

# RECOMMENDED PRACTICES FOR **SAFETY AND HEALTH PROGRAMS IN CONSTRUCTION**

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## DISCLAIMER

These practices for safety and health programs for construction worksites are recommendations only. Employers in construction work must have a program that includes measures to detect and correct workplace hazards. However, the program may not contain all of the practices recommended in this document. Employers will not be cited if their safety and health program does not comply with this document.

# INTRODUCTION

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These recommended practices provide responsible employers, workers, and worker representatives<sup>1</sup> with a sound, flexible framework for addressing safety and health issues on diverse construction job sites. They may be used by any construction company or job site, but they will be particularly helpful to small and medium-sized contractors. They also include guidance specifically aimed at general contractor employment, staffing agency employment and multiemployer work situations. These recommended practices have been developed solely for the construction industry. Separate recommended practices are available for all other industries.

The emphasis of these practices is to provide a proactive approach to managing occupational safety and health. Traditional approaches are often reactive—that is, actions are taken only after a worker is injured or becomes sick, a new standard or regulation is published, or an outside inspection finds a problem that must be fixed. Finding and fixing hazards before they cause injury or illness is a far more effective approach. Doing so avoids the direct and indirect costs of worker injuries and illnesses, and promotes a positive work environment.

These best practices present principles and approaches to implementing and maintaining a safety and health program for the entire construction company. OSHA recognizes that a wide variety of small and large construction job sites exist. Some are short-duration, while others may take years to complete. Some sites are characterized by frequently changing conditions, while other sites' conditions may change less often. An effective program emphasizes top-level ownership, participation by employees, and a “find and fix” approach to workplace hazards. The find and fix approach to workplace hazards refers to the “Hazard Identification” and “Hazard Prevention and Control” core elements. Because of the wide variety of site conditions, these two core elements should be implemented on a site-specific basis in order to effectively detect and correct hazards.

The concept of continuous improvement is central to these recommended practices. As with any journey, the first step is often the most challenging. The idea is to begin with a basic program and grow from there. By initially focusing on achieving modest goals, monitoring performance and evaluating outcomes, you can help your company progress over time along the path to higher levels of safety and health.

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<sup>1</sup> Worker participation is vital to the success of the program. In several places in these recommended practices, OSHA refers not just to workers but also to their representatives, such as labor unions or religious or community groups.

## THE BENEFITS OF IMPLEMENTING THESE RECOMMENDED PRACTICES

Responsible employers know that the main goal of a safety and health program is to prevent work-related injuries, illnesses and deaths, as well as the suffering and financial hardship these events can cause for workers, their families and their employers.

Employers may find that implementing these recommended practices brings other benefits as well. The renewed or enhanced commitment to safety and health and the cooperative atmosphere between employers and workers have been linked to the following:

- Improvements in production and quality
- Better employee morale
- Improved employee recruiting and retention
- A more favorable image and reputation (among customers, suppliers and the community)

## HOW TO USE THE RECOMMENDED PRACTICES

Each section of the recommended practices describes a core program element, followed by several action items. Each action item is an example of steps that general contractors, subcontractors, managers, supervisors and workers can take to establish, implement, maintain, and improve safety and health programs. A general self-evaluation tool can be found on the [recommended practices webpage](#). It can be tailored to your construction site to track your progress and document how you have implemented (or will implement) each action item.

### 7 Interrelated Elements

The seven core elements are interrelated and are best viewed as part of an integrated system. Actions taken under one core element can (and likely will) affect actions needed under one or more other elements. For example, workers must be trained in reporting procedures and hazard identification techniques in order to be effective participants. Thus, the “Education and Training” core element supports the “Worker Participation” core element. Similarly, setting goals (as described under “Management Leadership”) will be more effective if you routinely evaluate your progress in meeting those goals (see “Program Evaluation and Improvement”). Progress in each core element is important to achieve maximum benefit from the program.

### One Size Does Not Fit All

While the action items under each core element are specific, they are not prescriptive. The process described in these recommended practices can, and should, be tailored to the needs of each construction company or job site. Likewise, your safety and health program should evolve. Experimentation, evaluation and program modification are all part of the process. You may also experience setbacks from time to time. What is important is that you learn from setbacks, remain committed to finding out what works best for you and continue to try different approaches.

Injuries and illnesses occur in all construction trades. The preventive approaches described in these recommended practices work equally well for small and large organizations in the construction industry. Small employers may find that they can best accomplish the actions outlined in these recommended practices using informal communications and procedures. Larger employers, who have more complex work processes and hazards, may require a more formal and detailed program. They may also wish to

integrate their safety and health program with other programs that they are using to manage production, quality control and environmental protection or sustainability.

### The Importance of Worker Participation

Throughout these recommended practices, OSHA emphasizes the importance of worker participation in the safety and health program. For a program to succeed, workers and their representatives must participate in developing and implementing every element of the safety and health program. This emphasis on worker participation is consistent with the OSH Act, OSHA standards, and OSHA enforcement policies and procedures, which recognize the rights and roles of workers and their representatives in matters of workplace safety and health. Several action items described in these recommended practices rely on perspectives, expertise and input that can come only from workers and their representatives.

### When More Than One Employer Is Involved

Employers and workers on “multiemployer” worksites should pay particular attention to the “Coordination and Communication for Employers on Multiemployer Worksites” section.

This section describes actions that controlling employers, such as general contractors, prime contractors, construction managers, subcontractors and temporary staffing agencies, should take to ensure protection of everyone on the job site.

# 9 EASY WAYS TO GET YOUR PROGRAM STARTED

1.

**Always set safety and health as the top priority.** Tell your workers that making sure they finish the day and go home safely is the way you do business. Assure them that you will work with them to find and fix any hazards that could injure them or make them sick.

2.

**Lead by example.** Practice safe behaviors yourself, and make safety part of your daily conversations with workers.

3.

**Implement a reporting system.** Develop and communicate a simple procedure for workers to report any injuries, illnesses, incidents (including near misses and close calls), hazards, or safety and health concerns without fear of retaliation. Include an option for reporting hazards or concerns anonymously.

4.

**Provide training.** Train workers on how to identify and control hazards using, for example, OSHA's hazard identification training tool.

5.

**Conduct inspections.** Inspect the job site with workers, and ask them to identify any activity, piece of equipment or material that concerns them. Use checklists and other resources, such as OSHA's Construction Industry Digest, to help identify problems.

6.

**Collect hazard-control ideas.** Talk with workers about ideas on safety improvements throughout the project.

7.

**Implement hazard controls.** Assign workers the task of choosing, implementing and evaluating the solutions.

8.

**Address emergencies.** Identify foreseeable emergency scenarios, and develop instructions on what to do in each case. Meet to discuss these procedures, and post them in a visible location on the job site.

9.

**Make improvements.** Set aside a regular time to discuss safety and health issues, with the goal of identifying ways to improve the program.

# **CORE ELEMENTS**

OF THE RECOMMENDED PRACTICES FOR SAFETY  
AND HEALTH PROGRAMS IN CONSTRUCTION

**MANAGEMENT LEADERSHIP**

**WORKER PARTICIPATION**

**HAZARD IDENTIFICATION AND ASSESSMENT**

**HAZARD PREVENTION AND CONTROL**

**EDUCATION AND TRAINING**

**PROGRAM EVALUATION AND IMPROVEMENT**

**COMMUNICATION AND COORDINATION FOR  
EMPLOYERS ON MULTIEMPLOYER WORKSITES**

## FOR MORE INFORMATION

For more information about these recommended practices, tools to help you implement them and related topics, see the [recommended practices webpage](#). This page includes links to many tools and resources developed by OSHA and others that can help employers and workers implement these recommended practices. OSHA will continue to update and add to this resource list.

OSHA's On-site Consultation Program offers free and confidential occupational safety and health services to small and medium-sized businesses in all states across the country and in several territories, with priority given to high-hazard worksites.

On-site Consultation Program services are separate from enforcement and do not result in penalties or citations. Consultants from state agencies or universities work with employers to identify workplace hazards, provide advice on compliance with OSHA standards, and help them establish and improve their safety and health programs.

# MANAGEMENT LEADERSHIP

Management provides the leadership, vision and resources needed to implement an effective safety and health program. Management leadership means that business owners, managers and supervisors do the following:

- Make worker safety and health a core organizational value.
- Are fully committed to eliminating hazards, protecting workers and continuously improving workplace safety and health.
- Provide sufficient resources to implement and maintain the safety and health program.
- Visibly demonstrate and communicate their safety and health commitment to workers and others.
- Set an example through their own actions.

## ACTION ITEM 1: COMMUNICATE YOUR COMMITMENT TO A SAFETY AND HEALTH PROGRAM

A clear, written policy helps you communicate that safety and health is a primary organizational value that is just as important as productivity, profitability, customer satisfaction, and product or service quality.

### How to Accomplish It

Establish a written policy signed by top management describing the organization's commitment to safety and health and pledging to establish and maintain a safety and health program for all workers.

- Communicate the policy to all workers and, at appropriate times and places, to relevant parties, including the following:
  - Contractors, subcontractors, staffing agencies and temporary workers at your worksite(s)
  - Suppliers and vendors
  - Other businesses in a multitenant building
  - Visitors
  - Customers
- Reinforce management commitment by considering safety and health in all business decisions, including estimating and bidding on projects, subcontractor and vendor selection, scheduling, and implementing safety designs into construction processes, drawings and modifications.
- Be visible in operations, and set an example by following the same safety and health procedures you expect workers to follow. Conduct weekly or daily toolbox talks on safety and health, and discuss or review safety and health indicators. Add safety items to a to-do list.

## ACTION ITEM 2: DEFINE PROGRAM GOALS

By establishing specific goals and objectives, management sets expectations for managers, supervisors, workers and for the program overall. The goals and objectives should focus on specific actions that will improve worker safety and health.

### How to Accomplish It

- Establish realistic, measurable goals for improving safety and health.
- Develop plans to achieve the goals by assigning tasks and responsibilities to particular people, setting time frames and determining resource needs.

### ACTION ITEM 3: ALLOCATE RESOURCES

Management provides the resources needed to implement the safety and health program, pursue program goals and address program shortcomings when they are identified.

#### How to Accomplish It

- Estimate the resources needed to establish and implement the program. One example is by ensuring safety equipment is included in the project budget.
- Allow time in workers' schedules for them to fully participate in the program. Safety can be built into the labor rates when estimating a project.
- Integrate safety and health into planning and budgeting processes, and align budgets with program needs.
- Provide and direct resources to operate and maintain the program, meet safety and health commitments, and pursue program goals.

Note: Resource needs will vary depending on your organization's size, complexity and hazard types, as well as program maturity and development.

### ACTION ITEM 4: EXPECT PERFORMANCE

Management leads the program effort by establishing roles and responsibilities and providing an open, positive environment that encourages communication about safety and health.

#### How to Accomplish It

- Identify a frontline person or persons who will lead the safety program effort, make plans, coordinate activities and track progress. Define and regularly communicate responsibilities and authorities for implementing and maintaining the program, and hold people accountable for performance.
- Provide positive recognition for meeting or exceeding safety and health goals aimed at preventing injury and illness (e.g., reporting close calls and near misses, attending training and conducting inspections).
- Establish ways for management and all workers to communicate freely and often about safety and health issues, without fear of retaliation.

Note: Maintaining a positive and encouraging tone is important. Successful programs reward, rather than discipline, workers who identify problems or concerns, much like successful quality programs. Disciplinary measures should be reserved for situations in which an individual manager or worker is uncooperative or becomes an impediment to progress.

# WORKER PARTICIPATION

To be effective, any safety and health program needs the meaningful participation of workers and their representatives. Workers have much to gain from a successful program and the most to lose if the program fails. They also often know the most about potential hazards associated with their jobs. Successful programs tap into this knowledge base.

Worker participation means participation in establishing, operating, evaluating and improving the safety and health program. All workers at a worksite should participate, including those employed by subcontractors and temporary staffing agencies (see “Coordination and Communication on Multiemployer Worksites”).

In an effective safety and health program, all workers have the following characteristics:

- Are encouraged to participate in the program and feel comfortable providing input and reporting safety or health concerns
- Have access to information they need to participate effectively in the program
- Have opportunities to participate in all phases of program design and implementation
- Do not experience retaliation when they raise safety and health concerns; report injuries, illnesses and hazards; participate in the program; or exercise safety and health rights.

Note: Worker participation is vital to the success of safety and health programs. When workers are represented by a union, it is important that worker representatives also participate in the program, consistent with the rights provided to worker representatives under OSHA and the National Labor Relations Act.

## ACTION ITEM 1: ENCOURAGE WORKERS TO PARTICIPATE IN THE PROGRAM

### How to Accomplish It

- Give workers the necessary time and resources to participate in the program.
- Acknowledge and provide positive reinforcement to those who participate in the program.
- Maintain an open door policy that invites workers to talk to managers about safety and health and to make suggestions.

## ACTION ITEM 2: ENCOURAGE WORKERS TO REPORT SAFETY AND HEALTH CONCERNS

Workers are often best positioned to identify safety and health concerns and program shortcomings, such as emerging job site hazards, unsafe conditions, close calls and near misses, and actual incidents. By encouraging reporting and following up promptly on all reports, employers can address issues before someone gets hurt or becomes ill.

### How to Accomplish It

- Establish a simple process for workers to report injuries, illnesses, close calls and near misses, hazards, and other safety and health concerns, and to respond to reports promptly. Include an option for anonymous reporting to reduce fear of reprisal.<sup>2</sup>
- Report back to workers routinely and frequently about action taken in response to their concerns and suggestions.

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<sup>2</sup> Under OSHA’s injury and illness recordkeeping rule (29 CFR 1904), employers are required to establish a “reasonable” procedure for employees to report work-related injuries and illnesses promptly and accurately. A reasonable procedure is defined as one that would not deter or discourage a reasonable employee from accurately reporting a workplace injury or illness.

- Emphasize that management will use reported information only to improve job site safety and health, and that no worker will experience retaliation for bringing such information to management’s attention (see Action Item 5).
- Empower all workers to initiate or request a temporary suspension or shutdown of any work activity or operation they believe to be unsafe.
- Involve workers in finding solutions to reported issues.

### **ACTION ITEM 3: GIVE WORKERS ACCESS TO SAFETY AND HEALTH INFORMATION**

Sharing relevant safety and health information with workers fosters trust and helps organizations make more informed safety and health decisions.

#### **How to Accomplish It**

- Give workers the information they need to understand safety and health hazards and control measures on the job site. Some OSHA standards require employers to make specific types of information available to workers, such as the following:
  - Safety Data Sheets (SDSs)
  - Injury and illness data (prevent disclosure of sensitive and personal information as required)
  - Results of worker exposure monitoring conducted at job sites (prevent disclosure of sensitive and personal information as required)
- Other useful information for workers to review can include the following:
  - Chemical and equipment manufacturer safety recommendations
  - Job site equipment and vehicle inspection reports
  - Incident investigation reports (prevent disclosure of sensitive and personal information as required)
  - Job hazard analyses (JHAs) and/or job safety analyses (JSAs)

### **ACTION ITEM 4: INVOLVE WORKERS IN ALL ASPECTS OF THE PROGRAM**

Including worker input at every step of program design and implementation improves your ability to identify the presence and causes of job site hazards, creates a sense of program ownership among workers, enhances their understanding of how the program works and helps sustain the program over time.

#### **How to Accomplish It**

- Provide opportunities for workers to participate in all aspects of the program, including, but not limited to, helping in the following ways:
  - Develop the program and set goals to reduce or eliminate injuries and illnesses.
  - Report hazards and develop solutions that improve safety and health.
  - Analyze hazards in each step of routine and nonroutine jobs, tasks and processes.
  - Define and document safe work practices.
  - Conduct site inspections, including equipment and vehicles.
  - Develop and revise safety procedures.
  - Participate in incident and close call and near miss investigations.
  - Train current co-workers and new hires.
  - Develop, implement and evaluate training programs.
  - Evaluate program performance, and identify ways to improve it.

- Take part in exposure monitoring and medical surveillance associated with health hazards. Conduct daily planning meetings, huddles, toolbox talks or tailgate meetings to engage workers in the safety and health program.

## ACTION ITEM 5: REMOVE BARRIERS TO PARTICIPATION

To participate meaningfully in the program, workers must feel that their input is welcome, their voices will be heard and they can access reporting mechanisms. Participation will be suppressed if language, education or skill levels on the job site are not considered, or if workers fear retaliation or discrimination for speaking up.

### How to Accomplish It

- Ensure that workers from all levels of the organization can participate regardless of their skill level, education or language.
- Provide frequent and regular feedback to show employees that their safety and health concerns are being heard and addressed.
- Authorize sufficient time and resources to facilitate worker participation; for example, hold safety and health meetings during regular working hours.
- Ensure that the program protects workers from being retaliated against for reporting injuries, illnesses and hazards; participating in the program; or exercising their safety and health rights. Ensure that other policies and programs do not discourage worker participation.
- Post the Section 11(c) fact sheet (found at [www.whistleblowers.gov](http://www.whistleblowers.gov)) in the workplace, or make it available for easy access by employees.

Note: Incentive programs (such as point systems, awards and prizes) should be designed in a manner that does not discourage injury and illness reporting; otherwise, hazards may remain undetected. Although sometimes required by law or insurance providers, mandatory drug testing following injuries can also suppress reporting. Effective safety and health programs recognize positive safety and health activities, such as reporting hazardous conditions or suggesting safer work procedures. (See OSHA's "Employer Safety Incentive and Disincentive Policies and Practices" memorandum, dated March 12, 2012: [www.osha.gov/as/opa/whistleblowermemo.html](http://www.osha.gov/as/opa/whistleblowermemo.html).)

# HAZARD IDENTIFICATION AND ASSESSMENT

In construction, unanticipated hazards can arise due to changes in project timelines, sequence of events and the fast pace of some construction projects. Hazard identification and assessment is a crucial part of an effective safety and health program.

One of the “root causes” of construction injuries, illnesses and incidents is the failure to identify or recognize hazards that are present, or that could have been anticipated. A critical element of any effective safety and health program is a proactive, ongoing process to identify and assess such hazards.

To identify and assess hazards, employers and workers should do the following:

- Collect and review information about the hazards present or likely to be present at the job site.
- Conduct frequent and regular inspections of the job site to identify new or recurring hazards.
- Investigate injuries, illnesses, incidents, and close calls and near misses to identify the underlying hazards, their causes, and safety and health program shortcomings.
- Group similar incidents and identify trends in injuries, illnesses and hazards reported.
- Consider hazards associated with emergency or nonroutine situations.

For each hazard identified, determine the severity and likelihood of incidents that could result and use this information to prioritize corrective actions.

Some hazards, such as housekeeping and tripping hazards, can and should be fixed as they are found. Fixing a hazard on the spot emphasizes the importance of safety and health and takes advantage of a safety leadership opportunity. Fixing other hazards identified using the processes described here will be addressed in the next section, “Hazard Prevention and Control.”

## ACTION ITEM 1: COLLECT EXISTING INFORMATION ABOUT JOB SITE HAZARDS

Information on job site hazards may already be available (from both internal and external sources) to employers and workers.

### How to Accomplish It

- Collect, organize and review information with workers to determine types of hazards. Information can include the following:
  - Equipment and machinery operating manuals
  - SDSs provided by chemical manufacturers
  - Self-inspection reports and inspection reports from insurance carriers, government agencies and consultants
  - Records of previous injuries and illnesses, such as OSHA 300 and 301 logs and reports of incident investigations
  - Workers’ compensation records and reports
  - Patterns of frequently occurring injuries and illnesses
  - Exposure monitoring results, industrial hygiene assessments and medical records (appropriately redacted to ensure patient and worker privacy)
  - Existing safety and health programs such as hazard communication, confined spaces in construction, respiratory protection, process safety management and personal protective equipment (PPE)
  - Input from workers, including surveys or minutes from safety and health committee meetings
  - Results of job hazard analyses (also known as job safety analyses)

- Look for hazard information from outside sources, such as the following: OSHA, National Institute for Occupational Safety and Health (NIOSH), and Centers for Disease Control and Prevention (CDC) websites, publications and alerts
  - Trade associations
  - Labor unions, state and local occupational safety and health committees or coalitions (“COSH groups”), and worker advocacy groups
  - Safety and health consultants

## ACTION ITEM 2: INSPECT THE JOB SITE FOR SAFETY HAZARDS

Hazards can be introduced over time as conditions on the job site change. For example, as the building goes up, equipment or tools become worn, different trades arrive at and depart from the site and housekeeping practices decline. Setting aside time to frequently and regularly inspect the job site for hazards can help identify shortcomings so that they can be addressed before an incident occurs.

### How to Accomplish It

- Designate a competent person to conduct frequent and regular inspections of the job sites, materials and equipment. Have workers on the inspection team, and talk to them about hazards that they see or report.
- Plan ahead to anticipate the potential introduction of additional hazards by the next group of trades or sequence of construction activities and to address these additional hazards. For example, ensure that structures can handle any additional anticipated loads.
- Be sure to document inspections so you can later verify that hazardous conditions have been corrected. Take photos or videos of problem areas to facilitate on-the-job discussion and brainstorming about how to immediately control them.
- Include all areas and activities in these inspections, such as trenching and excavations, staging areas, layout yards, working at heights, materials storage, heavy equipment maintenance, and the activities of on-site contractors, subcontractors and temporary workers.
- Regularly inspect both mobile construction equipment (e.g., forklifts, bulldozers, aerial lifts and cranes) and transportation vehicles (e.g., cars and trucks).
- Create material delivery areas and internal traffic control plans for the construction site and laydown areas.
- Use checklists that highlight things to look for. Typical hazards fall into several major categories, such as those listed below. Each workplace will have its own list.
  - Slip, trip and fall hazards
  - Electrical hazards
  - General housekeeping
  - Equipment operation
  - Equipment maintenance
  - Fire protection
  - Work organization and process flow (including staffing and scheduling)
  - Work practices
  - Ergonomic problems
  - Lack of emergency procedures
- Seek the input of workers and evaluate the planned changes for potential hazards and related risks before doing the following:

- Changing operations, workstations or workflow
- Making major organizational changes
- Introducing new equipment, materials or processes

Note: Many hazards can be identified using common knowledge and available tools. For example, you can easily identify and correct hazards associated with broken stair rails and frayed electrical cords. Workers can be a very useful internal resource, especially if they are trained in how to identify and assess risks.

### ACTION ITEM 3: IDENTIFY HEALTH HAZARDS

Identifying workers' exposure to health hazards is typically more complex and less obvious than identifying physical safety hazards. For example, gases and vapors may be invisible, often have no odor and may not have an immediately noticeable harmful health effect. Health hazards include chemical hazards (e.g., solvents, adhesives, paints and toxic dusts, such as lead and silica) physical hazards (e.g., noise, radiation and heat), biological hazards (infectious diseases), and ergonomic risk factors (heavy lifting, repetitive motions, and vibration from operating tools and earthmoving equipment).

#### How to Accomplish It

- Identify chemical hazards—review SDSs and product labels to identify chemicals at your job site that have low exposure limits, are highly volatile, or are used in large quantities or in unventilated spaces. Identify activities that may result in skin exposure to chemicals.
- Identify physical hazards—identify any exposures to excessive noise (areas where you must raise your voice to be heard by others), elevated heat (indoor and outdoor) or sources of radiation (radioactive materials, X-rays or radiofrequency radiation).
- Identify biological hazards—determine whether workers may be exposed to sources of infectious diseases, molds, toxic or poisonous plants, or animal materials (fur or scat) capable of causing allergic reactions or occupational asthma.

Identify ergonomic risk factors—examine work activities that require heavy lifting, work above shoulder height, repetitive motions or tasks with significant vibration.

- Conduct quantitative exposure assessments, using air sampling or direct reading instruments when possible.
- Review OSHA 300 logs to help identify health hazards associated with job site exposures.

Note: Identifying and assessing health hazards may require specialized knowledge. Small businesses can obtain free and confidential occupational safety and health advice services, including help identifying and assessing workplace hazards, through OSHA's On-site Consultation Program (see [www.osha.gov/dcsp/smallbusiness/consult.html](http://www.osha.gov/dcsp/smallbusiness/consult.html)).

### ACTION ITEM 4: CONDUCT INCIDENT INVESTIGATIONS

Incidents—including injuries, illnesses, close calls and near misses, and reports of other concerns—provide a clear indication of where hazards exist. By thoroughly investigating incidents and reports, you will identify hazards that are likely to cause future harm. The purpose of an investigation must always be to identify the root causes (and there is often more than one) of the incident or concern, in order to prevent future occurrences.

## How to Accomplish It

- Develop a clear plan and procedure for conducting incident investigations, so that an investigation can begin immediately when an incident occurs. The plan should cover items such as the following:
  - Who will be involved
  - Lines of communication
  - Materials, equipment and supplies needed
  - Reporting forms and templates
- Train investigative teams on incident investigation techniques, emphasizing objectivity and open-mindedness throughout the investigation process.
- Conduct investigations with a trained team that includes representatives of both management and workers.
- Investigate close calls and near misses.
- Identify and analyze root causes to address underlying program shortcomings that allowed the incidents to happen.
- Communicate the results of the investigation to managers, supervisors and workers to prevent recurrence.

Note: OSHA has special reporting requirements for work-related incidents that lead to serious injury or a fatality (29 CFR 1904.39). OSHA must be notified within eight hours of a work-related fatality, and within 24 hours of an amputation, loss of an eye or inpatient hospitalization.

## ACTION ITEM 5: IDENTIFY HAZARDS ASSOCIATED WITH EMERGENCY AND NONROUTINE SITUATIONS

Emergencies present hazards that need to be recognized and understood. Nonroutine or infrequent tasks, including mobilization and demobilization of the site, critical lifts with cranes, concrete pours or setting critical structural members, also present potential hazards. Plans and procedures need to be developed for responding appropriately and safely to hazards associated with foreseeable emergency scenarios and nonroutine situations.

## How to Accomplish It

- Identify foreseeable emergency scenarios and nonroutine tasks, taking into account the types of material and equipment in use and the location at the worksite. Scenarios such as the following may be foreseeable:
  - Structural collapse (e.g., bridges, buildings, trenches and concrete forms)
  - Nonroutine tasks, such as infrequently performed activities (e.g., critical lifts and concrete pours)
  - Fires and explosions
  - Medical emergencies
  - Weather emergencies and natural disasters
  - Hazardous material spills
  - Startups after planned or unplanned equipment shutdowns

## ACTION ITEM 6: CHARACTERIZE THE NATURE OF IDENTIFIED HAZARDS, IDENTIFY INTERIM CONTROL MEASURES AND PRIORITIZE THE HAZARDS FOR CONTROL

The next step is to assess and understand the hazards identified and the types of incidents that could result from worker exposure to those hazards. This information can be used to develop interim controls and to prioritize hazards for permanent control (see “Hazard Prevention and Control”).

### **How to Accomplish It**

- Evaluate each hazard by considering the severity of potential outcomes, the likelihood that an event or exposure will occur, and the number of workers who might be exposed.
- Use interim control measures to protect workers until more permanent solutions can be implemented.
- Prioritize the hazards so that those presenting the greatest risk are addressed first. Note, however, that employers have an ongoing obligation to control all serious recognized hazards and to protect workers.

Note: "Risk" is the product of hazard and exposure. Thus, risk can be reduced by controlling or eliminating the hazard, or by reducing workers' exposure to hazards. An assessment of risk helps employers understand hazards in the context of their own workplace and prioritize hazards for permanent control.

# HAZARD PREVENTION AND CONTROL

Effective controls protect workers from hazards; help avoid injuries, illnesses, and incidents; minimize or eliminate safety and health risks; and help employers provide workers with safe and healthy working conditions. The processes described in this section will help employers prevent and control hazards identified in the previous section.

To effectively control and prevent hazards, employers should do the following:

- Involve workers, who often have the best understanding of the conditions that create hazards and insights into how they can be controlled.
- Identify and evaluate options for controlling hazards, using a “hierarchy of controls.”
- Use a hazard control plan to guide the selection and implementation of controls, and implement controls according to the plan.
- Develop plans with measures to protect workers during emergencies and nonroutine activities.
- Evaluate the effectiveness of existing controls to determine whether they continue to provide protection, or whether different controls may be more effective. Review new technologies for their potential to be more protective, more reliable or less costly.

## ACTION ITEM 1: IDENTIFY CONTROL OPTIONS

A wealth of information exists to help employers investigate options for controlling identified hazards. Before selecting any control options, it is essential to solicit workers’ input on their feasibility and effectiveness.

### How to Accomplish It

- Review sources such as OSHA standards and guidance, industry consensus standards, NIOSH publications, manufacturers’ literature and engineering reports to identify potential control measures. Keep current on relevant information from trade or professional associations.
- Investigate control measures used at other worksites and determine whether they would be effective at your job sites.
- Get input from workers who may be able to suggest and evaluate solutions based on their knowledge of the job site, equipment and work processes.
- For complex hazards, consult with safety and health experts, including OSHA’s On-site Consultation Program.
- Plan the sequencing of various trades to reduce overlap where possible and to avoid exposing other trades to hazards.

## ACTION ITEM 2: SELECT CONTROLS

Employers should select the controls that are the most feasible, effective and permanent.

### How to Accomplish It

- Eliminate or control all serious hazards (hazards that are causing or are likely to cause death or serious physical harm) immediately.
- Use interim controls while you develop and implement longer-term solutions.
- Select controls according to a hierarchy that emphasizes engineering solutions (including elimination or substitution) first, followed by safe work practices, administrative controls and PPE.

- Avoid selecting controls that may directly or indirectly introduce new hazards. Examples include exhausting contaminated air into occupied workspaces or using hearing protection that makes it difficult to hear backup alarms.
- Review and discuss control options with workers to ensure that controls are feasible and effective.
- Use a combination of control options when no single method fully protects workers.

Note: Whenever possible, select equipment, machinery and materials that are inherently safer based on the application of “Prevention through Design” (PtD) principles. Apply PtD when making your own job site or equipment decisions. For more information, see the link to the NIOSH PtD initiative on the [recommended practices webpage](#).

### **ACTION ITEM 3: DEVELOP AND UPDATE A HAZARD CONTROL PLAN**

A hazard control plan describes how the selected controls will be implemented. An effective plan will address serious hazards first. Interim controls may be necessary, but the overall goal is to ensure effective long-term control of hazards. Control plans at a construction site may need to be updated and modified often as the project develops and the site conditions and hazards change.

#### **How to Accomplish It**

- List the hazards needing controls in order of priority.
- Assign responsibility for installing and implementing the controls to a specific person or persons with the power or ability to implement the controls.
- Establish a target completion date.
- Plan how you will track progress toward completion.
- Plan how you will verify the effectiveness of controls after they are installed or implemented.

### **ACTION ITEM 4: SELECT CONTROLS TO PROTECT WORKERS DURING NONROUTINE TASKS AND EMERGENCIES**

A hazard control plan includes provisions to protect workers during nonroutine tasks and foreseeable emergencies, such as falls, cave-ins, fires and explosions, chemical releases, hazardous material spills, infrequent activities, natural and weather disasters, workplace violence, terrorist or criminal attacks, disease outbreaks (e.g., pandemic influenza) and medical emergencies. Nonroutine tasks, or tasks workers don’t normally do, should be approached with particular caution. Prior to initiating such work, review JSAs with the workers involved and notify others about the nature of the work, work schedule and any necessary precautions.

#### **How to Accomplish It**

- Develop procedures to control hazards that may arise during nonroutine tasks (e.g., mobilization and demobilization of the site, critical lifts with cranes, concrete pours or setting critical structural members).
- Develop or modify plans to control hazards that may arise in emergency situations.
- Procure any equipment needed to control emergency-related hazards.
- Assign responsibilities for implementing the emergency plan.
- Conduct emergency drills to ensure that procedures and equipment provide adequate protection during emergency situations.

Note: Depending on your location, type of business and materials stored or used on-site, authorities including local fire and emergency response departments, state agencies, the U.S. Environmental Protection Agency, the Department of

Homeland Security and OSHA may have additional requirements for emergency plans. Ensure that your procedures comply with these requirements.

#### **ACTION ITEM 5: IMPLEMENT SELECTED CONTROLS ON THE JOB SITE**

Once hazard prevention and control measures have been identified, they should be implemented according to the hazard control plan.

##### **How to Accomplish It**

- Implement hazard control measures according to the priorities established in the hazard control plan.
- When resources are limited, implement measures on a “worst-first” basis, according to the hazard ranking priorities (risk) established during hazard identification and assessment. (Note, however, that regardless of limited resources, employers have an obligation to protect workers from recognized, serious hazards.)
- Promptly implement any measures that are easy and inexpensive—such as general housekeeping and removal of obvious tripping hazards, such as electrical cords and basic lighting—regardless of the level of hazard they involve.

#### **ACTION ITEM 6: FOLLOW UP TO CONFIRM THAT CONTROLS ARE EFFECTIVE**

To ensure that control measures remain effective, employers should track progress in implementing controls, inspect and evaluate controls once they are installed, and follow routine preventive maintenance practices.

##### **How to Accomplish It**

- Track progress and verify implementation by asking the following questions:
  - Have all control measures been implemented according to the hazard control plan?
  - Have engineering controls been properly installed and tested?
  - Have workers been appropriately trained so that they understand the controls, including how to operate engineering controls, safe work practices and PPE use requirements?
  - Are controls being used correctly and consistently?
- Conduct regular inspections (and industrial hygiene monitoring, if indicated) to confirm that engineering controls are operating as designed.
- Evaluate control measures to determine if they are effective or need to be modified. Involve workers in the evaluation of the controls. If controls are not effective, identify, select and implement further control measures that will provide adequate protection.
- Confirm that work practices, administrative controls and PPE use policies are being followed.
- Conduct routine preventive maintenance of equipment and controls to help prevent incidents due to equipment failure.

# EDUCATION AND TRAINING

Education and training are important tools for informing workers and managers about hazards and controls so they can work more safely and be more productive. Another role of education and training is to provide workers and managers with a greater understanding of the safety and health program itself, so that they can contribute to its development and implementation.

Education and training provide employers (owners and executives), managers, supervisors and workers with the following:

- Knowledge and skills needed to do their work safely and to avoid creating hazards that could place themselves or others at risk.
- Awareness and understanding of hazards and how to identify, report and control them.
- Specialized training, when their work involves unique hazards.

Additional training may be needed depending on the roles assigned to employers or individual managers, supervisors and workers. For example, employers, managers and supervisors may need specific training to ensure that they can fulfill their roles in providing leadership, direction and resources for the safety and health program. Workers assigned specific roles in the program (e.g., incident investigation team members) may need training to ensure their full participation in those functions.

Effective training and education can be provided outside a formal classroom setting. Peer-to-peer training, on-the-job training, daily toolbox talks and worksite demonstrations can be effective in conveying safety concepts, ensuring understanding of hazards and their controls, and promoting good work practices.

## **ACTION ITEM 1: PROVIDE PROGRAM AWARENESS TRAINING**

Managers, supervisors and workers all need to understand the program's structure, plans and procedures. Having this knowledge ensures that everyone can fully participate in developing and implementing the program.

### **How to Accomplish It**

- Provide training to all managers, supervisors, workers, and contractor, subcontractor and temporary agency workers on the following:
  - Safety and health policies, goals and procedures
  - Functions of the safety and health program
  - Whom to contact with questions or concerns about the program (including contact information)
  - How to report hazards, injuries, illnesses, and close calls and near misses
  - What to do in an emergency
  - The employer's responsibilities under the program
  - Workers' rights under the OSH Act
- Provide information on the safety and health hazards of the job site and the controls for those hazards.
- Ensure that training is provided in the language(s) and at a literacy level that all workers can understand.
- Emphasize that the program can only work when everyone is involved and feels comfortable discussing concerns, making suggestions, and reporting injuries, incidents and hazards.
- Confirm, as part of the training, that all workers have the right to report injuries, incidents, hazards and concerns, and to fully participate in the program without fear of retaliation.

## **ACTION ITEM 2: TRAIN EMPLOYERS, MANAGERS AND SUPERVISORS ON THEIR ROLES IN THE PROGRAM**

Employers, managers and supervisors are responsible for workers' safety, yet sometimes have little training on safety-related concepts and techniques. They need specific training that allows them to fulfill their leadership roles in the program.

#### **How to Accomplish It**

- Reinforce employers, managers and supervisors' knowledge of their responsibilities under the OSH Act and the workers' rights guaranteed by the act.
- Train employers, managers and supervisors on procedures for responding to workers' reports of injuries, illnesses and incidents, including ways to avoid discouraging reporting.
- Instruct employers, managers and supervisors on fundamental concepts and techniques for recognizing hazards and methods of controlling them, including the hierarchy of controls (see "Hazard Prevention and Control").
- Instruct employers, managers and supervisors on incident investigation techniques, including root cause analysis.
- As a starting point, consider providing the OSHA 30-hour construction safety course or a similar course.

### **ACTION ITEM 3: TRAIN WORKERS ON THEIR SPECIFIC ROLES IN THE SAFETY AND HEALTH PROGRAM**

Additional training may be needed to ensure that workers can incorporate safety and health responsibilities into their daily routines and activities.

#### **How to Accomplish It**

- Instruct workers on how to report injuries, illnesses, incidents and concerns. If a computerized reporting system is used, ensure that all employees have the basic computer skills and computer access sufficient to submit an effective report.
- Instruct workers assigned specific roles within the safety and health program on how they should carry out those responsibilities, including the following:
  - Hazard recognition and controls (see Action Item 4)
  - Participation in incident investigations
  - Program evaluation and improvement
- Provide opportunities for workers to ask questions and provide feedback during and after the training.
- As the program evolves, institute a more formal process for determining the training needs of workers responsible for developing, implementing and maintaining the program.

### **ACTION ITEM 4: TRAIN WORKERS ON HAZARD IDENTIFICATION AND CONTROLS**

Providing workers with an understanding of hazard recognition and control, and actively involving them in the process, can help to eliminate hazards before an incident occurs. Employers are required to instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his or her work environment to control or eliminate any hazards or other exposure to illness or injury [29 C.F.R. 1926.21(b)(2)]. As a starting point, employers may consider providing the OSHA 10-hour course for construction or a similar course to be supplemented by orientation training and toolbox talks to cover hazards on each specific site.

#### **How to Accomplish It**

- Train workers on techniques for identifying hazards, such as job hazard analysis (see OSHA Publication 3071).

- Train workers so they understand and can recognize the hazards they may encounter in their own jobs, as well as more general work-related hazards. Instruct workers on concepts and techniques for controlling hazards, including the hierarchy of controls and its importance.
- Train workers on the proper use of work practice and administrative controls.
- Train workers on when and how to wear required PPE.
- Provide additional training, as necessary, when construction progresses. Consider situations such as when new trades and equipment arrive at the job site to perform the next phase of the project.

# PROGRAM EVALUATION AND IMPROVEMENT

Once a safety and health program is established, it should be evaluated initially to verify that it is being implemented as intended. After that, employers should periodically, and at least annually, step back and assess what is working and what is not, and whether the program is on track to achieve its goals.

Whenever these assessments identify opportunities to improve the program, employers, managers and supervisors—in coordination with workers—should make adjustments and monitor how well the program performs as a result. Sharing the results of monitoring and evaluation on the job site, and celebrating successes, will help drive further improvement.

Program evaluation and improvement includes the following:

- Establishing, reporting, and tracking goals and targets that indicate whether the program is making progress
- Evaluating the program initially and periodically to identify shortcomings and opportunities for improvement
- Providing ways for workers to participate in program evaluation and improvement

## ACTION ITEM 1: MONITOR PERFORMANCE AND PROGRESS

The first step in monitoring is to define indicators that will help track performance and progress. Next, employers, managers, supervisors and workers need to establish and follow procedures to collect, analyze and review performance data. Both lagging and leading indicators should be used. Lagging indicators generally track worker exposures and injuries that have already occurred. Leading indicators track how well various aspects of the program have been implemented and reflect steps taken to prevent injuries or illnesses before they occur.

### How to Accomplish It

- Develop and track indicators of progress toward established safety and health goals.
  - Track lagging indicators, such as the following:
    - Number and severity of injuries and illnesses
    - Results of worker exposure monitoring that show that exposures are hazardous
    - Workers' compensation data, including claim counts, rates and cost
  - Track leading indicators, such as the following:
    - Level of worker participation in program activities
    - Number of employee safety suggestions
    - Number of hazards, near misses and first-aid cases reported
    - Amount of time taken to respond to reports
    - Number and frequency of management walk-throughs
    - Number and severity of hazards identified during inspections
    - Number of workers who have completed required safety and health training
    - Timely completion of corrective actions after a job site hazard is identified or an incident occurs
    - Timely completion of planned preventive maintenance activities
    - Worker opinions about program effectiveness obtained from a safety climate or safety opinion survey
- Analyze performance indicators, and evaluate progress over time.
- Share results with workers and invite their input on how to further improve performance.
- When opportunities arise, share your experience and compare your results across similar construction projects within your company, with other companies you know, or through trade or business associations.

Note: Indicators can be either quantitative or qualitative. Whenever possible, select indicators that are measurable (quantitative) and that will help you determine whether you have achieved your program goals. The number of reported hazards and near misses would be a quantitative indicator. A single worker expressing a favorable opinion about program participation would be a qualitative indicator.

## **ACTION ITEM 2: VERIFY THAT THE PROGRAM IS IMPLEMENTED AND IS OPERATING**

Employers need to continuously evaluate the effectiveness of the entire program and newer site-specific programs to ensure they are operating as intended, are effective in controlling identified hazards, and are making progress toward established safety and health goals and objectives. The scope and frequency of program evaluations will vary depending on changes in OSHA standards, the types of hazards it must control, and the scope, complexity and maturity of the program.

### **How to Accomplish It**

- Verify that the core elements of the program have been fully implemented on each of your job sites.
- Involve workers in all aspects of program evaluation, including reviewing information, such as incident reports and exposure monitoring results, establishing and tracking performance indicators, and identifying opportunities to improve the program.
- Verify that the following key processes are in place and operating as intended:
  - Reporting injuries, illnesses, incidents, hazards and concerns
  - Conducting job site inspections and incident investigations
  - Tracking progress in controlling identified hazards and ensuring that hazard control measures remain effective
  - Collecting and reporting any data needed to monitor progress and performance
- Review the results of any compliance audits to confirm that any program shortcomings are being identified. Verify that actions are being taken that will prevent recurrence.

## **ACTION ITEM 3: CORRECT PROGRAM SHORTCOMINGS, AND IDENTIFY OPPORTUNITIES TO IMPROVE**

Whenever a problem is identified in any part of the safety and health program, employers—in coordination with supervisors, managers and workers—need to take prompt action to correct the problem and prevent its recurrence.

### **How to Accomplish It**

- If you discover program shortcomings, take actions needed to correct them.
- Proactively seek input from managers, workers, supervisors and other stakeholders on how you can improve the program.
- Determine whether changes in equipment, materials, key personnel or work practices trigger any need for changes in the program.
- Determine whether your performance indicators and goals are still relevant and, if not, how you could change them to more effectively drive improvements in safety and health.

Note: The scope and frequency of program evaluations will depend on the scope, complexity and maturity of the program as well as on the types of hazards it must control. Program evaluations should be conducted periodically (and at least annually) but might also be triggered by a change in process or equipment, or an incident such as a serious injury, significant property damage or an increase in safety-related complaints.

# COMMUNICATION AND COORDINATION FOR EMPLOYERS ON MULTIEMPLOYER WORKSITES

Construction job sites typically have workers who are employed by a contractor or subcontractor, or workers from other sources.

In these circumstances, it is important that each employer and contractor consider how its work and safety activities can affect the safety of other workers at the job site. Examples include electrical or mechanical contractors working for the general contractor at a building construction site. Several subcontractors working together on a job site (such as a subcontractor tying rebar and another subcontractor setting concrete formwork at the same job site) would be another example.

In today's economy, an increasing number of workers are assigned by staffing agencies to work at specific "host" worksites under the direction and control of the host employer. Examples include unskilled laborers or skilled trade workers from a staffing agency who may be placed in either short- or long-term assignments with a general contractor or other contractor. In these situations, it is important for the staffing agency and the host employer to communicate and coordinate to provide and maintain a safe work environment for their workers. (Note: Any employer on a multiemployer worksite may be a "joint employer" with a staffing agency if temporary workers are utilized.)

In both temporary worker and multiemployer situations, safety is enhanced if employers establish mechanisms to coordinate their efforts and communicate effectively regarding their safety and health responsibilities to afford all workers equal protection against hazards. These mechanisms include measures to ensure that all workers on-site (and their representatives) can participate in preventing injuries and illnesses. Failure to take these steps may undermine safety programs. For example, if the different employers have inconsistent policies for when and where to wear PPE, workers may mistakenly believe that the equipment is not needed, leading to injury. Inconsistent safety policies may also cause workers to question the credibility of safety and health programs, resulting in less meaningful employee engagement and participation.

The following are examples of effective communication and coordination among such employers:

- General contractors and their workers are aware of the following:
  - The types of hazards that may arise from the work being done on-site by workers employed by contractors, subcontractors or staffing agencies
  - The procedures or measures needed to avoid or control exposure to these hazards
  - How to contact the contractor, subcontractor or staffing agency if they have a safety concern
- Before coming on-site, contractors, subcontractors, and staffing agencies and their workers are aware of the following:
  - The previous work done and the types of hazards that may already be present at the job site
  - The procedures or measures they need to use to avoid or control their exposure to these hazards
  - How to contact the general contractor to get more information, report an injury, illness or incident, or if they have a safety concern

## ACTION ITEM 1: ESTABLISH EFFECTIVE COMMUNICATION

Each general contractor establishes and implements a procedure to ensure the exchange of information about hazards present on-site and the hazard control measures in place. Thus, all workers on the site are aware of worksite hazards, and the methods and procedures needed to control exposures to them.

## How to Accomplish It

- The general contractor communicates with contractors, subcontractors and staffing agencies to determine which among them will implement and maintain the various parts of the safety and health program, to ensure protection of all on-site workers before work begins. These determinations can be included in contract documents that define the relationships between the parties and confirmed during pre-construction meetings.
- The general contractor establishes and implements procedures to exchange information with contractors, subcontractors and staffing agencies about hazards present on the job site and the measures that have been implemented to prevent or control such hazards.
- The general contractor gathers and disseminates information sufficient to enable each employer to assess hazards encountered by its workers and to avoid creating hazards that affect workers on the site.
- Contractors, subcontractors and staffing agencies regularly give the general contractor any information about injuries, illnesses, hazards or concerns reported by their workers and the results of any tracking or trend analysis they perform.
- Each contractor or subcontractor establishes and implements a procedure for providing the general contractor with information about the hazards and control measures associated with the work being done by its workers and the procedures it will use to protect workers on the site.
- The general contractor gives contractors, subcontractors and staffing agencies the right to conduct site visits and inspections, and to access injury and illness records and other safety and health information.
- The general contractor provides contractors, subcontractors, and staffing agencies and their workers information on hazards that could occur as a result of nonroutine operations or emergencies and procedures to follow in emergency situations.
- Information is communicated before on-site work starts and, as needed, if conditions change.

## ACTION ITEM 2: ESTABLISH EFFECTIVE COORDINATION

General contractors, contractors, subcontractors and staffing agencies coordinate on work planning, scheduling and resolving program differences to identify and work out any concerns or conflicts that could impact safety or health.

### How to Accomplish It

- General contractors should do the following:
  - Include in contracts and bid documents any safety-related specifications and pre-qualifications and ensure that contractors, subcontractors and staffing agencies selected for the work meet those requirements.
  - Identify issues that may arise during on-site work and include procedures to be used by the general contractor, contractors, subcontractors and staffing agencies for resolving any conflicts before work starts. This may be accomplished through pre-construction meetings.
- General contractors coordinate with contractors, subcontractors and staffing agencies to do the following:
  - Ensure that work is planned and scheduled to minimize impacts on safety.
  - Ensure that joint-employed workers are adequately trained and equipped before arriving on the worksite.
  - Harmonize their safety and health policies and procedures to resolve important differences, so that all workers at the site have the same protection and receive consistent safety information (e.g., conduct site-specific training).
- General contractors, contractors, subcontractors and staffing agencies should do the following:

- Work together to deal with unexpected staffing needs by ensuring that enough trained and equipped workers are available or that adequate lead time is provided to train and equip workers.
- Make sure that managers with decision-making authority are available and prepared to deal with day-to-day coordination issues.

*Source: OSHA*