

Landfill Safety



GENERAL SAFETY RISKS AT THE LANDFILL

- ▲ Heavy equipment mixes with hauling trucks and self-haul vehicles in a noisy, chaotic environment.
- ▲ Landfill staff and customers also face safety risks from the waste material itself and ancillary impact from dust, odors, or potentially hazardous materials.
- ▲ Many customers may not have proper personal protective equipment (PPE) or know how to keep themselves safe.

SAFETY STATISTICS

- ▲ According to data gathered by the Bureau of Labor Statistics (BLS), workers in the waste industry consistently rank in the top six most dangerous jobs in the United States.
- ▲ *Note: This safety data is not specific to landfills, but is helpful to understand the high risk overall of the waste industry.*



SAFETY PLANNING DOCUMENTS

- ▲ At a minimum, landfills should have:
 - ▶▶ An injury and illness prevention program (IIPP)
 - ▶▶ A health and safety plan (HASP)
 - ▶▶ Standard operating procedures (SOPs) on major landfill tasks and activities
 - ▶▶ A program to train their employees based on these documents

EAP AND OSHA TOPICS

- ▲ In addition, OSHA requires an Emergency Action Plan (EAP) and training on the following topics:
 - ▶ Hazard identification and assessment
 - ▶ Hazard prevention and control
 - ▶ Emergency response plans and evacuation plans
 - ▶ Prevention of landfill fires
 - ▶ Personal protective equipment, including eye and hand protection
 - ▶ Hazards in the waste stream, including bloodborne pathogens
 - ▶ First aid basics
 - ▶ Trench safety

EAP AND OSHA TOPICS, CONT.

- ▶▶ Confined space safety
- ▶▶ Emergency response, including hazardous materials
- ▶▶ Fall protection
- ▶▶ Safe lifting procedures
- ▶▶ Ladder safety and working at heights
- ▶▶ Hazard communication and understanding a Safety Data Sheet (SDS)
- ▶▶ Electrical safety
- ▶▶ Hard hat safety
- ▶▶ Asbestos safety
- ▶▶ Lock-out/tag-out

SAFETY AUDITS

- ▲ Safety audits should, at a minimum, look at the following areas:
 - ▶▶ Unsafe operations and conditions
 - ▶▶ Alignment with industry standards
 - ▶▶ OSHA safety compliance
 - ▶▶ Emergency response preparedness
 - ▶▶ Traffic flow
 - ▶▶ Heavy equipment
 - ▶▶ Personal protective equipment
 - ▶▶ Communication



COMMON SAFETY ISSUES FOR STAFF

- ▲ *Note: This module covers several relevant safety topics for landfill workers but should not be considered a complete and comprehensive resource of all possible safety issues and risks.*
- ▲ *It's imperative that MOLOs work with their management and staff to determine the safety risks present at their unique site and develop the plans, procedures, and policies to mitigate the risk.*

WEATHER SAFETY ISSUES

- ▲ Working at a landfill means workers may potentially be exposed to severe temperatures.
- ▲ The MOLO should:
 - ▶▶ Ensure staff members have the proper training to avoid unsafe working conditions
 - ▶▶ Identify signs of worker stress
 - ▶▶ Know how to treat an individual showing signs of stress



HEAT EXHAUSTION AND HEAT STROKE

▲ Typical symptoms of heat exhaustion include:

- ▶▶ Pale or clammy skin
- ▶▶ Faintness or weakness
- ▶▶ Rapid pulse
- ▶▶ Painful or incapacitating cramps or muscle spasms

▲ Typical symptoms of heat stroke include:

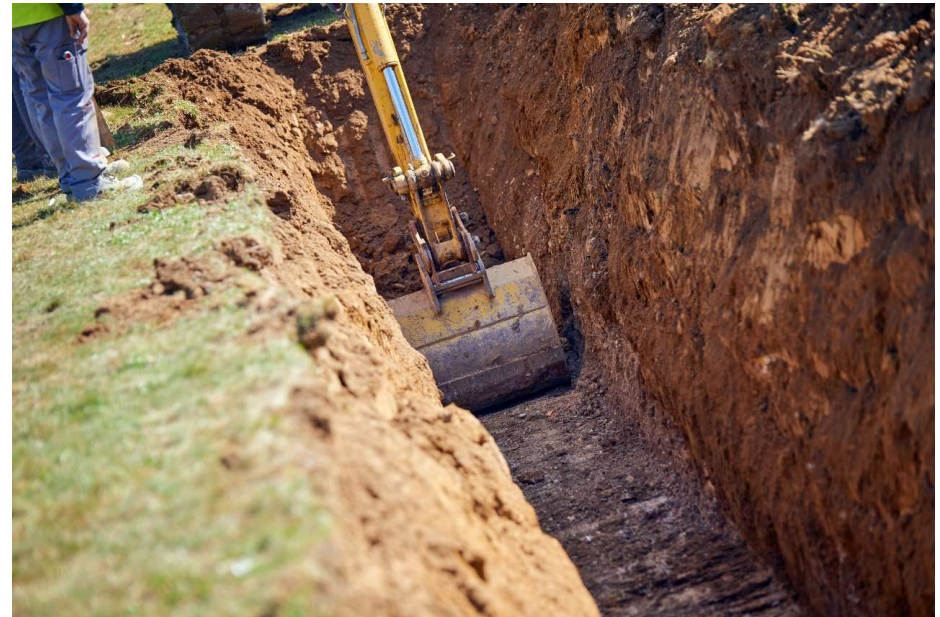
- ▶▶ Soft, flushed, and dry skin
- ▶▶ Body temperature may rise to 105° F (40° C)
- ▶▶ Hot, sticky, and/or weak feeling
- ▶▶ Disorientation
- ▶▶ Unconsciousness

HYPOTHERMIA AND FROSTBITE

- ▲ Hypothermia is caused when the body is exposed to cold weather or water and loses heat faster than it can produce it. Typical symptoms of hypothermia include:
 - ▶▶ Shivering and numbness
 - ▶▶ Apathy
 - ▶▶ Slow or irregular pulse
- ▲ Frostbite is caused by prolonged exposure to wet, cold temperatures. Typical symptoms of frostbite include:
 - ▶▶ Red, itchy inflammations
 - ▶▶ Lesions on the skin

CONFINED SPACE SAFETY

- ▲ Construction, operation, repair, and maintenance may require working in confined spaces.
- ▲ By OSHA's definition, a confined space:
 - ▶▶ Is large enough for an employee to enter fully and perform assigned work
 - ▶▶ Is not designed for continuous occupancy by the employee
 - ▶▶ Has a limited or restricted means of entry or exit



HAZARDOUS WASTE

- ▲ Hazardous waste, while typically not accepted by MSW landfills, will still show up in the waste stream and landfill staff can be at risk from these types of materials.
- ▲ Workers should be trained on how to respond if a hazardous waste is identified.

SCAVENGING

- ▲ Scavenging presents huge risks, including:
 - ▶▶ Being crushed by heavy equipment
 - ▶▶ Sickness or infection from contacting disposed materials
 - ▶▶ Injury from handling materials
- ▲ Landfills should have a zero tolerance policy regarding scavenging.



LANDFILL FIRES

- ▲ Landfills should have a fire plan that:
 - ▶ Assigns staff responsibilities in addressing fires
 - ▶ Identifies water resources
 - ▶ Locates firefighting equipment on site
 - ▶ Integrates local fire departments
 - ▶ Establishes regular staff training



FIRE CONTROL

- ▲ Control can be accomplished by:
 - ▶▶ Watching for hot loads and isolating them if they come in
 - ▶▶ Covering solid waste daily or more frequently or compacting waste to reduce air spaces
 - ▶▶ Exposing the burning area if a fire occurs and pushing it aside

FIRE STAGES

- ▲ For solid waste workers, there are two primary stages: Incipient and Developed Stage Fires.
- ▲ **Incipient Stage** fire is the initial or beginning stage of fire development. Incipient Stage fires can usually be safely controlled by waste operations staff without specialized protective clothing or respiratory protection.
- ▲ **Developed Stage** fires require emergency response professionals with specialized protective clothing or respiratory protection.

BLOODBORNE PATHOGENS

- ▲ OSHA's Bloodborne Pathogen program requires managers to review their sites and prepare a written report that assesses worker exposure to bloodborne pathogens.
- ▲ If a landfill accepts biomedical waste, written procedures must describe the appropriate training, equipment, and medical support given to the landfill staff.

SHARPS

- ▲ Landfill staff and customers could be stuck by a needle that punctures their boots or hands as they clean their equipment or debris.
- ▲ Landfill staff should be trained on how to properly respond to the presence of sharps and how to safely reduce or eliminate their exposure to identified sharps.



SAFETY AT THE ACTIVE FACE

- ▲ The active landfill face is the most dangerous area of the site because of:
 - ▶▶ Mixed traffic
 - ▶▶ Heavy equipment
 - ▶▶ Exposed waste
 - ▶▶ Sensory overload
 - ▶▶ Many blind spots

BLIND SPOTS

- ▲ At a busy landfill, the tipping pad becomes a kaleidoscope of blind spots, with constant movement and overlap.
- ▲ Blind spot diagrams can be valuable training tools to help operators, spotters, and landfill staff understand the impact of blind spots at the active face.

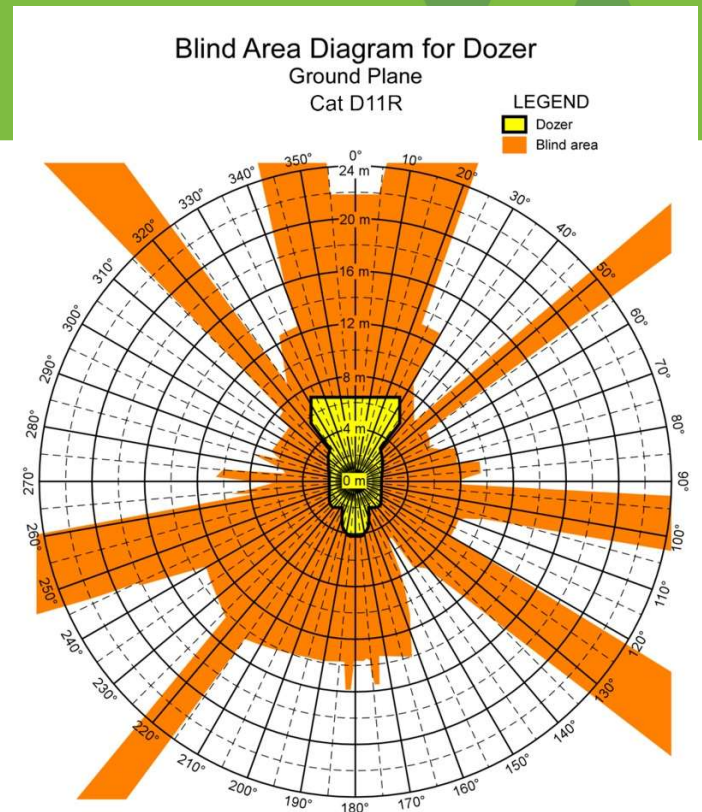


Photo credit: National Institute for Occupational Safety & Health (NIOSH).

TRAFFIC MANAGEMENT

- ▲ Traffic directors must be provided with a protected zone where they can see the entire active face and direct customers but remain out of the mix of traffic.



SAFETY TRAINING AND COMMUNICATION

- ▲ The first line of defense in site safety and protection of the environment begins with the design of the facility.
- ▲ Equally important is the knowledge of the landfill staff.

ONBOARDING AND ONGOING SAFETY TRAINING

- ▲ New employees need training before they are assigned their normal duties
- ▲ Current employees need training before reassignment to new duties
- ▲ All employees need regular continuing training



STANDARD OPERATING PROCEDURES (SOPS)

- ▲ Standard operating procedures (SOPs) are the actionable documents that outline the specific procedures and policies for all the important tasks at the landfill.
- ▲ SOPs should:
 - ▶ Clearly identify the purpose and scope of the procedure
 - ▶ Identify the PPE and safety devices needed to perform a task
 - ▶ Detail step-by-step instructions for how to consistently, safely, and efficiently perform a task
 - ▶ Document that both operations staff and management understand how the task is to be performed

EXAMPLE OF SOP

Heavy Equipment/Vehicle Pre-Trip Tasks

Purpose and Scope

The following procedure is based on the organization's health and safety plans and is intended to ensure the safety of operations staff, customers, and the public. Operations staff shall review and thoroughly understand this procedure prior to operating any heavy equipment or vehicles.

Start of Shift Procedure

Upon arriving report to the breakroom and complete the following tasks:

1. Clock in to begin shift.
2. Determine and discuss the day's workplan with the Supervisor.
3. Put on **High Visibility Safety Apparel** and depart for the work area.
 - a. If operating vehicles or heavy equipment continue to following section.
 - b. If not operating vehicles or heavy equipment, proceed to the next applicable standard operating procedure.

Pre-Trip Inspection

1. Use the appropriate **Pre-Trip Inspection Form** for the specific heavy equipment/vehicle to perform a pre-trip inspection according to the manufacturer's operation and maintenance manual.
 - a. Put on **Gloves** and **Safety Glasses** as necessary when conducting the pre-trip inspection.
 - b. Maintain 3 points of contact when climbing is necessary to conduct the pre-trip inspection (e.g. entering cab, etc.)
 - c. Ensure windshield wipers and defroster/defogger are operational and activated (if appropriate).
 - i. If not equipped with defroster/defogger, direct heater vents at windshield and windows if necessary.
 - d. Report any deficiencies to the Supervisor immediately. The Supervisor shall determine whether the heavy equipment/vehicle will be repaired immediately or taken out of service.

NEVER OPERATE HEAVY EQUIPMENT/VEHICLES WITH KNOWN SAFETY ISSUES
2. Start heavy equipment/vehicle according to the manufacturer's operation and maintenance manual.
3. Adjust mirrors and seat to provide appropriate reach and field of view.
4. Buckle **Seat Belt**.
5. Ensure **Headlights** (appropriate for conditions) are on and that **Safety Beacons** and **Hazard Flashers** are activated.
6. Ensure no objects or people are in the area around the heavy equipment/vehicle or the intended travel path.
7. Prepare to begin operation according to the applicable standard operating procedure.

*This procedure requires the following
PPE and Safety Devices:*
Gloves
Hazard Flashers
Headlights
High Visibility Safety Apparel
Safety Glasses
Safety Beacons
Seat Belt

Employee Acknowledgment

Date	
Name (Print)	
Signature	

Supervisor Acknowledgment

Date	
Name (Print)	
Signature	

TAILGATE MEETINGS

- ▲ In addition to regular safety meetings, MOLOs and other management staff should look for other opportunities to review safety topics and policies with staff.
- ▲ Five minutes at the top of a shift or regular tailgate safety meetings can reinforce important safety practices.

EMERGENCY RESPONSE

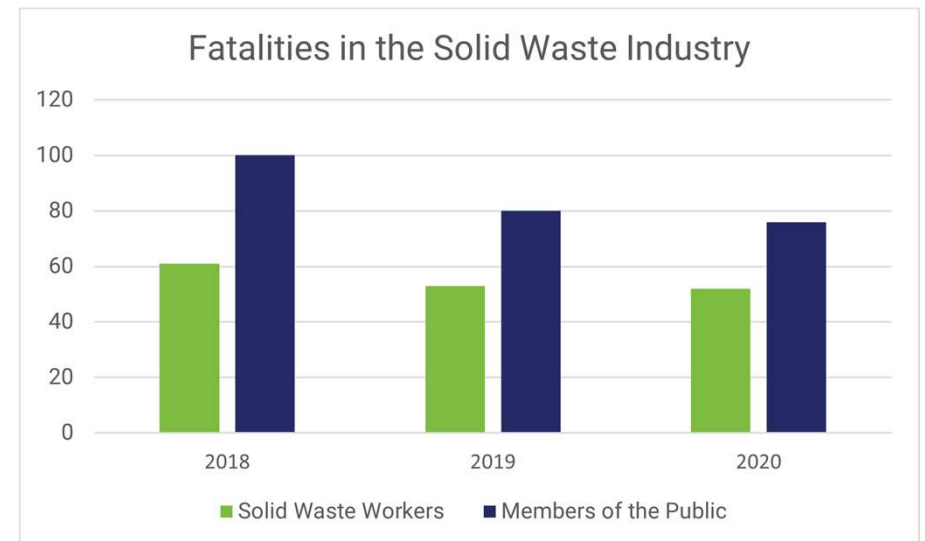
- ▲ Every MOLO must have a written plan responding to on-site emergencies.
- ▲ Written emergency response plans need to address the unusual situations—the “what ifs”—arising from weather events, wastes from special collection events, and entry into confined spaces.
- ▲ Certain emergency plans may be required by other government agencies.

COMMUNICATION DURING EMERGENCIES

- ▲ The ability to communicate with on-site landfill staff, contractors, and customers is essential in mitigating hazards during emergency situations.
- ▲ The MOLO should work with landfill staff to develop a communication plan that provides notification of an emergency condition and determines a predetermined response from on-site landfill staff.

SAFETY TRAINING AND COMMUNICATION FOR CUSTOMERS

- ▲ The MOLO should create a customer safety plan that includes customer safety policies, how those policies will be communicated, and the enforcement steps to deal with non-compliant customers.
- ▲ This plan should be communicated clearly to landfill staff.



COMMUNICATION CHANNELS

- ▲ While the most common method of communicating with customers is verbal—usually at the scalehouse or active face—there are additional effective methods:
 - ▶▶ Videos
 - ▶▶ Signage
 - ▶▶ Websites and Social Media
 - ▶▶ Verbal Communication

GET CREATIVE

- ▲ Break up information into multiple signs
- ▲ Create several short safety videos
- ▲ Host an event for haulers, like a lunch, and present a safety video
- ▲ Print safety rules on receipts
- ▲ Post unusual speeds limits, such as 12 ½ MPH speed limit



ENFORCEMENT

- ▲ Safety policies are meaningless unless they are enforced.
- ▲ Staff or customers who refuse to follow the rules can put themselves and others in serious danger.
- ▲ MOLOs need to build in a system of enforcement for all on-site safety policies.

SAFETY EQUIPMENT AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

- ▲ Landfill staff, customers, visitors, and contractors must be appropriately equipped with personal protection gear.
- ▲ Not only is it a good idea, but PPE is also an OSHA-mandated requirement.

RESISTANCE TO PPE

- ▲ Some workers resist wearing appropriate PPE. There can be many reasons for this, including that it is not “cool,” it is uncomfortable, or it gets in the way of their work.
- ▲ However, there is rarely a legitimate reason to not wear it. Suffering an injury or being killed is more uncomfortable than an itchy mask or sweaty hardhat.

TYPES OF PPE

- ▲ High-visibility clothing and safety vests
- ▲ Hard hats
- ▲ Safety glasses or goggles
- ▲ Boots
- ▲ Gloves
- ▲ Hearing protection
- ▲ Dust masks and respirators
- ▲ Uniform
- ▲ Additional safety equipment

MAINTAINING PPE

- ▲ Properly maintaining and cleaning PPE is critical to ensuring it provides protection to the wearer:
 - ▶▶ Hard hats, gloves, boots, and other apparel should be replaced if they have cracks, rips, or tears.
 - ▶▶ Dust masks should be replaced when they are dirty and hearing protection should be replaced, as needed.
 - ▶▶ Ear plugs are typically single-use, while earmuffs can be worn multiple times.

SITE SECURITY AND SAFETY

- ▲ The MOLO is responsible for both the security of the site and the safety of users, employees, and the public.
- ▲ Site safety is maintained and achieved through careful planning, the provision and use of appropriate equipment, and landfill staff training.

ACCIDENT INVESTIGATION, PREVENTION, AND DOCUMENTATION

- ▲ An accident investigation seeks to determine who, what, when, where, why, and how by:
 - ▶▶ Identifying and interviewing all parties involved in the accident and any witnesses.
 - ▶▶ Taking lots of photographs of the accident site and the surrounding environmental conditions.
 - ▶▶ Safeguarding evidence, including maintaining chain of custody, for further evaluation.
 - ▶▶ Documenting the accident in chronological order, making sure to understand activities that led up to the accident.
 - ▶▶ Seeking to find the cause, not assign blame

NEAR-MISS INCIDENTS

- ▲ A near-miss describes incidents where, given a slight shift in time or distance, property damage, personal injury, or a fatality could have occurred.
- ▲ A near-miss incident provides an opportunity for an investigation to be performed to help prevent the incident from reoccurring or becoming an actual accident in the future.



SAFETY DOCUMENTATION AND INSPECTION

- ▲ OSHA establishes that the employer or manager is responsible for initiating and maintaining accident prevention programs.
- ▲ Regulations require frequent and regular safety inspections of job sites, materials, and equipment, as well as ongoing training.
- ▲ All training should also be documented. If it's not documented, it didn't happen.

Review Questions

1. Why can landfills be dangerous for workers and customers?
2. What are some of the safety topics required by OSHA?
3. What are some common safety risks for landfill workers and how can they be mitigated?
4. What are the primary components of safety training and communication?

Review Questions

5. Why is safety training for customers important at a landfill?
6. What are typical PPE requirements for landfill staff and customers?
7. How can accident investigation and near-miss tracking help prevent accidents, injuries, and fatalities?

MODULE OBJECTIVES

- ▲ Upon completion of this module, students will be able to:
 - ▶▶ Outline the safety risks present at landfills
 - ▶▶ Review and summarize the requirements of a good safety program
 - ▶▶ Review OSHA regulations that are specifically related to landfill safety
 - ▶▶ Discuss the need for ongoing safety training for staff and customers

MODULE EXPANSION

- ▲ Discuss each of these safety audit components. Course participants should suggest specific things to look for in each of the above categories.
- ▲ The instructor can write ideas on a flipchart. As the course or module progresses, students may have additional ideas. These should be added to the list throughout the duration of the course or module.

MODULE EXPANSION

- ▲ Discuss the issue of scavenging.
- ▲ Participants should discuss their facility's policies.

MODULE EXPANSION

- ▲ The instructor should lead a discussion about how course participants reduce risk from sharps and bloodborne pathogens at their facilities.

MODULE EXPANSION

- ▲ Discuss other specific safety risks that participants experience at their sites.
- ▲ In addition to discussing safety risks, participants should discuss methods of addressing risks or brainstorm potential methods of mitigating risks.

MODULE EXPANSION

- ▲ Discuss the various types of topics that might be covered for new and existing employees.
- ▲ These topics should be written on a large flipchart. Throughout the rest of this module, participants can suggest other topics that should be included.

MODULE EXPANSION

- ▲ Standard Operating Procedures (SOPs)-writing activity.
- ▲ Course participants should choose a simple home, office, or yard activity to work on as a group. Some examples are:
 - ▶▶ Cooking an egg
 - ▶▶ Changing a headlight
 - ▶▶ Doing a load of laundry

MODULE EXPANSION, CONT.

- ▲ Write out the steps required to complete the task, thinking about what protective gear or special equipment is necessary and what potential safety risks exist.
- ▲ When writing, the SOP should be written for someone who has never done these tasks before, so details are important.

MODULE EXPANSION

- ▲ Discuss the various ways that participants have communicated safety information to customers.
- ▲ Are there any especially creative or unique approaches?

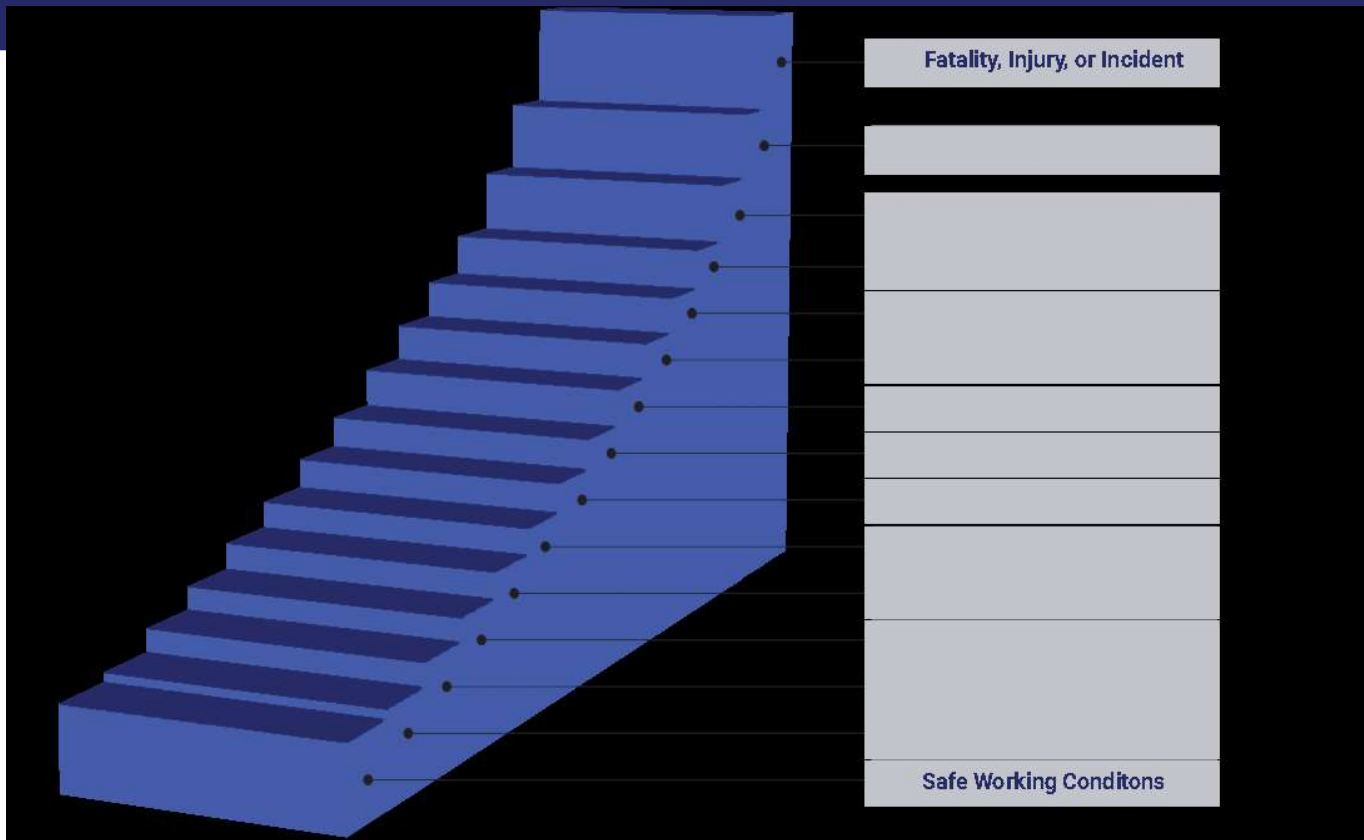
MODULE EXPANSION

- ▲ PPE activity.
- ▲ Participants will decide which PPE item(s) would be appropriate for the safety scenarios presented by the instructor.

MODULE EXPANSION

- ▲ Safety Staircase activity.
- ▲ Rarely do accidents happen as an “act of God.” There are often several small decisions and actions taken along the path to an accident finally occurring.
- ▲ This activity will help participants think through the key players and their actions (or lack thereof) that contributed to the accident happening.

MODULE EXPANSION



MODULE EXPANSION

- ▲ Safety Scenario activity.
- ▲ Discuss what happened, how it could have been prevented, what policies would help prevent the situations, and any other safety considerations, including PPE.