

Preventing Dump Truck-related Injuries and Deaths During Construction

Guidance for Employers

Injuries from dump trucks led to the deaths of 809 construction and extraction workers from 2011 to 2020. Those operating dump trucks or working nearby are at risk of multiple hazards including struck-by, tip-over from loss of vehicle control, crushing, electrical, and falls.

Prepare and Plan for Safety

- Develop a written safety program that addresses the safety hazards to drivers and those who work on the ground near dump trucks (ground workers).
- Inspect the work area for potential hazards before each shift and during the shift to address changing conditions. This should be done by one or more [‘competent persons’](#).
- Provide staging areas to minimize backing up distances.
- [Create internal traffic control plans](#) for areas involving dump truck travel. Focus on eliminating or decreasing the need for ground workers near moving vehicles and providing physical barriers where necessary.
- Anticipate ground conditions through pre-planning and provide a stable surface for all dumping operations.
- Prepare and deploy signs and markers to show workers where to walk in high-traffic areas.
- Follow applicable Occupational Safety and Health Administration (OSHA) regulations and elements of consensus standards concerning [work zone safety for roadway construction](#) and [high-visibility safety apparel](#).



A dump truck tip-over that occurred while operating on a soft surface.
Photo: Flickr Creative Commons

Consider Using New Technologies

Consider [installing cameras, electronic signaling devices, or sensors](#) to reduce hazards. These can include:

- Audible, visual, and/or sensor-based (e.g., radar) devices to warn drivers of workers on foot in the immediate work area.
- Back-up/proximity cameras with a video display for the driver to see their surroundings.
- Proximity detection alarms for ground workers who must be in the work zone.
- Body-up indicators or electronic sensors to alert drivers that a dump body is in the raised position. This can help avoid collisions with overhead objects such as bridges, overpasses, streetlights, and electrical power lines.

Consider [cost, maintenance, usability, and privacy issues related to sensors](#). These factors could affect how widely organizations adopt these technologies.



Provide Training

Train all workers on best work practices in languages they understand. Training should apply to the specific equipment in operation and be based on the manufacturer's recommendations. Effective training is an important part of a strong health and safety program that follows the [hierarchy of controls](#) and can help create a strong [safety climate and safety culture](#).

Train drivers to recognize and prevent hazards related to operating dump trucks. Topics include:

- [Internal traffic control plans](#) and standard operating procedures for entering and exiting the work zone.
- Determining a safe distance from overhead hazards particularly [electrical lines](#).
- Emergency procedures if a truck strikes an electrical line and how to safely exit a truck contacting live lines, if necessary.
- Recognition and respect of barrier types and placement that indicate unauthorized entry.
- Steps to take when tarping and untarping the truck bed and when [getting on and off equipment](#).
- Sources of instability leading to dump truck tip-overs including:
 - o Narrow roads.
 - o Unstable ground unable to support the weight of the dump truck.
 - o Longer truck beds and raised truck beds.
 - o Improper tire pressure.
 - o Improper loading of the truck, including loads over the rated load capacity.
 - o Operating on slopes or uneven ground.
 - o Uneven or incomplete material flow out of the dump bed, for example a problem with clayey or frozen soil.
 - o Poor vehicle maintenance.

Train ground workers on hazards of working near operating dump trucks such as:

- [Blind spots](#) (areas where drivers cannot see) and how to avoid being in a blind spot.
- Communication difficulties and how to avoid them between dump truck drivers and other workers.
- Potential for dump trucks to move unexpectedly.

Use Work Site Best Practices

Struck-By Hazards (including back-over incidents)

- Establish physical barriers (e.g., cones, warning lines, and barricades) where necessary to demarcate worker-free zones as appropriate.
- Follow best practices when loading and dumping, including:
 - o Ensure that operators know how to check that the tailgate is unlocked.
 - o Avoid dumping when trucks are parked side-by-side with another vehicle.
 - o Distribute the load evenly.
 - o Drive the truck while the bed is raised only when necessary.



- Use a trained and dedicated spotter when backing a dump truck. This prevents:
 - o Workers from entering a moving dump truck's path.
 - o The dump truck from entering a hazardous area.
- [Follow the directions of the spotter.](#)
 - o Use pre-arranged standard communication methods between drivers and spotters that includes confirmation before moving the dump truck.
 - o Maintain direct line-of-sight between spotters and drivers as much as possible. Locate spotters in places where a moving truck will not hit them.
- [Avoid ground workers standing in areas where dump trucks are moving and might hit them.](#)
 - o The most dangerous locations are those in the [blind spot areas](#) of the dump truck. This includes directly [behind](#), near the front bumper, and on the truck's passenger side.
 - o Always confirm that the driver knows when ground workers plan to cross in the truck's path. This includes stationary trucks when a driver is in the cab.
- Provide sufficient lighting at night and for poor visibility situations.
- Establish safe work practices for mobile phone use during work activities.

Tip-overs from Loss of Vehicle Control

- [Always wear a seat belt](#) while driving the vehicle. Seat belt use is one of the most effective ways to save lives and reduce injuries from crashes.
- Use a trained and dedicated spotter when backing a dump truck.
- Use the correct type of truck for the task or activity.
- Do not operate on surfaces which are unstable, excessively soft, or otherwise unable to support the dump truck weight.
- Load materials evenly in the bed. For example, if most of the material is piled high in the forward section of the bed, the dump truck can become unstable when the bed is raised.
- Be conscious of abnormal conditions such as high winds.

Crushing Hazards (Including Caught-between Hazards)

- Always use a safety support or brace to prop the truck bed if working beneath it. Ensure that support braces provide a positive means of support, are permanently attached, and are capable of being locked in position. This can prevent the dump bed from falling if the hydraulics fail.
 - o Comply with applicable OSHA rules relevant to dump beds at construction work sites, including those at [29 CFR 1926.600 \(a\)\(3\)\(i\)](#) and [29 CFR 1926.601\(b\)\(10\)](#).
 - o Use proper lockout/tagout procedures during maintenance.
- Follow the equipment manufacturer's recommendations and procedures when operating, inspecting, or performing maintenance on the dump bed.



Electrical Hazards

- Perform dumping operations far clear of the electrical lines.
- Minimize driving the truck with a raised bed to prevent striking overhead objects.
- Clearly mark electrical power lines in a construction zone with surface level signage or goal post along the travel way.
- If the truck contacts any overhead power lines:
 - o Remain inside truck and call 911.
 - o If the truck is on fire, the driver should jump from the truck and not touch the truck and the ground at the same time.
 - o Do not approach a dump truck that has come in contact with an electrical line.

Falls From Dump Truck Cab or Dump Bed

- Face the equipment ladder and use three points of contact (two hands and one foot or one hand and two feet) until reaching the destination.
- Check the handholds and steps for mud or other conditions that could make them slippery.
- Keep work areas clean and free of waste such as scraps, extra materials, and garbage to prevent trip and slip hazards.

Provide Personal Protective Equipment (PPE)

Employers should identify potential hazards at each worksite and determine which PPE is necessary on the job. High-visibility apparel should always be worn when working around operating dump trucks. The type of [high-visibility apparel](#) selected depends on time of day and visibility conditions. The [Manual on Uniform Traffic Control Devices](#) and [ITCP guidance](#) include important information concerning high-visibility safety apparel.

Data and Reports

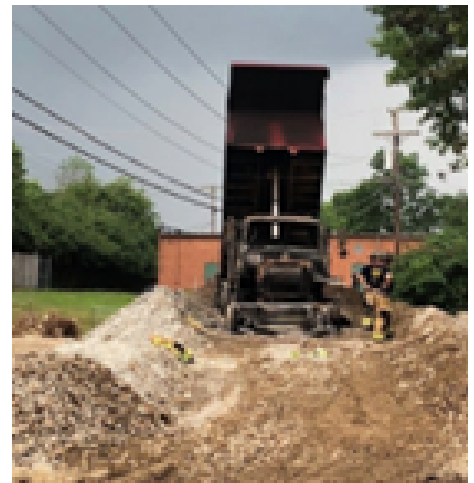
The NIOSH [Fatality Assessment and Control Evaluation \(FACE\)](#) program provides reports on dump truck-related deaths in [NIOSH FACE reports](#) and [State FACE reports](#). Below are two FACE investigations that demonstrate specific examples of hazards of working around dump trucks in construction. Recommendations are available in the individual report. [Animated videos based on NIOSH FACE investigations](#) during work zone accidents and incidents are also available.

Fatality Caused by Backing Up

[Site Superintendent Run Over by Backing Dump Truck](#)

Fatality Caused by Electrocution from Contacting Overhead Power Lines

[Dump Truck Driver Electrocuted After Truck Bed Contacts High Voltage Line](#)



A dump truck that had contact with electrical lines.

Photo: Kentucky FACE report 18KY024