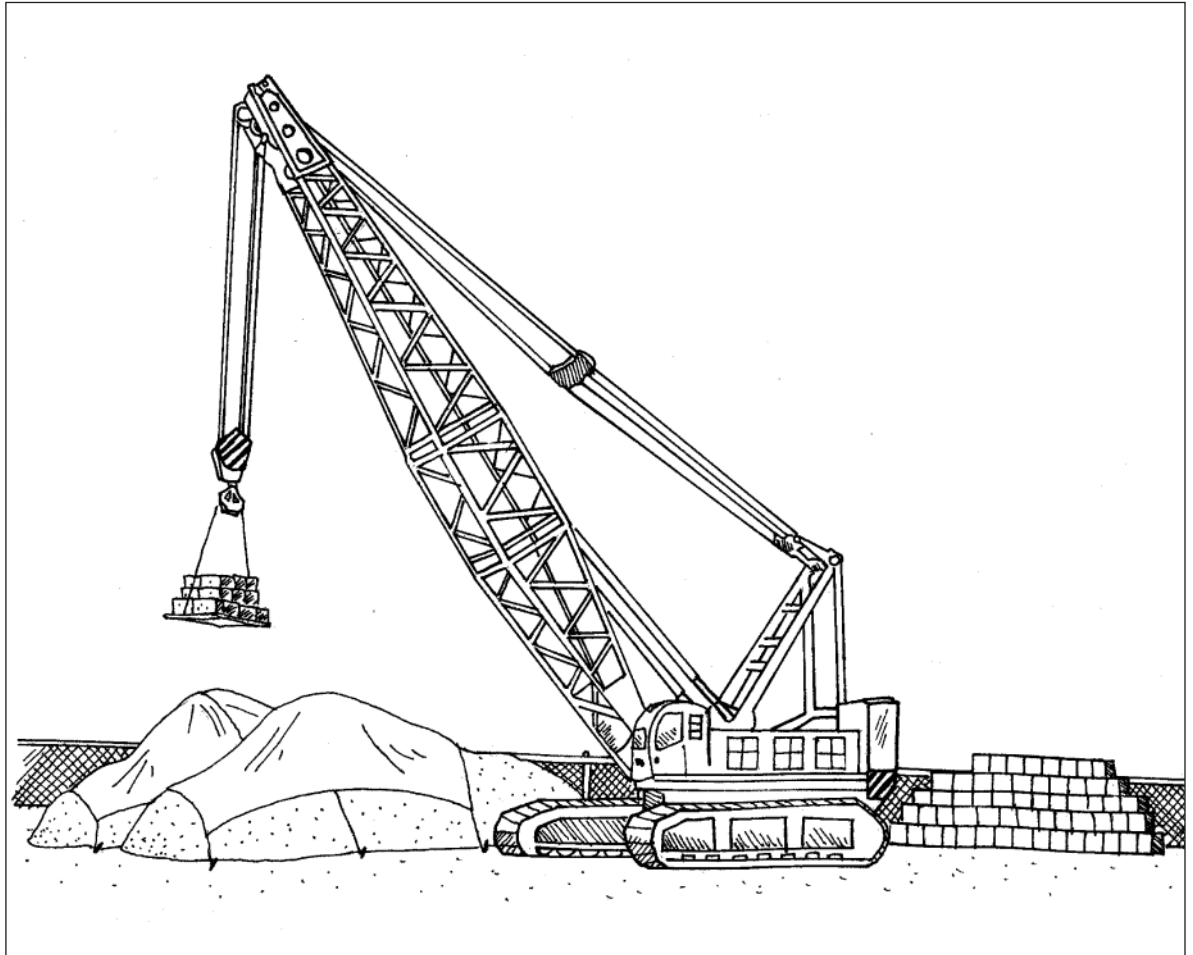


FOCUS 4

CONSTRUCTION SAFETY & HEALTH



‘Struck-By’ Hazards *Trainer Guide*

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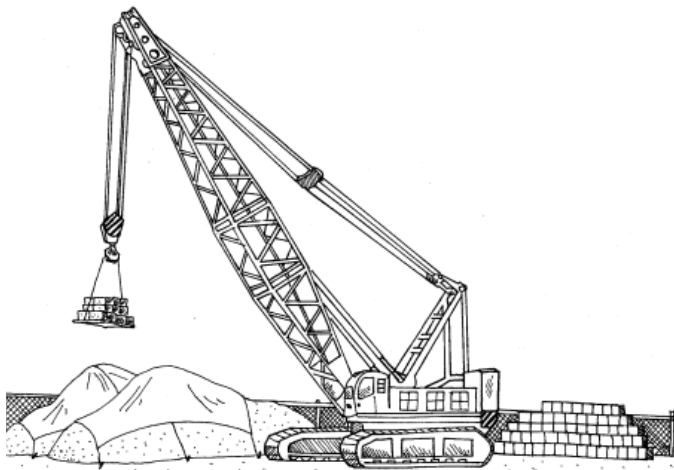
“Struck-By” Hazards

Being struck by an object is one of the leading causes of construction-related deaths.

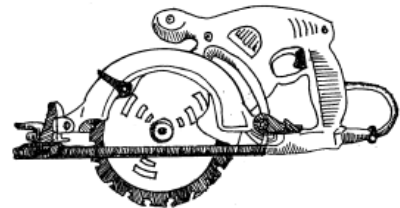
Workers are most often struck by:

- heavy equipment and vehicles, like trucks and cranes;
- falling or flying objects, like tools and flying particles;
- concrete or masonry walls that are being constructed

Employers must protect workers from being struck by vehicles and objects on the job. While these hazards exist, there are ways to prevent or reduce injuries from these types of hazards. These are called control measures, and workers must ensure that control measures are in place to ensure their safety.



Crane Safety: Can the crane operator see you? Stay out of the “swing radius” – of the cab and of the load – and never get under a suspended load.



Tool Safety: Picture shows the movable lower guard of this circular saw in its fully raised position and with the blade fully exposed below the base plate.

Prevent “kick-back” of the saw by adjusting the blade exposure to the minimum distance needed, with saw teeth extending just beyond the thickness of the material you are cutting.



Unsafe Work: You must cap the ends of exposed “rebars” (reinforcing bars) if anyone can walk into them or fall onto them.



Tool Safety: Always make sure the head of the hammer is firmly attached to the handle so the head doesn’t fly off.

EXERCISE

Controlling “Struck-By” Hazards

Divide the group into three smaller groups. Each group must come up with answers on how to control the hazards they are assigned.

1. HAZARD: VEHICLES	HOW DO WE WORK SAFELY? (Control Measures)
1. Driving a vehicle at work	Wear a seat belt (but not on stand-up equipment).
2. Driving a vehicle that is not properly maintained	Do a vehicle inspection before every shift. Don't operate defective equipment: It's your license and your life.
3. Driving vehicle in reverse gear	Use another worker to signal when backing up with an obstructed rear view, whenever possible. Must have a reverse alarm, audible above surrounding noise.
4. Parking on an incline	Use the parking brake and chock the wheels.
5. Using lifting or dumping devices	Clear all personnel. Always lower or block blades.
6. Carrying / lifting heavy loads	Don't exceed the equipment's load or lift capacity.
7. Operating powered industrial trucks (forklifts)	Operators must be trained and certified to operate the forklift safely. Follow safe operating procedures for picking up, moving, putting down, stacking loads. Observe height limitations when stacking loads. Don't exceed vehicle capacity or load capacity. Operate at a safe speed and don't exceed 5 mph. Slow down in congested areas or on slippery surfaces. Avoid traveling with elevated loads. Ensure reverse signal alarm works and can be heard above surrounding noise level. Inspect forklifts: ensure brakes, horns, steering, forks and tires are in good working condition. Look around for hazards (workers and objects) when lifting/lowering material. Clear all personnel and lower the blades.
8. Working on public roadways	Use advance traffic signs. Gradually taper any lane closure. Use barricades whenever possible. Otherwise, place heavy vehicles with impact attenuators (crash cushions) inside the work zone. Use flaggers if needed. Wear bright colored and reflective vests. Use proper illumination for all night work. If possible, have police in work zone for traffic enforcement.

GENERAL: WEAR HARD HATS. STACK AND SECURE MATERIALS TO PREVENT SLIDING OR COLLAPSE.

2. HAZARD: FALLING/FLYING OBJECTS	HOW DO WE WORK SAFELY? (Control measures)
1. Working underneath cranes, hoists, scaffolds	Don't exceed capacity. Stay clear of lifted loads and never work under a suspended load. Beware of unbalanced loads. Barricade all dangerous areas. Use toeboards on scaffolds to prevent objects from falling. Don't store materials on scaffolds in excess of what you need for immediate operations. Don't assume the crane operator has seen you. The operator must acknowledge that you have been seen. Be aware of power lines, unstable soil, high winds. Use qualified workers.
2. Performing overhead work	Secure all tools and materials. Use toeboards, screens, guardrails and debris nets. Barricade the area and post signs. Materials stored in buildings under construction shall not be placed within 6 feet of hoist way / floor openings, nor within 10 feet of an exterior wall which doesn't extend above material.
3. Working with hand tools	Don't use tools with loose, cracked or splintered handles: the head of the tool might fly off, striking the worker or others. Don't use a wrench whose jaws are sprung: it might slip. Don't use impact tools with mushroomed heads: heads might shatter on impact, sending metal fragments flying toward user / others.
4. Working with power tools, such as saws, drills, grinders	Train workers on safe operation of tools. Inspect tools before use. Wear safety glasses, goggles, face shields, gloves, boots, and hearing protection. Operate according to manufacturer's instructions. Guard rotating and moving parts. All guards must be in place while tool is in use.
5. Working with machines, such as jack hammers, pavement saws	Train workers. Inspect machinery. Ensure that all guards are in working order. Guard rotating or moving parts. Guard against flying particles. Protect feet, eyes, ears and hands; wear hearing protection.
6. Working with powder-actuated tools	Operators of powder-actuated tools (gunpowder) must be trained and licensed. Consequences from improper use of these tools could lead to death or serious bodily harm.
7. Pushing or pulling objects that may become airborne	Stack and secure materials to prevent sliding, falling or collapse. Keep work areas clear. Secure material against wind gusts.
8. Working with compressed air	Reduce air pressure to 30 psi if used for cleaning, and use only with guards and proper PPE.

3. HAZARD: CONSTRUCTING MASONRY AND CONCRETE WALLS	HOW DO WE WORK SAFELY? (Control Measures)
1. Placing construction load on concrete structure	Qualified person needs to give the go-ahead.
2. Working when permanent support elements are still not in place	Shore and brace structures. Use controlled access zones to keep out non-essential personnel.
3. Having unauthorized persons working in area	Allow only essential personnel.
4. Loading lifting devices with heavy materials	Don't load beyond capacity. Know loading capacity of the place where the load will go.
5. The lifting device fails and falls on the structure you are building	Use automatic holding devices to support forms.

SUMMARY

“Struck-by” Hazards

Vehicles, Falling and Flying Objects, and Masonry Walls

Too many construction workers die on the job when they are

1. struck by a vehicle;
2. struck by a falling or flying object;
3. struck by a concrete or masonry wall that collapses.

*To prevent injury or death from being **STRUCK BY A VEHICLE**:*

1. Wear a seat belt! Seat belts save lives, both on the roadways and on construction sites. (Note: Don't wear one if the vehicle is only designed for standing up or if it has no rollover protective structure, like a roller used on paving jobs.)
2. Make sure that all vehicles are inspected before each shift – everything should be in good working condition, including the brakes, before you begin work. Use your parking brake when the vehicle is not in use, and chock the wheels if you are parked on an incline. And never lift or load more than the vehicle can hold.
3. If you are driving a vehicle in reverse and you can't see behind you, be sure to have a reverse alarm that people can hear, AND have another worker signal to you that all is safe. Ensure that no one is in the way when you are using lifting and dumping devices. Get out and look for people and hazards.
4. Don't drive vehicles in areas that are not safely constructed or maintained. When using lifting or dumping devices, make sure to clear all personnel and lower or block all blades.
5. All forklift operators must be trained and certified. Equipment must be inspected, and all safe operating procedures must be followed. Drive slowly, and don't travel with elevated loads. Make sure all signal alarms work, and watch for hazardous conditions (involving both workers and objects).
6. If you are working in traffic, use traffic signs and barricades. Use flaggers if needed. Be sure to stay out of blind spots. Workers must wear warning clothing, like orange vests. If they are working at night, these must be of a reflective material. Use proper lighting when working at night. Use traffic barricades whenever possible. If you can't barricade the traffic, use heavy equipment with impact attenuators (crash cushions) within the work zone, to protect you from moving traffic. Be alert for pedestrians in urban areas.

*To prevent injury or death from **FALLING or FLYING OBJECTS**:*

7. Inspect tools, cranes, hoists to see that all are in good condition.
8. Use toeboards, screens, debris nets, and guardrails on scaffolds to prevent tools/other items from falling from overhead work areas.

9. If you are working underneath cranes, hoists or scaffolds, never work under a suspended load. Barricade hazard areas and post warning signs. Don't exceed capacity, and don't assume the operator has seen you. Watch out for power lines, unstable soil, and high winds.
10. Materials stored shall not be placed within 6 feet of hoist way/floor openings, nor within 10 feet of an exterior wall which doesn't extend above material.
11. Don't use hand tools with loose, cracked or splintered handles, or use impact tools with mushroomed heads; the head could fly off, striking you or others. Operators of powder-actuated tools (gunpowder) must be trained and licensed. Train all workers on safe operation of tools, and inspect all tools before use.
12. Train workers on safe operation of power tools, such as saws, drills, and grinders. Inspect all tools before use, and wear protective gear. Guard rotating and moving parts – all guards must be in place when tools are in use.
13. Secure tools and other items to prevent them from falling on the people below; stack and secure materials (even from wind gusts) to prevent sliding, falling or collapse. And always keep areas clear of clutter.
14. Use personal protective equipment to prevent being hit by falling or flying objects. Wear a hard hat, safety glasses, goggles, and face shields. Wear hearing protection when needed.
15. Reduce compressed air used for cleaning to 30 psi, and only use it with the proper guards and other protective equipment. And never clean your clothing with compressed air: you could be injured by a particle driven into your eyes or skin by the force.

Workers are killed or are seriously injured when they are BUILDING CONCRETE OR MASONRY WALLS. They can be struck by materials when the lifting equipment is putting the slabs in position, or when materials are not shored properly and are not yet stable.

To prevent these types of accidents:

16. Don't place loads on concrete structures until someone who is qualified says that it's safe to do.
17. Shore structures until permanent supporting elements are secured; concrete should be tested to make sure it has enough support strength.
18. Don't overload lifting devices, and use automatic devices to support the forms in case the lifting mechanism fails.
19. Use a **Personal Fall Arrest System**, with *full-body harness*, to protect you from falls if other fall protection is not available.

In all of these situations, **be sure that you are properly trained** to do this work, and you are trained on all of the equipment you use.

Training Evaluation – Focus 4 Construction Safety & Health

“STRUCK-BY” HAZARDS

Date:

Location:

Trainer:

1. Overall, how would you rate this training?

- Excellent Good Fair Poor

2. Were the teaching methods (activities, exercises) effective?

- Yes No Not sure

3. Were the handouts and materials useful?

- Yes No Not sure

4. Will the information you received in this workshop be useful on your job?

- Yes No Not sure

5. What did you like most about this training?

6. What did you like least about this training?

7. Please feel free to make additional comments or to suggest ways to improve the training.
