- **Once you're done inspecting the equipment you'll be using, you need to determine how to stack the load you're moving.**
  - For instance, two-wheeled hand trucks work on the "lever and fulcrum" principle.

- **They give you good lifting power and control.**
  - But you need to pay careful attention to how you load them.

- **To prevent materials from falling off…**
  - Position the load against the back of the truck.
  - Stack smaller, lighter objects on top of larger, heavier ones.
  - Don't stack items any higher than the truck's backrest.
  - You can hurt yourself trying to move too much weight, so be careful not to overload the truck.

- **Watch out for oddly shaped or unbalanced objects that could destabilize the load too.**
  - Some materials handling equipment comes with straps and chains to keep loads secure.
  - If yours has them, use them.

- **Once you've prepared the load, the next step is moving it. First, you need to tip the truck back. To do this safely…**
  - Stand behind it.
  - Hold the top of the load with one hand.
  - Rest one foot on the axle.
  - Use your other hand to gently tilt the truck back.
  - Then balance the weight of the load over the wheels.
  - Finally, grip the handholds firmly and push the truck away.

- **Remember, pulling a hand truck stresses both your arms and shoulders and can lead to an ergonomic injury.**
  - When you reach your destination, you can make a "controlled landing" going through the same steps you did when you tipped it back… but in reverse.

- **While two-wheeled equipment can be useful for moving stacked items…**
  - Four-wheeled dollies come in handy when you need to move something large and bulky.

- **They are rectangular platforms with four wheels that can swivel 360°.**
  - Because they are horizontal, they should only be used on even ground… never on stairs or rough surfaces.

- **There are two ways to load a four-wheeled dolly…**
  - The 45° method.
  - The deadlift method.

- **The "45° method" requires two people.**
  - One to tilt the object to the side while the other positions the dolly underneath it.
  - Then, the person holding the object slowly lowers the raised side down onto the dolly and positions it so that its weight is evenly distributed.

- **The "deadlift method" involves a similar process.**
  - But in this case two or more people lift the object that needs to be moved, while another person slides the dolly underneath the object.
  - Together, they then carefully position the object on the dolly.

- **Once the load is balanced, it can be safely rolled to its destination.**
  - Then, it can be unloaded using the 45° or deadlift method, but in reverse.

- **When you're dealing with a very heavy load, using equipment like platform trucks and carts can help you move it securely and safely.**
  - But it's important to pay attention to how you load them.
  - The materials you're moving must be stable and self-supporting, with their weight evenly distributed.

- **Be careful not to overload a truck or cart as well.**
  - They can be designed to hold anywhere from hundreds to thousands of pounds.
  - So always check their “rated load capacity”, which you can find on their equipment label or in their user’s manual.
  - They will tell you the maximum weight the equipment can carry safely.

- **There are two main ways to stack materials on carts and trucks securely.**
  - “Interlocking”, which involves stacking items like a “puzzle” to reduce their movement.
  - “Column stacking,” where you pile items vertically and symmetrically.

- **“Brick” and “Pinwheel” stacking are both examples of “Interlocking” methods.**
  - “Block” and “Split Block” are types of “column stacking”.

- **Once you have your materials secured, you want to move the cart or truck by pushing from behind.**
  - Use caution while you’re in motion.
  - They are usually large and can be heavily loaded, so it could be hard to stop.
  - Be careful to avoid pedestrians, as well as other equipment and materials.

- **When you arrive at your destination, you have to make sure you unload the materials safely, too.**
  - If you re-stack them in a way that leaves them unstable, they could fall and hurt someone.

- **After you finish, be sure to park carts and trucks in their designated storage areas.**
  - Leaving equipment where people don't expect it to be can result in accidents and injuries.

- **There may be times when you have to move materials that have been palletized.**
  - In these cases, you’ll need to use a "pallet jack".
  - But you'll want to keep a couple of things in mind when you do.

- **First, you need to "slide" the jack into the pallet.**
  - Make sure the jack's wheels are resting on the ground before you raise the forks.
  - If the wheels are on one of the pallet's slats, trying to raise it will tear the pallet apart!

- **A pallet jack can be tricky to control when you push it, because the wheels that steer it are located at the rear of the jack.**
  - So to avoid running into things, or people, it can be easier, and safer, to pull a loaded pallet jack.

- **But you will probably need to push the jack to position the pallet where you want it when you are putting the load down.**
  - So be sure you have complete control and don't have to strain yourself.
  - At that point, lower the forks and pull the jack out from under the pallet.

- **Remember, you should never store materials haphazardly.**
  - So make sure to leave loaded pallets where they are secure and stable.

- **Forklifts are powerful and versatile machines, but they can also be dangerous when you're using them.**
  - That's why following safe work practices is crucial.

- **When you're operating a forklift, you need to…**
  - Always wear your seatbelt.
  - Keep your hands and feet inside the vehicle.
  - Maintain a safe speed.
  - Keep to the right of traffic as well as pedestrians.

- **Keeping these basic safety rules in mind, when you're "empty" you should drive with your forks four to six inches above the floor.**
  - As you approach your load, stop when you're about one foot away.

- **You may need to get off your forklift to see if the width of the forks needs to be adjusted to accommodate the size of the pallet you're going to pick up.**

- **Once the forks are spaced correctly, move the forklift forward until the forks are fully inserted into the pallet.**
  - Raise the forks so that the load is about a foot or so off the floor. Then, tilt the mast back to stabilize the load.

- **As you take your load to its destination, make sure you can always see clearly in front of you.**
  - If what you're carrying obstructs your view, run the forklift in reverse, looking over your shoulder.
  - Always watch for pedestrians and other moving equipment. And watch out for overhead obstructions.

- **Remember to back down any grades when your forklift is loaded.**
  - And maintain a safe distance from the edges of ramps, docks and platforms.

- **To help prevent collisions, stop and sound your horn as you approach corners, intersections or doorways.**
  - Remember pedestrians always have the right of way.

- **If your forklift does collide with something, it could begin to tip over.**
  - In this case, do not try to jump out of the truck.
  - That can get you killed.

- **Instead you should…**
  - Brace your feet.
  - Pull yourself tight against the steering wheel.
  - Lean in the opposite direction from the way the vehicle is tipping.
  - Hang on.

- **When you reach your destination…**
  - Straighten the mast.
  - Position the pallet on the floor or on top of another pallet of materials if you are “stacking” it.

- **Even if you are not operating a forklift, working around them as a "pedestrian" can be dangerous.**
  - So always be aware of where the forklifts in your work area are and keep a safe distance.

- **Don't "pop up" where the driver doesn't expect you.**
  - Use designated walkways whenever possible.
  - Keep to the right when you're walking in aisles.
  - Remember to wear a reflective vest.

- **Since forklifts steer with their back wheels, they turn very sharply and their back ends swing out.**
  - So if you're working around a forklift, don't let this take you by surprise.
  - Always stay away from a forklift's forks.
  - Don't get caught between a forklift and a wall or other large object.
  - Never work, stand or walk under a raised load.

*** * * SUMMARY * * ***

- **Before you can begin any materials handling job, you have to prepare yourself, your equipment and your route.**

- **When you're lifting and carrying something, you need to work "ergonomically friendly", and avoid overexerting yourself.**

- **If you're using a hand truck or dolly, you should wear steel-toed boots and gloves, inspect your equipment before you use it, and keep your load stable at all times.**

- **When you're using carts, platform trucks and pallet jacks to move heavy or bulky loads, be sure that you choose the right stacking method for the materials you're handling.**

- **When you're operating a forklift, be aware of your surroundings, handle your loads carefully and always sound your horn to make yourself known to pedestrians.**

- **Now that you know what you should do to handle materials safely, you can protect yourself, your equipment and your coworkers… every day!**