CIVILIAN WORK FORCE

Leader's safety guide

FOR FURTHER INFORMATION CONCERNING DISTRIBUTION CALL (703) 767-8040

PLEASE CHECK THE APPROPRIATE BLOCK BELOW:

AQR _____

☐ _____ copies are being forwarded. Indicate whether Statement A, B, C, D, E, F, or X applies.

☑ DISTRIBUTION STATEMENT A:
APPROVED FOR PUBLIC RELEASE: DISTRIBUTION IS UNLIMITED

☐ DISTRIBUTION STATEMENT B:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES ONLY; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT C:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND THEIR CONTRACTORS; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT D:
DISTRIBUTION AUTHORIZED TO DoD AND U.S. DoD CONTRACTORS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT E:
DISTRIBUTION AUTHORIZED TO DoD COMPONENTS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT F:
FURTHER DISSEMINATION ONLY AS DIRECTED BY (Indicate Controlling DoD Office and Date) or HIGHER DoD AUTHORITY.

☐ DISTRIBUTION STATEMENT X:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND PRIVATE INDIVIDUALS OR ENTERPRISES ELIGIBLE TO OBTAIN EXPORT-CONTROLLED TECHNICAL DATA IN ACCORDANCE WITH DoD DIRECTIVE 5230.25. WITHHOLDING OF UNCLASSIFIED TECHNICAL DATA FROM PUBLIC DISCLOSURE. 6 Nov 1984 (Indicate date of determination). CONTROLLING DoD OFFICE IS (Indicate Controlling DoD Office).

☐ This document was previously forwarded to DTIC on _____ (date) and the AD number is _____

☐ In accordance with provisions of DoD instructions, the document requested is not supplied because:

☐ It will be published at a later date. (Enter approximate date, if known).

☐ Other. (Give Reason)

DoD Directive 5230.24, "Distribution Statements on Technical Documents," 18 Mar 87, contains seven distribution statements, as described briefly above. Technical Documents must be assigned distribution statements.

Cynthia Gleisberg
Print or Type Name

Cynthia Gleisberg
Authorized Signature/Date

334-255-2924
Telephone Number

Foreword

This Leader's Safety Guide is part of a continuing series of publications designed to help leaders build safety into their day-to-day operations. It is intended as a toolkit for military and civilian supervisors of the Army's blue- and white-collar work force. The methods discussed here weld time-proven workplace safety principles to the Army's expanding application of risk-management techniques.

The Army's Civilian Accident Prevention Program (CAPP) has held Armywide injuries and illnesses to less than 25 per thousand workers annually. But the tremendous cost—more than a half-million dollars per day—demands a relentless prevention effort.

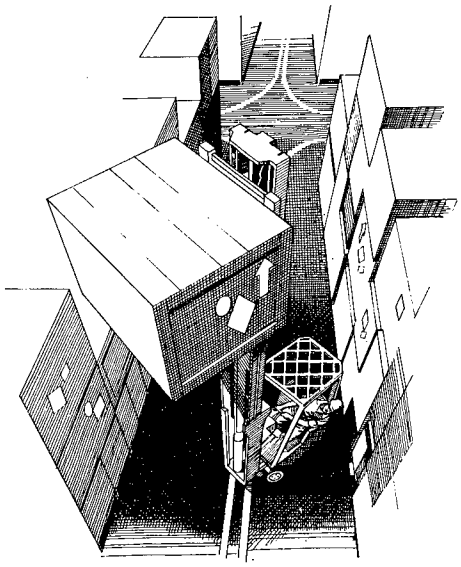
We know the overwhelming majority of accidents result from human errors, compounded by unforgiving environments. For that reason, much of this guide is devoted to ways to improve worker behavior and the workplace itself. The stability typical of Army civilian job sites and work processes allows the design of solid risk-management controls, and they must be applied in every Army workplace.

Protecting the work force is a shared responsibility. Everyone at every level of every organization must feel an essential part of the accident-prevention process. But you as leaders make a unique contribution to job safety. You know the skills, the physical condition, the capabilities, and the limitations of your people. You have authority to inspect, correct, and direct. No one is in a better position than you to prevent accidents before they happen. This guide will help you do that.

R. DENNIS KERR
Brigadier General, USA
Commanding General
U.S. Army Safety Center

Table of Contents

Section I	Risk Management	1
Section II	Leadership	5
Section III	Hazard Identification	9
Section IV	Improving Employee Skills	17
Section V	Improving Employee Motivation	21
Section VI	Improving the Workplace	27
Section VII	Administrative Actions	35
	References	43



Section I

Risk Management for Leaders

The key to successful leadership, particularly in an era of constant change, is to respond flexibly to unexpected challenges. Good supervisors do this constantly, often through instinct or undefined decision-making processes. The safety risk management process takes these unconscious decision-making methods and applies them systematically to accident prevention.

Safety Risk Management

■ Risk management is a tool that helps leaders make sound decisions in a logical manner. Used in a positive command climate, risk management can become a mindset that governs all missions and activities.

■ Risk management enables decision makers at all levels to do exactly what the term implies: manage risks.

■ Risks that confront managers are training risks, fiscal

risks, and safety risks. Safety risk management is a specific type of risk management.

■ Rather than advocate safety risk management as a separate consideration, this text explains it as a process that leaders understand and use instinctively.

■ Leaders need to think in terms of recognizing hazards even in the midst of carrying out changing tasks. Hazards can be identified and minimized so even risky operations can be completed without exposing workers to needless hazards.

Four Simple Rules

These rules are the core of the risk-management philosophy:

■ **Integrate risk management into planning.** It must be the basis for decision making, not an afterthought or appendage. Deliberate planning, taking into account all risks, options, and feasible controls, helps leaders avoid improvised operations that breed accidents. Early integration is also particularly important in the design of procedures, equipment, and facilities because it prevents expensive re-engineering.

■ **Accept no unnecessary risks.** The manager who has the authority to accept a risk has the responsibility to protect the work force from unnecessary risks. An unnecessary risk is one that, if eliminated, still allows accomplishment of the organization's mission.

■ **Make risk decisions at the proper level.** That's normally the lowest level consistent with resources, authority, and capability. For example, when senior leaders are bogged down in minute decisions, the organization is inefficient, and when first-line supervisors accept risks that could have catastrophic outcomes, proper control is lost. Therefore, the credible consequences of a course of action determine who should assume responsibility.

■ **Accept risks if the benefits outweigh the costs.** When a decision is called for, risk-management methods should be used to determine the best course of action. It is critical to weigh all the costs—real and potential—

including long-term effects and legal impact.

Risk Management Process

■ **Identify hazards.** Step one in risk management is to identify hazards. Hazards are any conditions with the potential to cause damage or injury, or lessen your ability to perform your mission. All hazards should be identified before starting a new task. Section III discusses hazard identification in detail.

■ **Assess hazards.** Step two is to assess the hazards to determine their cumulative effect on the planned activity. Each hazard is analyzed to determine the probability of its causing a problem and the severity of the consequences should such a problem occur. Exercising judgment on how to eliminate or reduce hazards to lessen the overall risk is inherent in the risk assessment process. This step concludes with a risk assessment that describes the impact of the combined hazards. The result is a statement that qualifies the risk associated with the operation as high, medium, or low.

			HAZARD PROBABILITY				
			Frequent	Reasonably Probable	Occasional	Remote	Improbable
			A	B	C	D	E
HAZARD SEVERITY	Catastrophic	I	HIGH				
	Critical	II					
	Marginal	III		MEDIUM		LOW	
	Negligible	IV					

■ **Make risk decision.** Step three is to make a risk decision. Leaders must weigh the risk against the benefits of performing an operation. Unnecessary risk can endanger mission accomplishment and subject employees to unnecessary risk of accidents and injuries. Risk decisions are made at a level of management that corresponds to the degree of risk. Guidance should be established as to who

makes which risk decisions. For example, low-risk decisions may be made by the immediate supervisor, medium-risk decisions by middle management (activity/division), and high-risk decisions by top management (directors/command staff) for acceptance or denial. The commander may elect to have some decisions made at lower levels of management.

■ **Implement controls.** Step four is to implement the controls established as a result of steps one through three. Included in this step is leader action to reduce or eliminate hazards. Controls may be as substantial as writing an SOP or as simple as conducting a short safety briefing. Sections IV, V, and VI outline strategies for development of workplace controls.

■ **Supervise.** Step five is to supervise. Supervision in this sense goes beyond ensuring that people do what is expected of them. It includes following up during and after an action to ensure that all went according to plan, re-evaluating the plan or making adjustments to accommodate unforeseen issues, and incorporating lessons learned for future use.

Section II

Leadership

Before you can lead a safe work force, before you can even discuss the workings of the risk-management cycle, it is necessary to set working definitions of some basic terms and concepts. This section takes the ideas in broad Army doctrines and makes them real for the civilian or military/civilian workplace.

Leadership Safety Basics

Army accidents include unplanned events that result in one or more of the following:

- Damage to Army property (including government-furnished material, property, and equipment provided to a contractor).
- Injury or occupational illness to on-duty Army civilian personnel, including nonappropriated fund employees and foreign nationals while in a work-compensable status.
- Injury or illness to non-Army personnel or damage to non-Army property when the Army is responsible.

Root causes of accidents

Accidents can be traced to combinations of errors, materiel failures/malfunctions, and environmental conditions. Almost all of these can be attributed to defects in workplace systems. These defects are directly related to the standards that are designed to control the work process. Note that the same defects that cause accidents can cause other failures that keep you from accomplishing your mission.

- **Standards defect:** Standards are unclear or impractical or just don't exist.
- **Training defect:** Standards exist but are not known or the ways to meet them are not known.
- **Leadership defect:** Standards are known but are not explained, supported, or enforced.
- **Worker-behavior defect:** Standards are known but are not followed.

How system defects show up in the workplace

- When the STANDARD is defective we find—
  - Sketchy written procedures (AR, TM, SOP, etc.)
  - Substandard facilities
  - Incapable employees
  - Unsuitable material and equipment
  - Inadequate support services
- When the TRAINING is defective we find—
  - Too little or misdirected school training
  - Little sustainer training
  - No formal OJT structure
- When LEADERSHIP is defective we find—
  - Lack of control by direct supervisor/director
  - Little authority at mid level
  - Low motivation
  - Indiscipline
  - Inverted priorities
  - Poor morale
  - Conflict between quality and production
- When WORKER BEHAVIOR is defective we find—
  - Fear/excitement
  - Unpredictability

- Overconfidence
- Haste
- Poor attitude
- Effects of alcohol/drugs
- Misjudgment
- Outside distractors

Countermeasure Development

The systems defects that create opportunities for accidents can be countered. Supervisors can't do it all, but they are in the best position to initiate and monitor many corrective actions. Countermeasures are performance-oriented, such as training and motivation. They might also be environment-oriented. That's the engineering approach to facilities, equipment, and process safety.

To attain and sustain safe performance

- Explain the reasons for the safety rules.
- Develop safe methods of performing each task.
- Be able to demonstrate safe performance of each task.
- Make sure needed tools and equipment are available and used.
- Assign employees tasks that are within their abilities.
- Promote teamwork among employees.
- Enforce rules and regulations.
- Prove your commitment to safety; set a good example.

To attain a safe workplace

- Identify hazards using risk-management techniques.
- Assess the risks and assign a priority.
- Fix the cheap and easy hazards quickly.
- Plan for abatement of the tough, expensive hazards.
- Develop interim measures to reduce the risk until abatement.
- Track the resourcing and scheduling of abatement projects.
- Monitor the effectiveness of countermeasures.
- Persist.

This is a simple outline of approaches to countermeasure development. Sections IV, V, and VI contain a more detailed step-by-step description of worker- and workplace-oriented corrective actions.

Fundamentals of Safe Leadership

■ **Know your workers.** Know their training status and their qualifications. Test knowledge of new employees, regardless of whether or not they have been previously certified in a certain area. Consider individual abilities when assigning job tasks.

■ **Know the rules.** Be aware of the safety precautions that fit your workplace. Know your equipment, its capabilities, and its condition. Study the publications that are available to guide you.

■ **Anticipate risks.** Seek advice and information on new missions and process.

■ **Encourage your workers.** Be receptive to your workers' ideas. They are a valuable source of firsthand knowledge of ways to prevent accidents.

■ **Assign sufficient resources.** Get the people and equipment needed to do the job safely. Do not allow false economies.

■ **Follow up.** See that your workers use the safeguards provided.

■ **Routinely spot check work.** If necessary, enforce safety rules through disciplinary action.

■ **Set the example.** Demonstrate safety in your own work habits and personal conduct. Don't undercut your instructions in the eyes of your workers.

■ **Investigate every accident.** There is something to learn from them all, however slight. Develop corrective measures to prevent similar accidents.

■ **Use the safety organization.** Its purpose is to help you get your job done.

■ **Accept responsibility.** Accident prevention is one of your prime obligations to your workers and to the Army.

Section III

Hazard Identification

The first step in managing risks is to recognize the hazards that are associated with a planned operation. This section discusses hazard identification in general terms and outlines methods supervisors can use to identify hazards unique to their operations. It also describes some hazards that are common to most workplaces.

Hazard Identification Methods

Efforts to identify workplace hazards can take three paths: history-based, engineering-based, and standards-based. All three methods can be applied to existing or to proposed work situations.

History-based path

Historical methods have high reliability and good predictive value. They share the same basis: You can find hazards in your workplace by looking at what caused accidents in other workplaces. There are many sources of historical

information. Among them are—

- Personal experience and the shared experience of other supervisors.
- Reports and summaries distributed by Army and industrial sources.
- Statistical data from your operation or similar ones.
- Lessons-learned publications such as *Countermeasure* (published monthly by U.S. Army Safety Center, Fort Rucker, AL 36362-5363).
- Consultation with outside experts.

Engineering-based path

Engineering methods involve step-by-step review of a process or area to discover potential sources of injury or illness. This approach can be applied to an existing facility, but it's especially valuable in planning a new process or workplace. Engineering analysis can be relatively simple or extremely complex. In any case, it asks two questions about how workers can be hurt or property can be destroyed: (1) In what ways can energy be destructively released, and (2) In what ways can people and machines be deprived of the things they need? The following kinds of energy are stored and used in the workplace:

- **Mechanical** (rotating parts, reciprocating parts, springs, compressed fluids, presses, tensioned components, vehicles)
- **Thermal** (flames, pipes, electrical resistance, friction surfaces, refrigerants, cryogenics)
- **Gravitational** (suspended loads, flows, climbing, manlifts, elevations, pits, conveyors, swings)
- **Electrical** (conductors, static, batteries, capacitors)
- **Chemical** (fuels, explosives, solvents, acids, oxidizers, other reactive material, toxins, reproductive agents)
- **Radiation** (ultraviolet, visible, infrared, radio, microwave, ionizing sources and equipment)
- **Sound** (audible, ultrasonic)

Standards-based path

The last hazard-identification strategy is to learn the

standards, laws, and regulations that govern the operation or workplace. There are two general types of safety rules: performance standards and specification standards.

■ Performance standards give supervisors considerable freedom to set workplace methods, but they don't give much guidance. They tell only what level of performance is required. For example, a performance standard would say the leader must provide a way of moving employees from the first floor to the second floor, in all realistic conditions, with no likelihood of injury. The standard would not specify how this is to be done.

■ Specification standards, on the other hand, can be very detailed. A specification standard might describe the ladder to be used in the example above. It would specify the type of wood, number of knotholes, spacing of rungs, etc. Such detail gives the supervisor a good idea of requirements but limits his freedom to find the best way to do a job safely.

A Representative Operation: Materiel Handling

To be effective, prevention programs must target hazards in the workplace. Supervisors must look at accident experiences in the worksite and apply guidelines or develop their own. For example, methods to attack materiel-handling hazards, very common in the Army, include the following:

Analysis of materiel-handling hazards

■ What is being moved? Size? Weight? Grip? Balance?

■ Is the proposed path of movement clear, level, and accessible from beginning to end?

■ Is materiel-handling equipment appropriate and available?

■ Did employees' preplacement screening cover their lifting limitations?

■ Are assigned workers trained to perform this specific

task? Is there a history of previous accidents?

■ Have you done a job hazard analysis (JHA) on the operation (see section VI)? If so, do you have an SOP for the procedure? Is it current? (If not, perform a JHA and develop an SOP. Enforce its use and update when conditions force change.)

■ Do performance standards and job descriptions clearly define requirements for materiel handling? Do they ask or allow employee to exceed any physical limit noted by the preplacement examination?

■ Does policy clearly specify when to ask for help in lifting?

■ Are gloves needed? If so, are suitable gloves available? Do they fit employees?

■ If operation involves banding or cutting bands, are goggles or face shields worn?

■ Are safety shoes required?

■ If materiel-handling equipment is provided, are employees trained to use it properly?

■ If materiel-handling equipment is not available, do problems in the supply system exist?

■ Do you have effective channels of communication on job performance and work habits?

Correct manual materiel-handling procedures

■ Warn personnel to *never* twist or jerk body while lifting.

■ Make sure personnel always carry objects as close to waist height as possible.

■ Assure personnel never carry a load heavier than can be managed with ease.

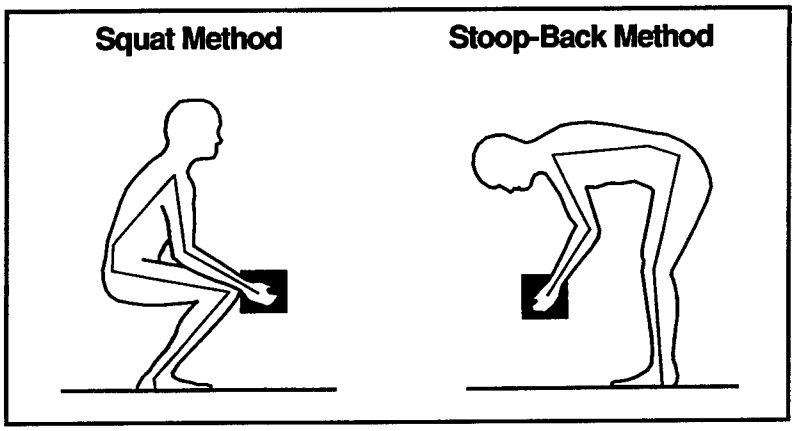
■ Enforce the "when in doubt, get help" rule.

■ Caution personnel to make sure their path of travel is unobstructed and desired location is adequate for the size of object *before* lifting object.

■ Do NOT allow personnel to carry unbalanced loads.

■ Make sure personnel have assistance if their vision of the path of travel is blocked.

■ Ensure that personnel wear gloves if the load's surface is rough.



Sources of materiel-handling safety information

- Occupational health/industrial hygiene staff
- U.S. Army Safety Center training materials
- Occupational Safety and Health Administration
- Safety office
- Installation or supporting headquarters engineers
- Vendors of commercial products
- Installation Safety and Occupational Health Council
- Civilian personnel office
- Other MEDDAC (physical therapist, nurse)
- Post engineer

A Representative Injury: Slips/Trips/Falls

Analysis (identify and define the problem)

■ What kinds of accidents happen? How often do they happen? When do they happen? Why do they happen?

■ What are the main accident causes? Examples: Failure to follow procedures, inadequate supervision, and inadequate written procedures.

■ Are there SOPs or procedures for the workplace? Are they routinely enforced?

■ Do workers receive training in the tasks they are to perform?

■ Are good housekeeping standards established and enforced in all operations?

■ Are all accidents investigated to determine where prevention efforts are needed?

■ Are there procedures that ensure no running in the workplace or on the stairs?

■ Are surfaces and stairs kept in nonslippery condition?

■ Are loose tiles, floorboards, bricks, pavement, and carpeting reported and repaired immediately?

■ Are doors and drawers closed after material is retrieved?

■ Do personnel walk in designated aisles or walkways?

Prevention (plan corrective actions)

■ Ensure all personnel receive training.

■ Require that SOPs be developed and enforced for each task.

■ Give additional training for nonroutine tasks.

■ Issue procedures for workplace cleaning and maintenance.

■ Set standards for keeping climbing equipment such as ladders and scaffolding in good condition.

■ Ensure that employees do not exceed a normal reach while working on this type of equipment.

A Representative Occupational Disease: Cumulative-Trauma Disorder

The name *cumulative-trauma disorder*, or CTD, is applied to a number of largely unrelated conditions that are thought to share a common cause—the body's response to repeated minor stresses. The most common such disorder is carpal tunnel syndrome (CTS), a painful disability of the wrist and hand. It might become the hottest occupational disease of the 1990s. Army typists, computer operators, cashiers, woodworkers, power-tool operators, and others are subject to the effects of the following actions, which can result in CTS:

■ Repetitive motions.

■ Forced and awkward posture.

■ Exposure to vibrations for long periods.

■ Holding the hands awkwardly over keyboards for long periods.

■ Twisting wrists to position product codes over a scanning window.

Prevention focuses mainly on reducing exposure to suspected causes. Conditioning or training the muscles to tolerate the repeated motions also helps. Corrective action can be as simple as having typists adjust the height of their chairs to raise their hands a little higher over the keyboard.

Before risk factors can be controlled, however, they must be recognized. Early recognition of the signs and symptoms of the disorder and recognition of occupational risk factors should reduce the number and severity of CTS cases and conserve our work force. The answer is leader awareness, and good lines of communication between supervisors and their workers.

Factors associated with CTS

Both occupational and nonoccupational factors can be associated with carpal tunnel syndrome:

■ Occupational factors
- Hands held in fixed positions for prolonged periods.
- Repeated wrist and finger flexion.
- Light, highly repetitive wrist and finger movements such as typing.
- Repeated flexion or overextension of the wrist.
- Prolonged strenuous use of the hands.
- Repeated pinching or grasping.
- Vibration, particularly that associated with power tools.
- Bending the wrist towards the pinkie finger.

■ Nonoccupational factors
- Rheumatoid arthritis, diabetes, and other illnesses contribute to CTDs.
- While cumulative-trauma disorders can be work related, the workplace may not be their only source. Hobbies, second jobs, or other outside activities can also lead to CTDs. Analysis of each case should consider total exposure, not just the worksite. Posture and technique may be more important than exotic ergonomic equipment or workstation redesign.

Section IV

Improving Employee Skills

To perform well, employees must know what to do and be motivated to do it. A deficiency in skill or motivation can lead to a human-error accident. Before investing considerable effort in skill-development training, however, it is necessary to assure that a true training need exists. Training is not the answer if employees aren't doing what they can do.

Training-Need Assessment

If there is a failure to perform a task to standard, it jeopardizes the success of the mission. Once the tasks are identified, they can be compared with potential problem areas to determine systemic sources of human error.

- Do standards exist for the task? Are they clear and practical?
- Have the standards been published effectively?
- Have assigned personnel received training necessary to perform the task to standard?

■ Is the training current, or have changes occurred in the process?

■ Have new people entered the work force since the initial training?

■ Have refresher and OJT training been provided?

■ Have personnel been evaluated or tested recently on their skills and knowledge?

If the answer to any of these questions is no, a systemic failure exists that may lead to a human-error accident.

Education and Training

As a leader, you are responsible for making sure workers receive the training they need to perform their jobs effectively and safely. There are several types of training you can provide.

Initial safety training

You must provide an initial safety and health orientation for your employees. Document the orientation and maintain the record with your employee record file. The orientation must include—

■ Hazard-communication training, a requirement of the Hazard Communication Standard issued by the Occupational Safety and Health Administration (OSHA). The training requires that employees be informed about hazardous chemicals in their workplace and trained to work safely with these materials.

■ All safety and health rules, including an explanation of their value.

■ Briefings on specific potential hazards and controls for those hazards.

■ Emergency and first-aid procedures.

■ A safety-oriented walk-through of job steps.

Remedial safety training

Remedial safety training is conducted to remedy some weakness or oversight in previous training. It can be directed

to an individual or group as needs dictate. The key to successful remedial training is to make sure that the training is directed at actual training problems. Do not make the mistake of trying to solve nontraining problems such as poor safety attitudes in this way.

Updated safety training

As an activity changes through the addition of new processes, procedures, or missions, so do safety training needs. Initial training must be updated, and employees must be informed of new hazards. A good time to review updated refresher training needs is during periodic inspections.

Ongoing safety training

All training has its greatest effect immediately after it is presented. After that, it loses effectiveness as employees forget the material. Periodically present some safety- and health-related training covering particularly important problems. To avoid repetition that could lead to employee boredom, vary your method of presenting material by using slides, films, charts, and other graphic aids.

Workplace Safety Promotion

Once basic safety skills are implanted through education and reinforced through periodic refresher training, they must be reinforced constantly. The methods used in this effort can be treated as a promotion program. For the most part, shop-level safety-promotion programs should be as simple and inexpensive as possible. A constant flow of face-to-face communication can be as effective as elaborate, expensive campaigns.

Safety meetings

A good way of promoting safety awareness is through safety meetings. These meetings should be held on a regular basis, and special meetings should be called when needed. Ideally, you should have at least a brief, "stand-up" or "tailgate"

meeting with your employees each week to maintain safety awareness and reconfirm the content of more formal classes.

Personal instruction

Nothing is more effective at reinforcing safety skills than one-on-one teaching at the worksite. Unfortunately, such instruction is costly in terms of the leader's time. It can be appropriate, however, when a serious accident threat is traced to a single employee's lack of skill or knowledge. Above all, it is important that the supervisor does not "un-teach" his employees by demonstrating improper and dangerous procedures himself.

Video and audiovisuals

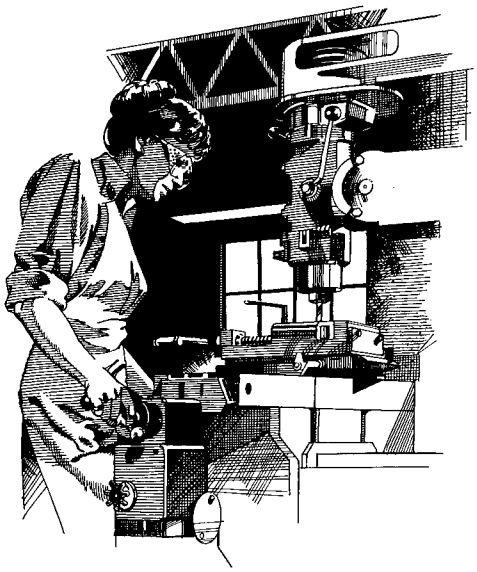
A lot of high-quality short instructional videos and other media are available for group awareness training. Often the cost of setup and assembly of the work team makes this method inefficient. There might be opportunities to set up short videos in break rooms or other natural gathering places.

Posters and signs

The old-fashioned safety poster is still one of the most cost-effective ways to inform and reinforce. The key is to run an active poster campaign. It is counterproductive to let old posters hang around for years, getting dirty and telling the work force that no one really cares. Note that some signs and posters, such as the OSHA rights and responsibilities poster (DD Form 2272) are required.

Grassroots

The supervisor knows he has reached his people with the safety message when he finds them teaching each other. His task then is to monitor and direct the kind of information that is spreading through the team.



Section V

Improving Employee Motivation

Even when every employee knows how to perform safely, the battle against human-error accidents is only half won. It isn't enough to know what to do; people must also want to do it. The ways to obtain cooperation and compliance with safety standards are well-known: positive and negative reinforcement, or reward and punishment.

Rewards

■ The key to safety motivation is to know the people you are dealing with, and thus select an incentive that will appeal to them.

■ For example, the need for recognition might be very high among your employees. A good incentive in this case would be a formal awards program recognizing safe performance.

■ On the other hand, individuals who don't respond well to recognition might have a high desire for acceptance by fellow

employees. In this case, you should develop a situation in which the group and its opinion setters adopt your safety objectives. In this way, those who seek to belong will be influenced to conform to the group's support of safety objectives. Failure to do so will earn group disapproval.

■ The bottom line is that you must recognize and use the needs of the individuals and groups under your supervision by continually applying incentives that will fill these needs while inducing safe behavior.

Discipline

■ How the supervisor obtains safe performance is an option. Getting that performance is not optional, because lives and health are involved. When positive methods fail, and they sometimes will, the supervisor has the responsibility to turn to disciplinary measures.

■ When discipline is necessary, it must be applied fairly, firmly, and without interpersonal rancor. Civilian Personnel Regulations set strict guidelines for unfavorable actions. They are designed to make sure employee rights are honored, but they are not "loaded" against the supervisor.

■ Use the established schedule of automatic penalties if violations occur. Let all employees know you are serious. Coordinate with Management Employee Relations Branch at your servicing Civilian Personnel Office for their help.

Motivation in Practice—Personal Protective Equipment

As a supervisor, one of your safety objectives is to assure that your workers use protective equipment:

■ Establish specific areas or operations in which the equipment will be used. Specify hard-hat areas, eye-protection operations, noise-hazardous areas, and so forth.

■ Put protective equipment requirements into job and process SOPs. Make it a part of the job.

■ Require use of the protective equipment as a condition of employment. Employees should learn to use the equipment just as they learn any other aspect of the job.

■ Train and educate your people. Stress that use of personal protective equipment is for their benefit. Teach them how to use and properly maintain the equipment, and use sustained training to ensure they remember.

■ Ensure that the equipment is readily available when needed. A worker is not likely to walk 50 yards or wait 5 minutes to get a pair of goggles for a simple job.

■ Set the example. You must use the equipment without fail when you're exposed to the hazard.

■ Look for violations and for proper use. Correct violations on the spot; by the same token, take time to notice and reward proper use. Praise those who use the equipment. Make them feel good for cooperating.

New-Employee Orientation

The supervisor's first chance to establish proper motivation in the workplace is a good welcoming orientation. It sets the tone for all subsequent communication regarding safety and other aspects of behavior. A safety orientation can be a separate, formal discussion. It can also be integrated into a comprehensive overview of the supervisor's expectations. In either case, a new-employee orientation should contain appropriate elements from the following outline.

Sample new-employee safety orientation

■ Discuss the requirement to report all accidents to the supervisor immediately.

■ Explain procedures to follow in case of emergency.

■ Discuss occupational safety and health protection for Federal employees, including the mandatory discussion of rights and responsibilities.

■ Explain the requirements for personal protective clothing and equipment directly related to the employee's job. For example:

- **Safety shoes.** Safety shoes must be worn by employees who work in shops, warehouses, garages, labs, explosives-production areas, and depots. Protective toe caps may be worn by employees performing temporary work in hazardous areas or employees exempted by the occupational health staff from wearing safety shoes.
- **Gloves.** Gloves should be worn when handling heavy, rough, or hard-to-grasp material and when working with skin-damaging chemicals.
- **Hearing protection.** Hearing protection must be worn in areas posted as noise hazardous. Sources of supply vary depending on the installation. Local procedures should be described.
- **Clothing.** Employees working on machinery shall not wear loose clothing or jewelry that could catch on a moving part of the machine.

■ Discuss housekeeping, including the following:

- Keep the floor free of oil; clean up spilled liquids.
- Keep aisles clear.
- Put tools away when not in use.
- Place scrap in proper containers.

■ Discuss specific job-related hazards. For high-risk jobs, use the job hazard analysis (see section VI) to orient new employees to specific procedures and safety precautions required in performance of their duties.

■ Explain specific installation policies.

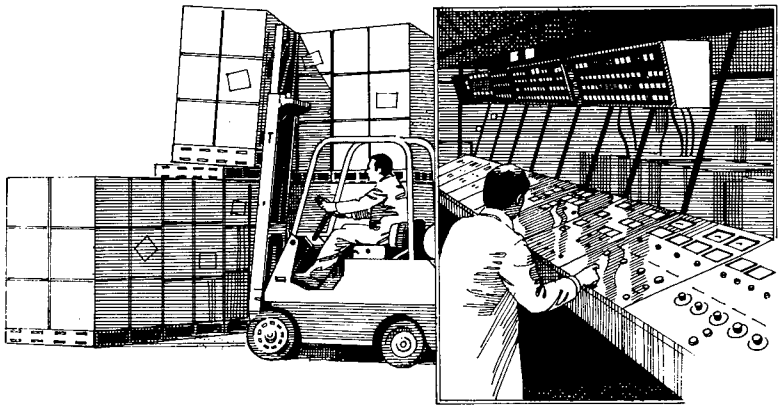
- Speed limits, seatbelt policy, and hazardous roads.
- Alcohol/drug abuse policy.
- Other related safety policies.

■ Procedures for reporting hazards. Through training, inspections, and job hazard analyses, the employee learns how to identify hazards. When hazards are identified in the employees' work areas, the correct procedures are to report them to the appropriate supervisor immediately. On-the-spot correction of hazards by the supervisor will create a safety culture in which an employee works accident free.

■ Verify limitations prescribed by preplacement medical examination. Assure limitations are not exceeded by job assignments. Recheck after accidents or other changes in

physical condition.

- Furnish handouts on the following:
  - Injury/illness bulletins.
  - Occupational Health Clinic services brochure.
  - Fact sheets.
  - Safety and health care promotional items.



Section VI

Improving the Workplace

Not all accidents originate in employee behavior. Most involve unsafe performance, but sometimes unsafe performance is dictated by an environment that contains uncontrolled hazards. A few workplace hazards are so severe that no one could expect to work safely around them. This section outlines ways to interrupt the accident sequence by finding and fixing faults in the work environment.

Safety Inspections

The purpose of a safety inspection is to target accident causes for elimination. You are your own most important safety inspector. A good safety inspection will—

- Detect specific unsafe conditions that might cause accidents.
- Detect unsafe practices or acts such as operating equipment at unsafe speeds or using unsafe materiel-handling techniques.
- Highlight the need to specify safeguards for people and machines.

■ Help sell safe performance to your people.

■ Encourage employees to inspect their own work areas and practices.

■ Detect deficiencies in the management of the safety program.

■ Be conducted under formal or informal program procedures such as the Standard Army Safety and Occupational Health Inspections outlined below.

Prevention program procedures

■ Inspections and surveys of operations, practices, and facilities should be conducted annually or more often.

■ Inspection procedures should include use of interviews, operational reviews, performance testing, and similar techniques designed to detect high risk of both a behavioral and environmental character at the earliest possible time.

Types of inspections

■ *Continuing and routine inspections* are usually performed by supervisors; however, they might be performed by a safety official. These informal quality-control inspections seek to discover conditions, procedures, and practices that, if allowed to continue, might cause accidents. Special targeted hazards might be scheduled; for example, wearing safety glasses one month, using machine guards the next. Your installation safety office and preventive medicine activity are available to help you with these inspections.

■ *Standard Army Safety and Occupational Health Inspections (SASOHI)* are performed at least annually using SASOHI procedures. These inspections are normally performed by a safety representative from the installation safety office. Inspection personnel must notify appropriate union representatives who might wish to participate.

■ *Special or command on-call inspections* are made by a safety representative from a higher echelon of command. The purpose of this inspection is to appraise the safety performance of the unit or department to determine areas where improvement is needed and to present these facts to

the commander or director.

Inspection records

■ During inspections, write up unsafe conditions and practices. The record should contain the date, type of inspection, detailed account of items that failed inspection, and recommendations for correcting those deficiencies.

■ You should retain a copy of the most recent inspection and any work orders submitted. Follow up on recommendations until the conditions have been corrected.

Job Hazard Analysis

Job hazard analysis (JHA) is a management technique that has been used successfully to assure safe operations. There are several advantages to using the JHA:

■ It is systematic and thorough.

■ It provides a permanent record of the safety situation for a specific job.

■ It produces a protective equipment list and step-by-step safe job procedures.

■ As long as the same job exists, the original job hazard analysis establishes the safe procedure.

Instructions for conducting a JHA

■ See the simple example on the next page.

■ Under "job description," list the name of the job being performed.

■ Under "job location," list the physical location(s) where the job will be performed.

■ In the column labeled "key job steps," list the steps in sequence. Within reason, the breakdown should be very detailed.

■ In the column labeled "tools, equipment, or material," list all of the proper ones to be used. Be sure to list the proper item in line with each successive job step.

■ In the "potential health, injury, or damage hazard" column, list the accident or unsafe conditions that can result

Sample Form for Job Hazard Analysis

Job Description: Change Tire

Job Location: Maintenance Area (Bays)

Key Job Steps	Tools, Equipment or Material	Potential Health, Injury, or Damage Hazard	Safe Practices, Apparel, and Equipment
1. Raise the vehicle	Use shop jack	Vehicle slips from jack	Place jack as directed by vehicle TM.
		Jack failure	Check jack for serviceability. Stay clear of area under vehicle.
2. Remove tire	Lug wrench	Strain or sprain from handling the tire and wheel	Get help or at least use proper lifting technique to avoid strain.
		Bruises or cuts from slipping wrench	Assure tool fits and use it properly.
	Wheel stands	Vehicle falls from jack or stand	Position jack or stand properly.
3. Mount spare	See 2 above	See 2 above	See 2 above.
4. Lower vehicle	See 1 above	See 1 above	See 1 above.

if proper procedures are not followed. List the proper item in line with each successive job step.

■ In the last column, "safe practices, apparel, and equipment," list the factors needed to prevent an accident that may result from use of improper procedures. List the proper item in line with each successive job step.

Ergonomics

Ergonomics involves human reaction to monotony, fatigue, repeated motion, and repeated shock. The human body can endure considerable discomfort and stress and can perform many awkward and unnatural movements—for a limited period of time. But, when unnatural conditions or motions are continued for prolonged periods, the worker sustains

injury and performance suffers. Therefore, work systems need to be tailored to human capacities and limitations. This is done through consideration of—

- Stress on muscles, bones, nerves, and joints.
- Sensory characteristics, use of color, audio signals, and the like.
- Environmental factors such as lighting, glare, temperature, humidity, noise, atmospheric contaminants, and vibration.
- The psychological and social aspects of the working environment.

The benefits of designing work systems to minimize physical stress on workers include more efficient operation, fewer accidents, lower cost of operation, reduced training time, and more effective use of personnel.

Among improvements that reduce fatigue and stress are redesigned handtools, adjustable chairs and workbenches, lighting improvements, control of heat and humidity, and noise reduction.

Personal Protective Clothing and Equipment

Fixing the workplace, especially when the hazard is transient or complex, can be very expensive and time-consuming. Until practical, permanent ways to remove hazards can be found, personal protective equipment (PPE) must be worn.

- During design of equipment and processes, personal protective equipment is the "last resort" control. It is used only when engineering controls cannot be instituted to eliminate a hazard.
- Protective equipment is also extremely important as a second line of defense against inadvertent or unexpected conditions.
- Workers should be advised that using PPE doesn't eliminate the hazard. If the PPE fails, exposure to the hazard will occur. To reduce the possibility of exposure, PPE

must be properly selected, fitted, and maintained.

■ Handing a worker a respirator and telling him or her to use it is not just ineffective, it violates federal regulations and it can be very dangerous. Using PPE requires that users be trained on hazard awareness and proper wear.

■ Selection of proper protection for a specific task or operation is extremely important. Command safety and industrial hygiene staffs can help in fitting the equipment to the task.

■ Make sure employees know that PPE should never be modified, and that they should check with the supervisor if it is uncomfortable. The specific item of PPE may not be fitted properly or otherwise be substandard. Most problems can be corrected. For example, earplugs designed for a large ear would be very uncomfortable for a person with small ears. Pay special attention to fit for comfort as well as protection.

■ Protective clothing and equipment requirements for preventing work hazards and health risks are contained in chapter 6, AR 385-10.

Eyes

■ Ensure that protective eye gear is worn during operations that pose hazards to the eye:

- Welding.
- Painting.
- Grinding.
- Fuel handling.
- Maintenance/repair.
- Woodworking.
- Metal work.
- Heavy equipment operation.
- Electrical work.
- Vehicle operations with the windshield down.

Ears

■ Ensure that personnel use proper hearing protection when equipment noise exceeds 85 decibels. Contact your

Protection for Common Eye and Face Hazards

Operation	Hazard	PPE
Acetylene welding	Sparks, flying particles, molten metal	Welding goggles
Buffing & grinding	Flying particles	Spectacles, goggles
Chemical handling	Splash, acid burns, fumes	Goggles, face shield
Chipping	Flying particles	Spectacles, goggles
Electric welding	Sparks, intense rays, molten metal	Welding helmet
Furnace operations	Glare, heat, molten metal	Welding goggles, face shield
Laboratory	Chemical splash, glass breakage	Goggles, face shield with spectacles
Machining	Flying particles	Spectacles, goggles
Molten metals	Glare, heat, spark, splash	Welding goggles
Visiting	Flying particles	Spectacles

Adapted from U.S. Department of Labor, OSHA, Vol. III, Construction Standards and Interpretations, page 39.

preventive medicine office for noise-level measurements and recommendations for reducing noise levels. The following are examples of equipment that exceeds 85 decibels when in operation:

- All Army aircraft.
- Construction/engineer items such as dozers, cranes, forklifts, graders, etc.
- Tractors.
- Tracked vehicle engines (APCs, tanks, etc.).
- Multifuel vehicle engines.
- HMMWV family of vehicles.

Head

■ Ensure that helmets are worn at all times by all personnel riding in or operating Army combat vehicles.

■ Ensure that helmets or hardhats are worn in established head-hazard areas in accordance with SOPs and Army regulations.

Hands

■ Provide and use gloves when chemical hazards, equipment characteristics, or the environment require them.

■ Require that personnel remove rings before working around equipment.

■ Caution employees that "hung" rings are common when dismounting vehicles, causing severe finger injuries.

■ Ensure that employees use the proper tool for the job.

■ Remind employees to ensure that hands and fingers are clear before opening or closing doors, hatches, and tailgates.

Feet

■ Ensure that protective boots or shoes are worn in areas that require toe protection. Consult your post regulation for appropriate footwear approved for specific occupations and tasks.

■ Ensure that the following personnel wear protective footgear:

- Electrical workers.
- Mechanics (tracked and wheeled vehicles, aircraft).
- Carpenters.
- Heavy equipment operators.
- Warehouse workers.
- Others performing operations posing hazards to the feet.

Section VII

Administrative Actions

A supervisor must manage certain program elements that are related to the health and safety of employees but whose accident prevention value is not apparent. Most of these, such as Occupational Safety and Health Act compliance and Federal Employee's Compensation Act execution, are a response to the provisions of law or higher headquarters requirements.

Federal Employee's Compensation Act (FECA)

The cost for compensation claims and continuation of pay from civilian job-related injuries and illnesses exceed $160 million per year and continues to rise. As a leader, you play an essential role in reducing workplace injuries and illnesses and controlling the resulting costs.

Key actions

- Get help from the Installation Safety Program. Learn

your local installation safety regulations. Contact your Safety Director for details.

■ Work with the Installation Workers' Compensation Program.

■ Refer to your local installation personnel management regulation. Contact the Workers' Compensation Program Administrator in your civilian personnel office for details and interpretations.

■ Coordinate with the installation Civilian Personnel Officer and Workers' Compensation Program Administrator regarding claim denials.

■ Notify the Workers' Compensation Program Administrator when an employee returns to work after a lost-time injury or occupational illness.

■ When an employee returns to work, brief him or her on measures to prevent recurrence of the injury/illness.

■ Follow your installation regulation on physical limitation.

■ Identify light-duty positions.

■ Encourage return to work as soon as possible.

■ Emphasize teamwork.

■ Conduct weekly safety and occupational health meetings.

■ Discuss recent accidents and measures to prevent recurrence.

■ Support the Commander's Safety Awards Program.

■ Perform job-hazard analyses.

■ Provide employee education and training regarding safety and health hazards in the workplace.

Accident Investigation and Reporting

Army accidents are investigated so that preventive measures can be developed. Even first-aid cases, no matter how minor, must be investigated. AR 385-40: Accident Reporting and Records prescribes responsibilities and procedures. Reports for Department of Army civilians are DOL Forms CA-1: Notice of Traumatic Injuries; CA-2: Notice of Occupational Disease/Illnesses; and CA-6: Notice of

Employee's Death. Very serious accidents, and those happening to civilians not covered by the Federal Employee's Compensation Act, must be reported on a DA Form 285: U.S. Army Accident Investigation Report. This is the same form used to report military injuries.

Reporting traumatic injuries (CA-1)

Upon receiving notice that an employee has sustained a job-related traumatic injury, the leader must—

- Seek help for the injured employee.
- Provide the employee with Form CA-1 for reporting the injury. Upon receipt of the employee's completed CA-1, complete side two of the form, and give the receipt back to the employee. Assist employee in initiating forms when no other person is able to act on his or her behalf.
- Advise the employee of the right to elect continuation of regular pay or use annual or sick leave, if the injury is disabling. Upon approval from CPO, annotate on the Time and Attendance Report accordingly.
- Submit Form CA-1, fully completed by both employee and supervisor, together with all other pertinent information and documents to the Civilian Personnel Office within 2 working days following the supervisor's receipt of the form from the employee.
- Inform the employee whether COP will be denied and, if so, the basis for this action.
- If the claim is denied, submit an explanation for denial to the Civilian Personnel Office on the supervisor's portion of Form CA-1 or by separate narrative report (or both).

Reporting occupational illnesses (CA-2)

Upon receiving notice that an employee has contracted an occupational illness or disease, the supervisor will—

- Provide the employee with Form CA-2: Federal Employee's Notice of Occupational Disease and Claim for Compensation.
- Upon receipt of the completed CA-2, return the "Receipt of Notice of Disease or Illness" to the employee.

Federal Employees' Compensation Act Basic Forms

Form No.	Form Title	Purpose
CA-1	Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation	Notifies supervisor of a traumatic injury and serves as the report to OWCP when (1) the employee has sustained a traumatic injury that is likely to result in a medical charge against the compensation fund; (2) the employee loses time from work on any day following the injury date, whether the time is charged to leave or to continuation of pay; (3) disability for work may subsequently occur; (4) permanent impairment appears likely; or (5) serious disfigurement of the face, head, or neck is likely to result.
CA-2	Federal Employee's Notice of Occupational Disease and Claim for Compensation	Notifies supervisor of an occupational disease and serves as the report to OWCP when (1) the disease is likely to result in medical charge against the compensation fund; (2) the employee loses time from work on any day because of the disease, whether the time is charged to leave or the employee chooses to claim injury compensation; (3) disability for work may subsequently occur; (4) permanent impairment appears likely; or (5) serious disfigurement of the face, head, or neck is likely to result.
CA-6	Official Superior's Report of Employee's Death	Notifies OWCP of the employment-related death of an employee.
CA-16	Authorization for Examination and/or Treatment	Authorizes an injured employee to obtain examination and/or treatment for up to 60 days and provides OWCP with initial medical report. Treatment may be obtained from a local hospital or physician (who may be a surgeon, osteopath, podiatrist, dentist, clinical psychologist, optometrist, or, under certain circumstances, a chiropractor), or from a U.S. medical facility, if available. May also be used for illness or disease if prior approval is obtained from OWCP. The employee may initially select the medical provider of his/her choice but must request any change from OWCP.

Prepared By	When Submitted	Completed Forms Sent To
Employee or someone acting on employee's behalf; witness (if any); supervisor.	By employee within 30 days (but will meet statutory time requirements if filed no later than 3 years after the injury); by supervisor within 10 working days following receipt of the form from the employee.	Supervisor, by employee or someone acting on employee's behalf; then to the appropriate OWCP office by the supervisor.
Employee or someone acting on employee's behalf; witness (if any); supervisor.	By employee within 30 days (but will meet statutory time requirements if filed no later than 3 years after the injury); by supervisor within 10 workdays after receipt of the form from the employee.	Supervisor, by employee or someone acting on employee's behalf; then to the appropriate OWCP office by the supervisor.
Supervisor	Within 10 workdays after knowledge by supervisor of the employment-related death of an employee.	Appropriate OWCP office.
Part A—Medical Authority	Part A—By medical authority, in duplicate, within 48 hours following first examination and/or treatment.	Part A—Physician or medical facility.
Part B—Attending Physician	Part B—By attending physician or medical facility as promptly as possible after initial examination.	Part B—Appropriate OWCP office.

■ Submit Form CA-2, fully completed by both the employee and supervisor, with all other pertinent information and documents to the Civilian Personnel Office within 10 working days following receipt of the form from the employee.

■ Advise the employee of the right to elect sick or annual leave, if disabled, pending adjudication of the claim by OWCP. If the claim is later approved by OWCP, the employee may elect compensation benefits for the loss of time and buy back his sick or annual leave.

Reporting traumatic injuries and illnesses (CA-1 and CA-2)

The following procedures apply to both CA-1 and CA-2:

■ Encourage use of military medical facilities.

■ Brief management on injury/illness as soon as possible after incident.

■ Notify the occupational health staff when an employee incurs an injury/illness during the nonduty hours of the Occupational Health Clinic.

■ Notify the occupational health staff when an employee sustains an injury or becomes ill and immediate transport to an emergency service is necessary.

■ Coordinate with the occupational health staff to arrange transportation for employees who prefer treatment at a private physician's office or a hospital when necessary.

■ Demonstrate concern for employee; for example, phone or visit within 3 days and every 2 weeks thereafter.

■ Ensure statements on compensation forms are properly investigated, fully documented, accurately reported, and denied/controverted where appropriate.

■ Identify individuals who have demonstrated histories of misuse or abuse of the Workers' Compensation Program and promptly report suspected fraudulent claims to CPO.

Continuation of pay

■ Continuation of pay (COP) assures no break in an injured employee's regular pay with no charge to sick or annual leave. The COP is available only in cases of traumatic injury

and only for a maximum of 45 calendar days.

■ To qualify for COP, the injured employee must file a written notice of injury on Form CA-1: Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation within 30 days of the date of injury and provide medical information showing all dates of disability caused by the injury.

The Occupational Safety and Health Act (OSHA)

The Occupational Safety and Health Act of 1970 applies to all civilian employees and to all working conditions and workplaces except those involving uniquely military equipment, systems, and operations. As a supervisor, you must use OSHA standards as your workplace safety guidelines or follow Army regulations that are more stringent than OSHA standards.

OSHA inspectors have the right of entry to Army workplaces to evaluate compliance with safety standards. They are not required to give you prior notice. Department of Labor OSHA inspectors are required to check in with management before inspecting a facility or operation.

Employees have certain rights granted by OSHA. You must protect your employees' right to—

■ Be represented during OSHA inspections of Army activities.

■ Make complaints orally or in writing during an OSHA inspection.

■ Know of all violations in work areas including overexposures to toxic or harmful materials.

■ Report unsafe or unhealthful conditions to the agency and appeal the disposition of such cases to OSHA through command channels.

■ Comment on proposed local standards.

■ Have access to standards, safety and health statistics, and agency safety and health procedures and findings.

■ Request representation on a safety and health committee.

■ Be protected against discrimination for exercising OSHA rights.

As a supervisor, you have other OSHA-related responsibilities. You must—

■ Minimize employees' need to complain directly to OSHA by being responsive and prompt to investigate complaints.

■ Execute supervisory and personal safety responsibilities inherent in your job.

■ Assure compliance with mandatory OSHA procedures.

Your installation safety office will—

■ Provide you with technical guidance and expertise.

■ Develop and coordinate the necessary management actions and programs to meet OSHA requirements.

■ Integrate OSHA requirements into the overall safety program.

References

Regulations

- AR 385-10: Army Safety Program
- AR 385-40: Accident Reporting and Records
- AR 735-11: Accounting for Lost, Damaged or Destroyed Property

DA Pamphlets

- DA Pam 385-1: Unit Safety Management
- DA Pam 385-3: Protective Clothing and Equipment
- DA Pam 690-31: Supervisor Training Course
- DA Pam 5-2: Improvement Tools for Soldier Managers

Occupational Safety and Health Act (OSHA)

- 29 CFR 1910: Code of Federal Regulations, Occupational Safety & Health Standards.
- 29 CFR 1960: Code of Federal Regulations, Basic Program Elements for Federal Employee Occupational Safety & Health Programs and Related Matters.
- Public Law 91-596: Occupational Safety & Health Act of 1970.

National Safety Council

- Accident Prevention Manual for Industrial Operations.
- Supervisors Safety Manual.
- Supervisors Guide to Human Relations.

Federal Personnel Manual

- Chapter 810, Injury Compensation, October 2, 1986

U.S. Army Safety Center

- Army Installation Key Action Packet, Jun 91.
- Forklift Package, Sep 91.
- Army Back Complaint (ABC) Packet, Oct 88.
- Other Safety Communication Products, ATTN: CSSC-M (Distribution), Fort Rucker, AL 36362-5363

☆ U. S. Government Printing Office: 1993 - 733-268 (61349)