

OS-SOFTWARE

## MACHINERY & TOOLS

# Machinist Shop Safety

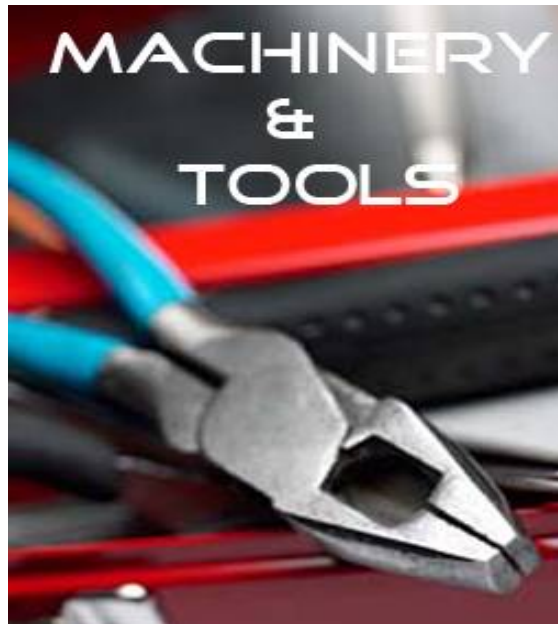


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**\*\*\* IMPORTANT NOTICE \*\*\***

**THE PASSING SCORE FOR ALL ACCP MATERIAL IS NOW 70%.**  
**PLEASE DISREGARD ALL REFERENCES TO THE 75% REQUIREMENT.**

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## INTRODUCTION

In the maintenance shop, as well as Army-wide, the objective of a safety program is to prevent accidents. Such accident prevention can be achieved by identifying and eliminating hazards. We can guard against or control hazards that cannot be eliminated, and establish safe practices consistent with military operations. Most important, we can train Army personnel to perform safely.

Safety must be considered in relation to the Army's mission-- success in combat. A good soldier is instilled with a vital sense of daring and boldness. This sense is based on his confidence in the reliability of his equipment and the soundness of the decision that must be implemented. Boldness and daring do not include the taking of needless risks. Needless risks often result in needless accidents. These accidents tend to weaken the soldier's confidence and the Army's combat potential.

Army personnel at all echelons must carry out their responsibilities for implementing the Army Safety Program. This will contribute greatly to the combat effectiveness of the Army.

At the end of this subcourse, you should know how to develop a successful shop safety program. Also, you will learn how to instill a safety awareness into the personnel that you supervise.

When used in this publication "he," "him," "his," and "men" represent both the masculine and feminine genders, unless otherwise stated.

LESSON 1

SHOP SAFETY RULES AND PROCEDURES;  
DEVELOPING A SHOP SAFETY PROGRAM

TASK

Describe shop safety rules to include: identification of potential safety hazards and the development of rules and procedures for a successful shop safety program.

CONDITIONS

The student will complete the subcourse and examination in a self-study environment, given the subcourse booklet. After successful completion of the examination, the student should be able to perform the learning event given FM 9-24, TM 9-243, and DA Pam 385-1.

STANDARD

Demonstrate your comprehension of the task by correctly answering 75% of the questions on the examination.

REFERENCES

AR 385-10  
AR 385-16  
AR 385-30  
DA Pam 385-1  
FM 9-24  
TM 9-243

GENERAL

The tank turret repairman must always be safety conscious while working in the shop or around equipment. The object of Learning Event 1 is to help soldiers identify general shop safety considerations and recognize safety hazards in

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the shop area. This learning event will also make you aware that accident prevention can be achieved by identifying and eliminating hazardous procedures, operations, or conditions. You will learn to establish safe practices consistent with military operations, and to motivate and train Army personnel to perform safely.

When you finish this learning event, you should be ready for Learning Event 2. There you will learn how to develop the rules and procedures necessary to establish a successful shop safety program. First, however, let's discuss some basic machine shop safety precautions.

### Learning Event 1:

#### DESCRIBE GENERAL SHOP SAFETY RULES AND POTENTIAL SAFETY HAZARDS

#### SAFETY PRECAUTIONS

The tank turret repairman may be called upon to work with machine shop equipment or to work near machinery. He should be familiar with safety precautions necessary to prevent him from injuring himself or others.

#### General Precautions

The use of the following general safety precautions is recommended to guard all workers against avoidable injury:

- Gears, pulleys, belts, and other moving parts should have a guard plate to prevent injury to personnel. The guards should be removed only for repairing or adjusting the machine, and should be replaced before operating it.
- Safety setscrews should be used in collars on all revolving or moving parts of machine tools and equipment.
- Do not work without proper light.
- It is extremely dangerous to attempt to operate any machine or power tool until you are properly trained in its use by a qualified person. Ignorance causes as many accidents in the shop as carelessness.
- Wearing loose or torn clothing, particularly loose or torn sleeves, a necktie, or a flapping belt end is dangerous. It can easily catch in moving parts and draw in and cut the fingers, the hand, the arm, or other parts of the body. Never wear gloves when operating a machine, except when absolutely necessary.



- Do not start a machine while it is being adjusted or repaired.
- Do not lubricate a machine while it is in motion. Injury to the operator and/or damage to the machine may result from this practice.
- Removing metal chips while the machine is running is dangerous. Stop the machine before removing chips from the work area.
- Eye protection should be worn during any machine operation to protect the eyes from flying chips or particles.

#### Safety Precautions for Drilling Machines

The following safety precautions are recommended for drilling machine operators:

- Do not attempt to adjust the piece of metal that you are drilling while the drilling machine is running.
- Never clean chips away from the workpiece with your hand, a rag, or a piece of waste material. Always use a brush to remove chips.
- Do not support the workpiece with your hands. If the revolving drill should snag while drilling, the workpiece could wrench out of your grip. This could cause injury to you and damage the workpiece or the drill.
- As with all machine tools that have revolving cutting tools, loose clothing is a potential hazard. It can catch on the revolving tool and draw the operator into the moving parts of the machine.

#### Safety Precautions for Grinding Machines

Most accidents resulting from grinding machine operation are eye injuries caused by flying particles. Eyeshields should be attached to the grinding machine to reduce flying particles. Goggles should be worn by the operator for all grinding machine operations. The following additional precautions should be taken:

- Never use a cracked grinding wheel. Before using the wheel, tap it lightly with a mallet or suitable object. A ringing sound indicates the wheel is satisfactory. A dull sound indicates the wheel is cracked and should be discarded.





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- Grinding machines should be used with exhaust air systems to prevent inhalation of harmful dust by the operator.
- Never operate grinding abrasive wheels at speeds in excess of those recommended by the manufacturer. Too high a speed may cause the grinding wheel to burst into flying pieces. When starting grinders, always stand off to one side until the wheel has come up to full speed before using.
- Be careful to keep the hands away from the revolving grinding wheel. Contact with the abrasive wheel will cause serious injury.

### Safety Precautions for Lathes

Lathe operation accidents are commonly caused by loose clothing snagging on the revolving workpiece, the chuck, or the lathe dog. Eye and skin injuries can also result from flying chips when turning cast iron or nonferrous metals. Care should also be taken to prevent contact of the hand or arm with the lathe dog, chuck, or the workpiece. In addition, the following precautions should be taken:

- If a coolant or cutting oil is used, take care to prevent the liquid from splashing on the floor when adjusting the splash pans. The cutting oil or coolant can make the floor beneath the lathe very slippery. This may cause the operator or passer-by to lose his balance and suffer injury.
- Do not try to stop the machine with your hands or body.
- Always see that work and cutting tools clear each other, and that they are securely clamped before starting the machine.
- Always remove centers and cutting tools when not being used.

### Safety Precautions for Milling Machines

Although accidents resulting from milling machine operation are few in number, they are usually severe. The following precautions should be observed:

- The greatest hazard of milling machine operations is contact with the revolving milling cutter. Loose or torn clothing should not be worn when operating the milling



machine. Chips should be removed from the workpiece with a brush, never with a rag or the hand.

- Flying chips are dangerous. Wear goggles or a face shield to prevent eye or face injuries.
- Do not attempt to use machine power to tighten arbor nuts.
- Never adjust the workpiece or the work mounting devices when the machine is operating.
- When using a cutting oil, prevent splashing by the use of appropriate splash pans. Cutting oil on the floor can cause a slippery condition that could result in injury to the operator.

#### Safety Precautions for Shapers and Planers

Shaper and planer accidents, like milling machine accidents, are usually severe, although not frequent. Observe the following precautions:

- Flying chips are common with shaper operations. Necessary precautions should be taken to prevent eye damage by wearing goggles.
- Accidents with the planer are usually caused by the operator getting in the way of the moving table or the ram arm. This may cause him to be caught between the table and the frame of the planer. Similar accidents are caused by being struck by the ram of the shaper when it is improperly adjusted. The operator should make sure that the area around the shaper or planer is clear of personnel before starting the machine.
- Never attempt any adjustments to the planer table stop dogs, the workpiece, or the cutting tool when the machine is in operation.
- Be sure the cutting tool is tight and mounted securely before operation.
- Keep your hands away from the worktable of the shaper while the shaper is cutting.
- Make sure the workpiece is mounted securely before starting any operation.
- Manually operate the machine through one complete cycle to check all clearances.



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### Safety Precautions for Sawing Machines

Observe the following precautions when operating a sawing machine:

- Keep your hands away from the saw blade of the hacksawing or bandsawing machine when in operation.
- Do not use your hands for pushing metal workpieces into the blade of the bandsawing machine. Keep the fingers well clear of the saw blade at all times.
- When removing and installing bandsaw blades, handle the blades carefully. A large, springy blade can be dangerous if the operator does not exercise caution.

### Safety Precautions with Portable Power Tools

All portable electric tools should be equipped with 3-conductor flexible cords. The third conductor is an electrical ground attached to the chassis of the tool. This must be grounded to a suitable ground source when the plug is connected to the power source. Failure to connect this ground may result in a severe shock to the operator. This will happen if the electrical insulation within the electric motor or portable tool housing should become damaged. Observe the following additional precautions:

- Never operate any power tool unless you are completely familiar with its operation.
- Make sure there is plenty of light in the work area. Never work with power tools in dark areas where you cannot see clearly.
- Before connecting a power tool to a power source, be sure the tool switch is in the OFF position.
- When operating a power tool, give it your full and undivided attention.
- Never try to clear a jammed power tool until it has been disconnected from the power source.
- Do not allow power cords to come in contact with sharp objects, chemicals, or hot surfaces. Never use a power tool that has a damaged cord.
- See that all cables and cords are positioned carefully so they do not become a tripping hazard.



- Never use a power tool around water or stand on wet ground when using a power tool.

#### Safety Precautions Using Jacks

Be aware of the capabilities of the jack, especially its load capacity. Overloading can be hazardous to the jack, the operating personnel, and the load that is being lifted. Observe the following additional precautions:

- Keep fingers away from all moving parts.
- Never get under a load that is only supported by a jack. Any jack is subject to failure and personal injury, or death could result.
- When jacking up vehicles, make certain that no one is under the vehicle being raised.
- Make certain that hydraulic jacks are filled with oil and have no visible oil leaks.

#### SAFETY COLOR CODE MARKINGS

Using the proper paint color and symbols to mark hazards in the workplace is required throughout the Department of the Army. We will now discuss some color combinations that have been effective in preventing accidents and improving production, visual awareness, and housekeeping. We will also discuss some hazards that must be uniformly marked throughout the Army.

#### Use of Paint

Paint specifications for marking hazards and making safety signs are listed in AR 385-30. Use high-visibility (fluorescent) paint in the appropriate color when instant recognition is essential. Use luminous (phosphorescent) paint to mark the location of dangerous areas, exits, or emergency equipment in darkened areas. To save money, it is acceptable to use materials other than paint, such as decals and tapes, in the appropriate colors.

#### Red Markings

Use red as the basic color for identifying:





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Fire Detection and Fire Suppression Equipment. This includes:

- o Fire alarm boxes (pull boxes).
- o Fire blanket boxes.
- o Fire extinguishing containers.
- o Fire extinguishers, unless local painting is unnecessary. For large areas; and when the extinguisher is not readily visible to the area occupants, use red on the housing wall or area above the extinguisher to show its location.
- o Fire hose locations.
- o Fire pumps.
- o Fire sirens.
- o Sprinkler piping.
- o Fire buckets.
- o Fire reporting telephone stations.
- o Fire exit signs.

Container of Flammable Liquid. Follow the instructions below:

Paint the following containers red with a yellow band around the can. An alternate method is to paint the can red with the name of the contents stenciled in yellow.

- o Safety cans.
- o Other portable containers of flammable liquids.

Danger. This includes:

- o Danger signs.
- o Fixed or flashing warning lights or reflective material on barricades or temporary obstructions.
- o Stop buttons and bars, such as the "emergency stop" button or bars on machinery.



## Yellow Markings

The following are examples of where solid yellow, yellow and black stripes, or yellow with black checkers may be used. Use the pattern that attracts the most attention in your particular environment, or the pattern called for in the local SOP.

Designating Caution. Examples of where to use yellow markings for caution include:

- Handrails, guardrails, bottom edge of overhead doors, and top and bottom treads of stairways.
- Fire hydrant barrels.
- Caution signs.
- Waste containers for combustible material. (List the contents, using black letters.)
- A hazardous area or a safe aisle in a hazardous area. Designate the area or aisle by marking lines 4-6 inches wide on the floor. Floor lines may be supplemented by caution signs.

Marking Physical Hazards. Examples of where to use yellow markings for physical hazards:

- Lower pulley blocks and cranes.
- Coverings and guards for belts, gears, and other moving parts.
- Pillars, posts, or columns that are physical hazards.
- Fixtures suspended from the ceiling or the walls that may present a hazard.
- Corner markers for storage piles.
- Exposed and unguarded edges of platforms and pits.
- Glass paneled doors.
- Obstructions and barricades.
- Static grounding points.



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### Green Markings

Use green as the basic color for designating safety equipment and operator devices, to include the location of first aid and first aid equipment (other than fire fighting equipment). The following are examples of where solid green, green and white stripes, green cross on a white background, or white cross on a green background will be used:

First Aid. Mark the location of:

- o First aid kit.
- o Stretchers.
- o Emergency showers and eyewash basins.

Other. Mark the location of:

- o Protective masks.
- o Safety starting buttons on machinery.
- o Safety instruction signs.

Machinery. Use green as the basic color for marking machinery such as lathes, presses, milling, and other shop machines. Highlight with yellow the moving parts, operating arms, levers, and so on.

### Black and White Markings

Use black and white as the basic colors for designating housekeeping and interior traffic markings. The following are examples of where solid white, solid black, single color striping, alternate stripes of black and white, or black and white checkers will be used:

Traffic. Examples include:

- o Location and width of aisles in nonhazardous areas.
- o Dead ends of aisles or passageways.
- o Directional signs.

Housekeeping. Examples include:

- o Locations for refuse cans.
- o Clear floor areas around first aid, fire fighting, and other emergency equipment.

Blue Markings

Use blue for the outside of switch boxes and electrical controls that are the starting point or power source for hazardous machinery.

Orange Markings

Use orange as the basic color to:

- o Designate dangerous parts of machines or energized equipment, including electrical conduits, which may cut, crush, shock, or injure.
- o Emphasize hazards in machinery if the enclosure around the gear, belt, or moving equipment is removed, exposing unguarded hazards.

#### ACCIDENT PREVENTION SIGNS

Accident prevention signs (see figure 1 on the next page) are used to indicate and define specific hazards that could lead to personal accidental injury or property damage. AR 385-30 contains specific details and specifications for these signs.

Categories of Accident Prevention Signs

These signs are placed in categories according to their purpose. The category and the required sign color are as follows:

Danger Signs. Red.

Caution Signs. Yellow.

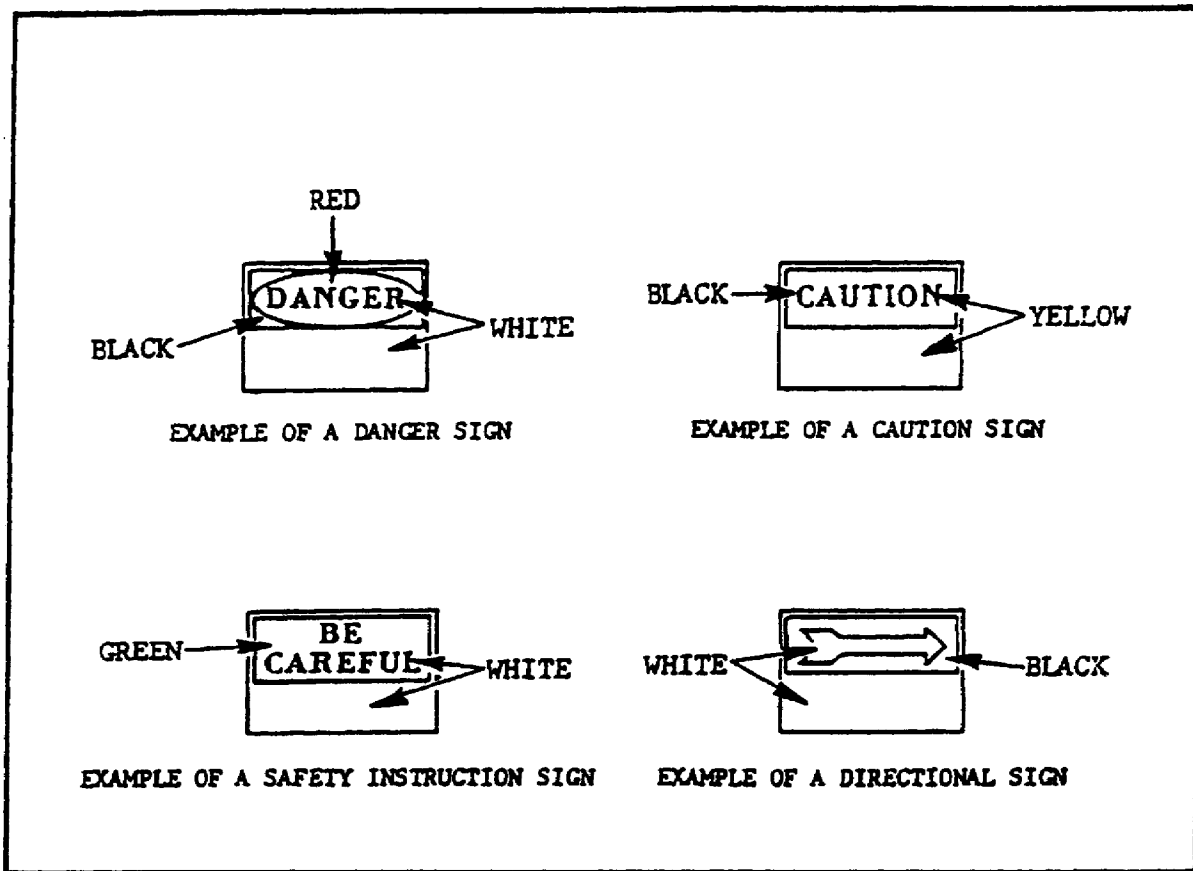
Safety Instruction Signs. Green.

Directional Signs. Black.





FIGURE 1. EXAMPLES OF ACCIDENT PREVENTION SIGNS.



Informational Signs. A variety of colors may be used, except for red, yellow, or magenta (purple).

#### Uses of Accident Prevention Signs

Danger Signs. Danger signs are used only when an immediate hazard exists. There will be no variations in the type or design of signs posted to warn of specific dangers. All personnel will be instructed that danger signs indicate immediate danger and that special precautions are necessary.

Caution Signs. Use caution signs only to warn against potential hazards or to caution against unsafe practices. All personnel will be instructed that a caution sign indicates a possible hazard against which proper precautions will be taken.

Safety Instruction Signs. Use safety instruction signs when there is a need for general instructions and suggestions relative to safety measures.



Directional Signs. Directional signs should be used in sufficient numbers to indicate the way to specified locations.

Informational Signs. Use informational signs when it is advisable to convey general information on a subject not necessarily of a safety nature.

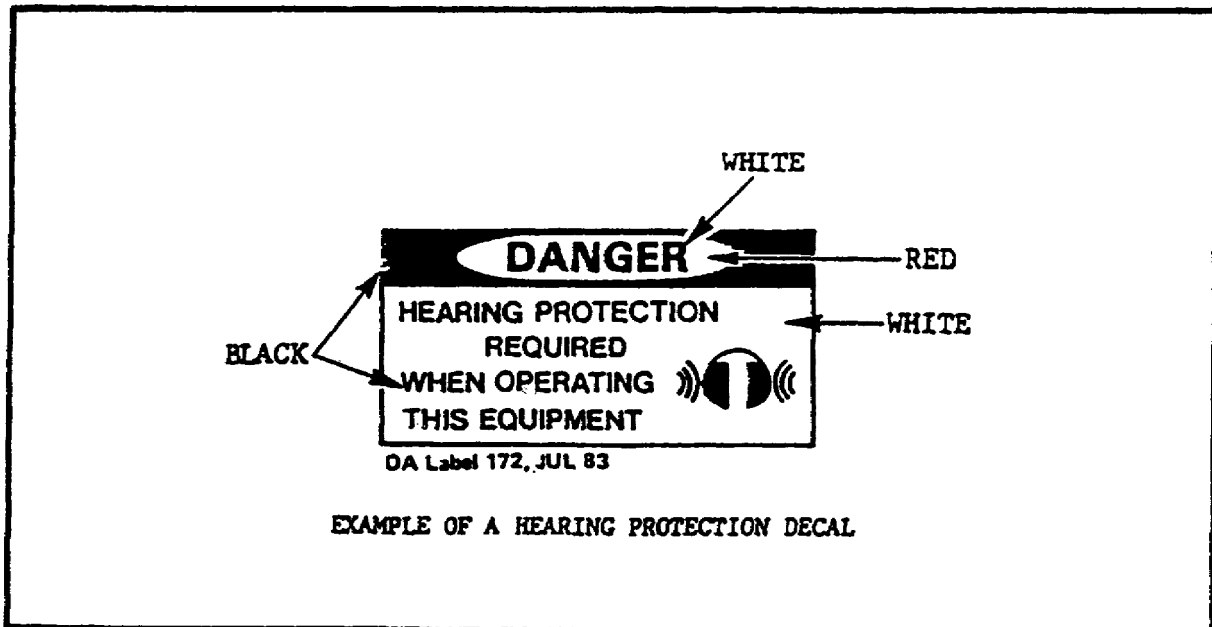
DA Label 172 (Danger-Hearing Protection Required)

Use the DA Label 172 hearing protection decals (figure 2) to warn personnel of noise hazards associated with selected small power equipment. Also, to direct that appropriate protective measures be taken.

#### ACCIDENT PREVENTION FUNDAMENTALS

We have discussed the safety precautions that you need to observe while working in the shop. Now, you may be saying to yourself, "That's not very difficult to understand; so why do so many accidents still happen?" So let's break down what actually causes an accident to happen.

FIGURE 2. EXAMPLE OF A HEARING PROTECTION DECAL.



#### Defining "Accident"

The first step in dealing with any problem is to define it. In its simplest form, "an accident is an unplanned event."

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For Army purposes, the following phrase is added: "that does damage to persons or property." It is important to note the distinction between the simple definition and the Army definition. Some accidents do not injure anyone or damage anything, but only causes a delay or interruption to the normal routine. These accidents usually do not have an impact on the mission. Therefore, for accident reporting purposes, the Army is concerned only with accidents that cause injury or damage. But we, as supervisors, must be concerned with these interruptions. They are a signal to us that a problem exists and should be corrected before they result in an accident.

### Accident Chain of Events

The chain of events leading to an accident can be visually represented by a domino sequence (figure 3, on the next page). If one domino in the row is pushed, the rest will fall in succession. But if the key domino (Unsafe Act or Condition) is removed, the "Accident" domino does not fall. In fact, if any one domino coming before the accident domino is removed, the accident does not occur. In the illustration, if the person had not been fatigued, the accident may not have happened. Why was this person performing this task while he was fatigued? Was he not trained to the fact that fatigue can cause accidents (lack of safety training) ? Did he just not care (poor attitude toward safety)? Was he ordered to do the job anyway (poor supervision)? These unknown causes (the domino with the question mark) are factors that good supervisors consider as they create their safety programs.

### Chance or Fate

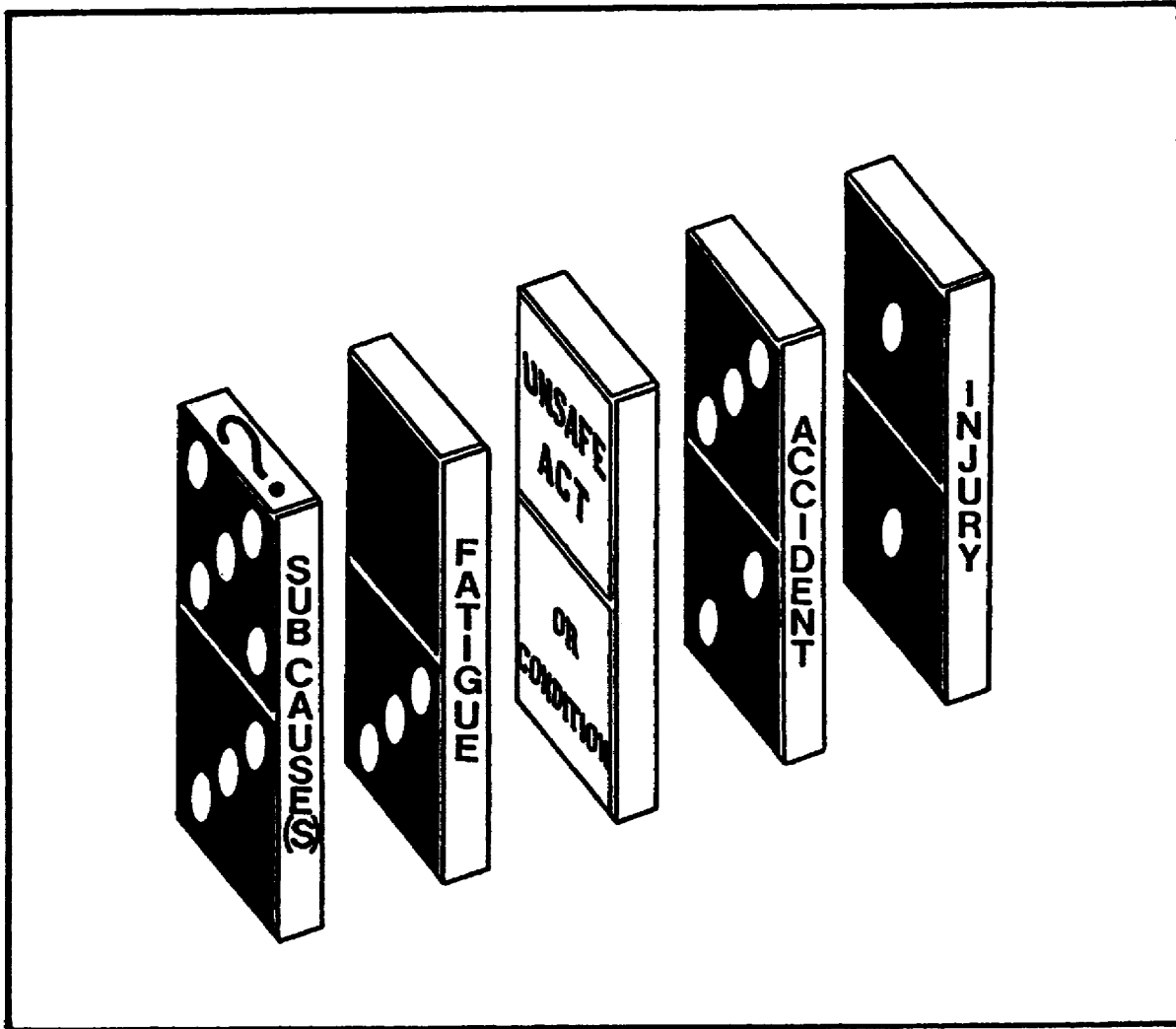
The domino theory points up one of the most important single concept relating to accident prevention. "most accidents do not occur by chance; they are caused by unsafe actions and conditions." How often have you heard the phrase, "well, I guess his number came up," or "chalk it up to bad luck?" Such superstitions have no place in accident prevention.

### Simple or Complex

A second important concept in accident prevention is that accidents are extremely complex. Usually, an accident has a combination of causes rather than a single cause. Therefore, it is important that each accident be thoroughly investigated to determine the underlying causes which must be corrected.



FIGURE 3. ACCIDENT CHAIN OF EVENTS.



#### CLASSIFYING ACCIDENT CAUSES

There are three basic elements in any accident: the individual injured, the agent (the object or person that caused the injury), and the environment. Any of these three elements, or a combination of them, can be primarily responsible for causing the accident.

#### The Individual Injured

The "individual injured" is almost always partially to blame when an accident occurs. Safety experts estimate that unsafe behavior accounts for 85 percent of all accidents. Even in the remaining 15 percent of the accidents, human error may be involved. Why, for example, does a stack of heavy cartons in the stock room topple over and crush a man's legs? The answer is because a human stacked the cartons improperly. In addition to being the primary cause

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of accidents, human behavior also is the most difficult to figure out or change.

### The Agent

The "agent" is the object, substance, or person immediately causing the injury. This could include a hammer, cleaning solution, spilt oil, or a person who caused an accident. Remember, determining the agent causing the injury or property damage in an accident is just the first step in accident investigation. To determine the true cause(s) of the accident, it must then be discovered why the agent was involved. Why was the hammer used improperly? Why was grease left on the floor?

### The Environment

"Environment" refers to the physical surroundings in which an accident occurs. Hazards or unsafe conditions in the environment are the easiest to detect and correct. Again, it is important to note that human behavior is often responsible for the existence of unsafe conditions. Why is the lighting in the work shop inadequate? Why is the shop too hot, causing fatigue? Human failures are the cause of these happenings.

## ACCIDENT PREVENTION TECHNIQUES

There are three time-proven methods which are effective in reducing accidents and keeping them to a minimum. These methods are commonly referred to as the "Three E's of Safety": Engineering, Education, and Enforcement.

### Engineering

This method can usually be the most rapidly accomplished. Safety engineering involves the use of qualified personnel. These personnel are familiar enough with a job, a piece of equipment, or an activity to make a decision concerning the safety factors involved.

### Principles of Engineering Safety

The five basic principles of engineering safety are:





(1) knowing the hazards, (2) finding the hazards, (3) eliminating the hazards that can be eliminated, (4) guarding against those hazards which cannot be eliminated, and (5) avoiding the creation of new hazards.

Knowing the Hazards. Knowing the hazard obviously requires the skill and experience of someone who has worked with a particular job, a piece of equipment, or activity. This person analyzes the specific job and determines the specific safety requirements.

Finding the Hazards. Finding the hazards in a given job, operation, or activity involves the use of supervisory personnel who have the skills and ability to detect the hazards. You would not expect to find a recruit training other recruits in the use of a firearm--you would expect to see a seasoned noncommissioned officer performing this function.

Elimination of Unnecessary Hazards. Elimination of unnecessary hazards does not imply that a particular job, operation, or activity must be avoided. Obviously, in the functions of the Army, there are many hazardous duties that must be performed. The objective is to reduce or remove the unnecessary hazards. This can be done by correcting, changing, or modifying a mechanical feature of the job, operation, or activity (such as treating the floor of the shop with a slip-proof compound). Also, emphasizing the human aspect by drawing attention to the hazards (for example, training supervisors that fatigue can lead to accidents in the shop).

Compensating for Hazards. Compensating for hazards which cannot be removed requires the teaching of correct procedures. It also involves making the individual aware of the hazards and ensuring that he has the necessary skills and ability to compensate for the hazards. The most important factor in compensating for hazards is that there are an adequate number of competent supervisors.

Avoiding the Creation of New Hazards. Avoiding the creation of unnecessary hazards requires constant supervision by competent personnel. These personnel must ensure that the job is performed in the most efficient way possible. The most efficient way is usually the safest way to do it. Periodic evaluation of jobs, operations, and activities is also essential to ensure that hazards "do not creep in."



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### Education and Training

Education and training are the means for developing safe behavior. As compared to engineering and enforcement, safety education is a long, slow procedure, and sometimes the results are hard to see. However it is the "E" which gives the best and the most long-lasting results.

Education Versus Training. Training is the process of developing the skills necessary to do a job, performing an operation, or engaging in an activity. Education is the process of teaching a man how to act in the performance of his job, operation, or activity. With this in mind, Army accidents can be classified into two types--operational and nonoperational:

- Operational accidents are those which occur in the performance of duty. Operational accidents can be rapidly reduced by additional training and close supervision.
- Nonoperational accidents are those that occur when a soldier is off duty. These accidents require education to teach a man to act safely when he is not under supervision, when he is "on his own."

Military personnel who have safety responsibilities should be more concerned with the educational aspects of the safety problem. There are three aspects of safety education and training:

- the development of positive safety attitudes;
- imparting the knowledge for safe performance; and
- the development of skill to the level necessary for safe performance.

Skill development is developed through training. Safe attitudes and safety knowledge is developed through education.

Safety Knowledge. Knowledge of rules and regulations is essential for safe performance. A high degree of skill in operating a motor vehicle is not sufficient for safe driving. The driver must also have knowledge of traffic regulations, stopping distances at various speeds, warning signals indicating defective brakes or tires, the effect of alcohol and fatigue on alertness and perception, and a long list of other factors. Having the appropriate knowledge also assists in the proper safety attitudes. Knowledge



leads to understanding and understanding leads to favorable attitudes.

Safety Attitudes. The area of attitudes is the least understood and the most difficult safety problem. An attitude may be simply defined as "the way a person feels about something." All the knowledge in the world does not ensure a favorable attitude. Certain needs must be fulfilled before favorable attitudes will develop. They are the need for:

- Belonging. A person who feels he is a participating member of the group will develop desirable attitudes toward the objectives of the group (in this case "safety").
- Security and trust. A person who feels secure and is trusted by the group will strive to reach group-determined objectives.
- Self-esteem. A person who feels that he is respected by the group will go along with group objectives.

A supervisor should try to meet these needs for all individuals under his Supervision. If he can, he is well on his way to establishing a high degree of morale, as well as safe performance on and off duty. A positive attitude toward safety will also lead to greater acceptance of the safety knowledge and skills provided in training.

#### Enforcement

Most accidents can be prevented through adequate safety engineering and education. However, there are some people who are hazards, to themselves and others, because of their failure to comply with accepted standards. For these persons, strict enforcement of safety practices, backed by prompt corrective action, is necessary. No accident prevention program can be successful without effective enforcement. Accidents are usually the direct result of violations of safety principles. Many supervisors are hesitant to reprimand a person just involved in an accident. Normally, the reprimand is not for having the accident; it is for violation of a safety order or procedure. These orders were made to prevent such an accident from happening.

#### MOTIVATION FOR SAFE PERFORMANCE

The basic problem in accident prevention is getting people to perform safely. A high degree of safety is incorporated



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into the designs of highways, bridges, automobiles, and all types of equipment. If only we could design safety into human beings! The closest we can come to this is getting people to want to be safe.

### Definition of Motivation

We are constantly bombarded with appeals to buy things-- clothing, cars, toothpaste. The manufacturers of these items are trying to motivate us to buy their products. Basically, motivation is simply the art of getting people to want to do things your way.

### Motives Versus Incentives

A motive is "the emotion or thing that makes us want to do something." How do we appeal to motives? We do this by providing appropriate incentives (e.g., praise, rewards, participation, security) to stimulate desirable motives among persons.

### Motivating for Safety

The distinction between needs and incentives is an extremely important one. We must recognize that many needs are common to everyone (i.e., food, drink, self-preservation). But each of us place a different value on many other needs, such as safety, respect from others, and creativity. Some individuals have little desire for recognition. Others spend most of their waking hours seeking such recognition. You, as a supervisor, must understand the nature of human needs. Then you can motivate the individual or group into thinking your way.

### Checking Safety Motivation

The supervisor should be constantly alert to indications that safety motivation remains high among his personnel. He can do this by checking the following factors. If these conditions are not met, he knows there is room for improvement in safety motivation. He must observe that:

- There is an increase in the desired learning (in this case, increased safety performance, as indicated by a reduction in accidents).
- Individual (or group) efforts toward safety are persistent.





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- The individual (or group) expresses interest and satisfaction in attempting to achieve the goal of improved safety performance.

You have now completed learning event 1. You should be able to identify safety hazards in the shop and be familiar with general shop safety considerations. You should know that accident prevention can only be achieved by identifying and eliminating hazardous procedures, operations, or conditions. We have also learned how to establish safe practices consistent with military operations, and how to train and motivate personnel to perform safely.

Now let's move on to learning event 2. Here you will learn about the Army Safety Program and other safety programs affecting the soldier. You will then be provided information on how to develop a safety and inspection program for your shop.

### Learning Event 2:

#### DEVELOP THE RULES AND PROCEDURES FOR A SUCCESSFUL SHOP SAFETY PROGRAM

#### THE ARMY SAFETY PROGRAM

We will briefly discuss the policies, procedures, and guidelines that are used for implementing the Army Safety Program. These include Occupational Safety and Health Administration (OSHA) and Department of Defense (DOD) safety policies and guidelines. This information is necessary for you to establish a successful shop inspection program. It will also assist you in developing necessary safety Standing Operating Procedures (SOP).

#### Safety Goals

The safety goals of the United States Army are to:

- Reduce accidental manpower and monetary losses to a minimum. This will provide more efficient use of resources and advance the combat effectiveness of the Army.
- Provide a safe and healthful environment at all times for all Army personnel and others exposed to Army operations.



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### Objectives

The above safety goals are achieved through the following safety program objectives.

Prevention of Injury and Occupational Illnesses. Prevention of injury and occupational illnesses reduces the frequency and severity of injuries and illnesses resulting from Army operations. This will improve employee morale and efficiency. It also reduces expenses caused by lost production, sick leave, and other related expenditures.

Damage Control. Damage control aims at detecting and eliminating the causes of preventable, unintended damage to property as a result of Army operations.

Accident Prevention. Accident prevention involves the use of special techniques to detect unsafe behavior and conditions and prevent accidents.

Compliance with Statutory and Regulatory Requirements. This uses the specialized experience of the safety staff. The staff ensure consistent, economical compliance with applicable safety requirements. These safety requirements may be of Federal statutes, Army regulations, host nation, and Status of Forces Agreements.

Liability Limitation. Liability limitation involves prompt action to reduce the likelihood of a liability claim (legal action) against the Army.

Occupational Health. Occupational health involves implementing AR 40-5 to ensure the physical and mental health of all personnel in cooperation with safety personnel.

### Policy

The policies below will be followed by safety managers at all levels in implementing the Army Safety Program. The policies listed are basically geared toward the commander; but it is necessary for you, as the shop supervisor, to understand the overall concept. It will help you to develop a working safety program for your area:



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- The safety program will fully support the Army mission while minimizing adverse impact on operations.
- Accident prevention is a command responsibility. Commanders must ensure compliance with the safety program. They must also establish any additional requirements necessary for the safety of personnel under their control.
- Safety requirements set by higher headquarters normally will not be waived without the approval of that headquarters. This does not prevent the commander from issuing temporary waivers in emergencies. All waivers must be subsequently reviewed by higher headquarters.
- Problem areas common to several commands will be reviewed centrally. This will ensure efficient accident prevention efforts throughout the Army, and reduce accidents in general. The Army Safety Management Information System (ASMIS) is designed to eliminate duplication of effort. Command safety data managers will coordinate studies and evaluations with commands having similar missions.
- Programs developed centrally should allow subordinate commanders sufficient flexibility to develop alternative approaches to meet their individual needs.
- Hazard analysis procedures (which will be discussed later) will be used to identify and control hazards during the planning stages. Commanders must emphasize the use of such early detection techniques. It is better to determine problem areas prior to the accident occurring than to wait until an accident has occurred.
- Available resources must be applied against hazards on a "worst first" basis. Evaluation of hazard priorities must include consideration of the potential consequences (degree of injury, occupational illness, or damage). Mission, legal, and regulatory implications of each hazardous situation must also be considered.

### HAZARD IDENTIFICATION

Let's now discuss the minimum hazard analysis procedures which were mentioned in the paragraph above. These are the minimum procedures for conducting inspections of operations and facilities.



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### Hazard Analysis Procedures

Commanders involved in developing Army materiel will comply with the system safety provisions of AR 385-16. Other commanders will determine which hazard analysis procedures meet their safety requirements. As a minimum, hazard analysis procedures will be the priority method used to detect accident threats. These threats are those that are likely to produce frequent or severe personnel injuries or high dollar losses. Threats that are likely to produce significant legal action or public discredit to the Army are also considered. Procedures for conducting a hazard analysis are outlined in AR 385-16.

### Inspections

The procedures outlined below, designated as Standard Army Safety and Occupational Health Inspections (SASOHI), are mandatory. These criteria will be followed on all installation level inspections. Additional procedures are also authorized, but the following are mandatory:

- All facilities will be inspected at least annually, using the SASOHI procedures. Facilities and operations involving special hazards will be inspected more frequently. These additional inspection requirements will be determined by the Safety and Occupational Health officer.
- All SASOHI will be conducted by a qualified civilian or military safety and health professional. Nonspecialist personnel may be used to inspect facilities judged by the Safety and Occupational Health official as entailing little risk.
- SASOHI may be conducted with or without prior notice. No notice inspections will be used when safety and health personnel determine that they will provide a more meaningful inspection.
- Installation commanders may deny the right of any person who may interfere with the inspection to accompany the inspectors.
- The inspector conducting the SASOHI will consult a sampling of personnel on matters affecting their safety and health. He will then offer them the opportunity to identify unsafe or unhealthy working conditions in the work area.
- When the inspector discovers a situation that poses an immediate danger, he will notify the immediate supervisor. The inspector will then provide technical advice to the





supervisor on the scene. The supervisor will then correct the condition or withdraw personnel from exposure. Imminent danger hazards that cannot be immediately corrected will be identified on DA Form 4754 (Violation Inventory Log).

- Written reports of violations resulting from SASOHI will be provided to the head of the activity or the commander of the unit inspected. These reports will cite hazards, safety management deficiencies, and recommended corrective action. DA Form 4753 (Notice No. . . of Unsafe or Unhealthful Working Conditions) may be used.
- Cases occur where the inspector finds a situation that may cause death, severe injury, or major property damage. DA Form 4753 will be initiated and posted at or near the area in violation.
- All safety deficiencies found during a SASOHI will be entered on DA Form 4754 (Violation Inventory Log). This log will be used to monitor compliance. It will show all violations in order of discovery. It will also show the date by which the deficiency must be corrected, and the date for the follow-up inspection.
- Procedures will be established to follow up on the correction of deficiencies identified during the SASOHI. If corrective action has not been accomplished, the inspector will notify the installation Occupational Safety and Health (OSH) officer. He will determine remedial action, to include notification of the installation commander, if appropriate.

All Safety and Occupational Health inspection procedures will conform to security regulations.

#### SAFETY TRAINING AND EDUCATION STANDARDS

The Department of the Army (DA) is tasked by OSHA and DOD to provide safety and occupational health training for all personnel. The following are the minimum requirements for implementing a training program at the shop level:

#### Nonsupervisory Personnel Training

This training includes job safety and health training appropriate to the work performed. This will include OSH criteria and hazards associated with any materials or operations in the workplace. It also includes informing employees of OSH complaint procedures and of their rights and obligations under AR 385-10.



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### Civilian Employee Training

Civilian employee training should include training to prepare them to assist in maintaining a safe and healthy workplace. This training should be given in addition to training given to other employees during normal work hours.

### Supervisor Training

Includes training in the recognition and elimination of hazards. It will also cover the development of other required skills to implement the Army's program at the working level.

### Army Sources for Safety Material

DA Pam 108-1 and DA Pam 108-2

Films and filmstrips suitable for use in safety training and information programs are listed in DA Pam 108-1 and DA Pam 108-2.

DA Pam 25-30

DA Pam 25-30 identifies such sources as Army regulations, special regulations, circulars, pamphlets, DA posters, Joint Chiefs of Staff publications, and general orders.

DA Pam 25-30 also identifies sources such as field manuals, Reserve Officer Training Corps manuals, training circulars, Army training programs, Army subject schedules, Army training tests, firing tables and trajectory charts, tables of organization and equipment, tables of distribution, and tables of allowances.

### SAFETY MANAGEMENT

The success of the Army Safety Program depends upon command support at all levels. Particular attention should be focused at the "grassroot" level--the unit command. Operations and activities under the unit must be examined on a constant and continuing basis. This is where you, as a shop supervisor, go to work. You must ensure the development, application, and maintenance of appropriate safe practices, and eliminate unnecessarily hazardous conditions. This can be accomplished through proper safety management.



## Objectives of Safety Management

Safety management consists of planning, organizing, directing, and controlling the accident prevention effort. The primary objective of safety management is to prevent accidents causing injury or property damage. This can be accomplished only by establishing and enforcing safe practices. This includes eliminating or controlling hazardous conditions, and educating and training personnel in the routine use of safe operating conditions.

## Safety Program Elements

Successful safety management results from effective use of the following eleven safety program elements.

Safety Administration consists of planning, budgeting, directing, evaluating, and re-evaluating the program.

Safety Training involves developing safety habits and skills among Army personnel. Such training must be integrated into every phase of Army operations and activities.

Safety Education involves teaching Army personnel the need to use the skills and habits they have developed through training.

Safety Promotion involves maintaining safety awareness. This is accomplished through the use of mass communications media. This can be in the form of group discussions, safety meetings, news releases, bulletin board notices, posters, and other methods.

Safety Engineering consists of eliminating physical hazards in the environment and guarding against those hazards which cannot be eliminated.

Safety Inspection involves evaluating Army structures, equipment, grounds, programs, and personnel performance. The purpose of these inspections will be to eliminate hazardous conditions and correct unsafe behavior.



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Safety Standards and Codes consist of the minimum specifications required to maintain safe equipment, procedures, and performance.

Accident Investigating and Reporting involves evaluating the conditions and actions surrounding an accident. It also involves recording the facts accurately and clearly to prevent the accident from happening again.

Accident Analysis involves appraising accident reports to determine trends in accident occurrence. Then, applying remedial measures to stop such trends.

Potential Hazard Analysis involves recording and evaluating "near miss" occurrences. These occurrences are those which, except for luck or unusual skill, could have been an accident. Such appraisals should lead to development of measures to prevent potential accidents.

Job Analysis puts the right job, the right machine, and the right person together into an accident-free work situation.

### THE SUPERVISOR AND SAFETY

In effect, anyone who has authority over another person is a supervisor. All supervisory personnel should assist the commander in the accident prevention program. The supervisor will ensure that all personnel follow the established safety program.

#### Safety Supervision

The qualities necessary for effective safety supervision are the same as for any other activity. Effective supervision is in a large measure associated with leadership. Leadership which enlists the cooperation and support of the group works best. The supervisor has the responsibility of demonstrating the importance of safety through his own actions. As a leader, he cannot ignore safety regulations himself and expect others to follow them.

It is extremely important that people understand safety rules and the necessity for them. Blind obedience is not enough. No supervisor can keep a close watch on all his men all of the time. If people understand why they are to do





something in a certain way, they are more likely to do their work in a safe fashion. They will continue to do it properly even though the supervisor is not looking over their shoulders.

A group that works with rather than for its supervisor is more effective in its performance. A supervisor has authority. If the soldiers under his authority are not sure of his fairness, they may compete with each other for the supervisor's favor. This can lead to hostility. Hostility will destroy the cooperation needed for effective (safe) group performance. It has been shown that accident rates are lower under supervisors whose leadership ability is superior.

Why do accidents happen?

Research has demonstrated that the following two factors are associated with accidents:

Unfamiliarity with the Task. The person is engaging in an activity in which he has little prior training or experience.

Isolation. The person is alone when he is performing the task.

Good supervision can prevent these circumstances from arising, and thus prevent accidents.

#### Basic Ingredients of Safety Supervision

To maintain safe performance among the men under his command, the supervisor must:

- Explain and stress safety rules and the reasons for those rules.
- Be able to safely perform the task himself, and adequately demonstrate its proper performance.
- Train the men in safe performance.
- Make available safe tools and equipment, and maintain them in safe condition.
- Properly place men in tasks that are within their abilities.



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- o Develop safe methods of performing the task.
- o Motivate his men to perform safely.
- o Promote teamwork among his men.

### Supervisory Responsibilities

All supervisory personnel assist the commander in the unit accident prevention program. They do this by requiring all personnel to follow safe operating procedures. The supervisor orients new personnel, teaches safe practices, and enforces rules and regulations. He investigates accidents, prepares and submits accident reports, and conducts safety inspections and safety meetings as required. No one is better qualified, or in a better position to discover and correct safety hazards and violations, than the supervisor. He is the one man who deals directly with both the worker and the job. He is in the best position: to improve the workers attitudes toward the job; to improve the worker's knowledge of the job; to improve the worker's skill; to insist on safe practices on the job; and to correct unsafe conditions involved in the job.

When the supervisor fails in any one of these responsibilities, he can expect inefficient and costly results. Supervision is a method of preventing accidents through continuous instruction, guidance, persuasion, and enforcement. Supervision is a basic accident prevention control. When supervision fails in this responsibility, constant observation and frequent enforcement become necessary.

### THE INDIVIDUAL AND SAFETY

The commanding officer, with the help of his supervisors, conducts a continuous effort to prevent accidents. Does this relieve the individual soldier of any responsibilities for safety? What is the role of the individual soldier in the accident prevention effort?

### Individual Responsibilities for Safety

Accident prevention is the responsibility of each soldier and civilian employee in the Army, both on and off duty. It is the responsibility of each individual to comply with rules, regulations, and standing operating procedures (SOP). They must correct or report unsafe conditions and report all accidents. They must use protective devices, and warn



others of a hazardous condition or practice. By developing an awareness 'for safety in every activity, on or off duty, the individual makes his greatest contribution to his unit's safety program.

#### SAFETY INSPECTIONS

The point to remember is that accidents do not just happen, they are caused by unsafe conditions or acts. Obviously, then, the best way to prevent accidents is to eliminate the unsafe conditions or unsafe acts. Safety inspecting is one way to do this. Safety inspections are a form of preventive maintenance.

#### Purpose of Safety Inspections

The purpose of the safety inspection is to eliminate accident causes through set procedures established to meet this purpose. A well-planned safety inspection will:

- o Detect specific unsafe conditions and practices.
- o Highlight the need for specific safeguards for men and machines.
- o Help to "sell" the safety program to personnel.
- o Encourage individuals to inspect their own work areas and work practices.
- o Allow safety personnel to come in closer contact with other unit personnel.
- o Detect deficiencies in the management of the safety program itself.

Remember, a safety inspection is designed to determine if everything is satisfactory. It is not conducted primarily to determine "how many things are wrong." It offers a golden opportunity for safety personnel to sell safety to the unit and should be conducted in an atmosphere of cooperation. The purpose of the inspection is to help unit personnel discover unsafe conditions and practices. They should not feel that they are being criticized.

#### Requirements of a Successful Safety Inspection

Specifically, safety inspections are concerned with conditions of the work area and equipment, personnel



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practices, and job procedures. To be successful, safety inspections require the following five elements:

- o Competent inspection personnel.
- O Definite schedules regarding what to inspect and how frequently.
- O Adequate orderly procedures (such as an inspection checklist).
- o Effective supervision.
- o Follow-up to ensure that conditions have been corrected.

### Safety Inspection Personnel

Safety inspections should be conducted by qualified personnel. This could be the unit safety officer, safety NCO, supervisors, or maintenance personnel. The installation safety director can assist in safety inspections. He may have his safety engineers or inspectors prepare checklists to assist you in performing your inspection. He may also have them conduct inspections to teach new personnel how it is done and what to look for during the inspection. The unit commander should participate in the safety inspection. His presence throughout the inspection is an indication of his interest in safety. The commander's participation in the inspection will also increase safety interest among the men.

Inspection Committees. Inspection committees should be formed to increase participation in the inspections. This will ensure that the inspections are thorough in their coverage. The committee should consist of experienced personnel representing each of the operations or activities to be inspected. These top quality individuals can assist in developing checklists to be used in inspecting specific areas and activities.

Training Safety Inspectors. The unit safety officer should be the most qualified individual to perform safety inspections. However, each operation and activity has its own peculiar aspects. It is unlikely that the unit safety officer would be familiar with all of them, nor should this be expected of him. Consequently, personnel competent in each operation should accompany him and assist with the inspecting. These personnel should be familiar with inspecting procedures and be qualified to inspect the area





he is assigned to inspect. The installation safety director can assist the safety officer in developing a brief, but adequate, training program for these persons. They should also be familiar with all publications that contain safety requirements for the operation and equipment that they are to assist in inspecting.

#### Types of Safety Inspections

The two basic types of safety inspections are:

One-call Inspection. The one-call inspection is made by a safety representative from a higher command. The purpose of this type of inspection is to evaluate the safety performance of the unit. It will also determine areas where improvement is needed, and present these facts to the unit commander.

Continuing Inspection. Each activity requires periodic safety inspections geared toward their specific function. The continuing inspection, which might be termed "quality control", is maintained to find safety problem areas. This type of inspection is used to discover conditions, procedures, and practices that might cause accidents if allowed to exist. This is the inspection that you, as the shop supervisor, should regularly schedule and conduct.

#### Inspection Scheduling

Inspections should be planned to make the most effective use of safety personnel and time. Consideration must be given to inspecting an activity so that normal operations will be disrupted as little as possible. Safety inspection schedules should not be announced; this allows the inspectors to observe operations under normal conditions. Advanced warning of an inspection allows personnel to "police the area" for an inspection.

#### Safety Inspection Checklists

A suitable checklist should be used as an inspection guide for each activity. DA Pam 385-1 contains some suggested safety inspection checklists. These can be reproduced locally and should be used, together with other appropriate references and safety material, during the inspection. Other safety inspection checklist considerations will be mentioned later in this subcourse.



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### Safety Inspection Records

During Inspections. Unsafe conditions and practices revealed by the inspection should be recorded on the checklist form. The form should contain useful information, such as the date, time, type of inspection, and names of the inspectors. It should also contain a detailed account of items that failed the inspection and recommendations for correcting these deficiencies.

Maintenance of Inspection Records. Each unit should maintain a master file comprised of reports of all inspections. These inspection reports should be maintained for an indefinite period of time. Each operation and activity should also have copies of the reports of all inspections conducted in their activity. Recommendations based upon the inspections should be followed up until the conditions have been corrected.

### Inspection Considerations for a Tank Turret Maintenance Shop

This checklist can be used as a guide in establishing your shop safety SOPs and in developing an indicator checklist for your shop safety inspections. Remember, this is only a guide. It should be changed to meet the safety needs of your particular shop and operations.

Maintenance Area. The following items should be considered:

- Are high flashpoint solvents being used in cleaning and testing as prescribed in regulations?
- Are lock assemblies checked on maintenance stands? Are they free of grease and oil?
- Are maintenance personnel cautioned regarding wearing loose clothing, dog tags, and various items of jewelry around equipment and machinery?
- Is good housekeeping maintained?
- Do maintenance personnel operate equipment controls before ensuring that all personnel are clear of moving parts?
- Do maintenance personnel engage in horseplay?
- Are makeshift workstands or scaffolding used?



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- Are jacks inspected regularly for defects, safety locks, and hydraulic fluids.
- Are hoisting devices in good repair? Are load limits indicated on the device?
- Are drip pans used to catch oil from engines? Is spilled oil promptly cleaned up?
- Is electric equipment properly grounded?
- Are fire extinguishers readily available for immediate use?
- Is adequate ventilation provided to prevent a build up of harmful gases?
- Are tool kits periodically inspected and defective tools replaced?
- Are extension cords checked periodically for deterioration due to contact with oil or grease?
- Are personnel prohibited from stretching extension cords along the floor?
- Are shop entrances and exits clearly identified?
- Are the safe load limits for cranes and derricks in both maximum and minimum positions clearly indicated?
- Are crane and derricks equipped with braking devices, capable of stopping at least one and one-half times the rated load?
- Are cables or wire ropes inspected for broken strands, corrosion, and other defects?

Machine Shop. The following is suggested:

- Are machines shut down before maintenance is performed?
- Are oily rags, waste, and other grease soaked materials disposed of in metal containers with self-closing lids? Are these cans emptied daily?
- Are personnel cautioned about wearing loose clothing, long sleeves, gloves, etc., while working on moving machinery?



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- Is eye protection worn where flying particles of metal are produced?
- Are lathes allowed to come to a stop of their own accord? Is hand pressure prohibited for stopping a spinning chuck?
- Is setting of tools prohibited while a lathe is in motion?
- Are clamps and bolts checked to ensure that they are low enough to pass under the arbor and cutter of the milling machine?
- Is it ascertained that the ram of the shaper has adequate clearance before starting the machine?
- Is eye protection worn when operating a shaper or grinder?
- Are grinding wheels thoroughly inspected for defects before use?
- Does the operator of a grinder stand to one side to avoid injury if the wheel fractures when the grinder is first started?
- Is the tool rest on the grinder properly adjusted? Are personnel prohibited from grinding extremely thin stock?
- Is grinding on the side of the wheel prohibited?
- Are machines properly grounded to a low resistance ground?
- Is scrap metal promptly cleaned up and disposed of?
- Is the illumination of the machine shop adequate?
- Are machines so located as to provide operators with sufficient space to handle materials and perform the job?
- Are machine controls clearly identified by appropriate color coding?
- Are machine controls located conveniently accessible to the operator?

General Supply Storage. The following suggestions are made:

- Is the arrangement orderly and neat?





- Are warehousing principles being followed as to aisleways, clearing space, and boundary lines?
- Are adequate safety precautions known and adhered to?
- Are enamel, lacquer, paint, and POL products stored in a well-ventilated structure, and separated from other storage areas?
- Are stacks of material piled neatly and securely?
- Is the clearance between electric light fixtures and stacked materials at least 18 inches?
- Is smoking permitted in other than designated smoking areas?
- Are flammable liquids and grease stored in a "No Smoking" area and at least 50 feet from other stored material?
- Is material stored so as not to interfere with sprinkler heads, fireline valves, firehoses, fire extinguishers, fire exits, and fire doors?
- Are large, bulky, or heavy materials stored near doors to minimize handling and facilitate movement?
- Are precautions taken to ensure that gasoline-powered lift trucks are not refueled inside storage buildings or when the motor is running?
- Are frequent checks made of storage areas of hazardous supplies to ensure safety?

#### CONCLUSION

This subcourse has provided you with the basic information concerning the Army Safety Program and general shop safety procedures. This knowledge should assist the shop supervisor in implementing a successful shop safety program.

You have learned how to prevent injury, loss of life, and damage to property resulting from accidents. Such accident prevention can be achieved by identifying and eliminating hazardous procedures, operations, and conditions. You must also learn how to train personnel to perform safely.

Repetitious drill will "train" a soldier to repair a tank properly, but he must be "educated" to repair it safely. High quality research and development have produced



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equipment designed to operate efficiently and safely. Effective supervision will ensure that it is properly used and maintained. Adequate education and training of all personnel will result in safe performance in its use.

Now you should be ready to take the practice exercise on the next page. If you have problems with any of the answers, review the text and repeat the exercise.



PRACTICE EXERCISE

INSTRUCTIONS

This practice exercise will show you how much you have learned in this lesson. Answer each question. When you are done, turn the page to check your answers.

SITUATION

You are the supervisor of the Tank Turret Branch of a Maintenance Company. You have been tasked by your unit safety officer to analyze the safety potentials of the tank turret repair shop and prepare a Standing Operating Procedure (SOP) for the shop. You pull out the references and prepare to start your research.

1. You notice that there are three basic elements in classifying accident causes. They are the \_\_\_\_\_, the \_\_\_\_\_, and the \_\_\_\_\_.

2. Of the "Three E's of Safety," which one gives the best and most long-lasting results?

- A. Engineering
- B. Education
- C. Enforcement
- D. Eliminate

3. Who is responsible for checking safety motivation throughout the shop area?

- A. Supervisor
- B. Company Commander
- C. First Sergeant
- D. Safety Officer



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4. Hazard analysis procedures are to be followed as a priority in the unit, including all safety potentials, using \_\_\_\_\_.

- A. AR 385-10
- B. AR 385-16
- C. AR 385-30
- D. DA Pam 385-1

5. What DA pamphlet(s) would you use to find films and filmstrips for safety training?

- A. DA Pam 108-1
- B. DA Pam 108-2
- C. DA Pam 310-1
- D. DA Pam 310-2

6. The primary objective of safety management is \_\_\_\_\_.

7. To have a good successful safety management program there is a minimum of safety program elements. How many are there?

- A. 3
- B. 6
- C. 9
- D. 11

8. What is one of the roles of the individual soldier in the accident prevention effort?

- A. Orient new personnel
- B. Conduct safety inspections
- C. Investigate accident reports
- D. Correct or report unsafe conditions

9. A group consisting of personnel representing each of the operations or activities to be inspected is called an inspection \_\_\_\_\_.

10. The two basic types of safety inspections are the \_\_\_\_\_ inspection and the \_\_\_\_\_ inspection.



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PRACTICE EXERCISE - ANSWERS

1. The individual injured, the agent, and the environment. (page 15, para 1)
2. B. Education (page 18, para 1)
3. A. the supervisor (page 20, para 5)
4. B. AR 385-16 (page 24, para 1)
5. A. and B. are correct; DA Pam 108-1 and DA Pam 108-2 (page 26, para 3)
6. to prevent accidents that cause injury or property damage (page 27, para 1)
7. D, eleven (page 27, para 2)
8. D, correct or report unsafe conditions (page 30, para 7)
9. committee (page 32, para 8)
10. one-call inspection and the continuing inspection (page 33, paras 3 and 4)

If you had a hard time getting the right answers, go back and review the lesson. If you did well on this practice exercise, you should be ready to take the exam.

