



American Fire Sprinkler Association Contractor's Toolbox Talks



CNA CONSTRUCTION



Table of Contents

Month	Title
	How To Give A Tool Box Talk/Sign-in Sheet
Jan-01	Back Injuries in Construction
Jan-02	Musculob-Skeletal Fatigue
Jan-03	Asbestos Impact-Building Owners
Jan-04	Electrical Safety
Jan-05	Housekeeping
Feb-01	Goggles and Gloves
Feb-02	Courtesy and Safe Driving
Feb-03	Asbestos Impact-Repair/Maintenance Contractors
Feb-04	Stretching for Workplace Postures
Mar-01	MSDS
Mar-02	Slips, trips, falls
Mar-03	Asbestos - OSHA Standards
Mar-04	Floor and Wall Openings
Apr-01	Water Damage Prevention - Top 3 Causes
Apr-02	Stretching and Exercising
Apr-03	Choosing Safer Hand Tools
Apr-04	Seat Belts - Three Collisions
Apr-05	Drive Defensively
May-01	Accident Investigation
May-02	Jobsite Foreman Responsibilities
May-03	Frequently Asked Questions About Ergonomics
May-03	Healthy Backs in Mechanical Trades
Jun-01	Safe Use of Hand Tools
Jun-02	Back to Basics
Jun-03	Proper Ladder Setup
Jun-04	Seat Belts

Month	Title
	How To Give A Tool Box Talk/Sign-in Sheet
Jul-01	Back Injuries
Jul-02	Floor Openings - Cover/Protect
Jul-03	Don't Give Fire a Chance
Jul-04	Water Damage Prevention - Gen Reminders
Jul-05	Internal Theft Prevention
Aug-01	Training for Back Injury Prevention
Aug-02	Roads and Weather
Aug-03	Water Damage Prevention - Misc. Precautions
Aug-04	Asbestos Impact - Custodial Work
Sep-01	Aerial Lift Mounting/Dismounting
Sep-02	Back Injury Prevention in Construction
Sep-03	Protect Yourself with PPE
Sep-04	The Right of Way
Oct-01	Fire Extinguishers
Oct-02	Contractor Eq. Guidelines - Better Security
Oct-03	Aerial Platform Safety
Oct-04	Material Handling on Construction Sites
Oct-05	Ground Fault Circuit Interrupters (GFCIs)
Nov-01	Lockout/Tag Out
Nov-02	Backing Problems
Nov-03	Aerial Lift Inspection
Nov-04	Fall Protection Applies
Dec-01	Lifts and Loads
Dec-02	Hard Hats
Dec-03	Improving Security on Construction Sites
Dec-04	Crime Proof Your Jobsite - Audit

These toolbox talks were put together especially for the fire sprinkler contractor. Their purpose is to assist sprinkler contractors in their efforts in preventing and controlling losses through continuous safety training. The topics address the exposures sprinkler contractors face on a daily basis and proportionately reflect the loss trends from CNA Commercial Insurance's book of sprinkler contractors for the period 1/97 – 12/00.

This is another jointly developed safety product by the AFSA Safety Committee and the CNA Commercial Insurance Claim, Risk Control and Underwriting Staff. This group is largely composed of seasoned contractors with extensive experience in preventing and controlling losses.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



How To Give A Tool Box Talk

Communication is one of the best ways to prevent accidents. And one of the best ways of communicating the importance of safety on a construction job is through toolbox talks. You don't have to be a professional speaker to give a good toolbox talk. But there are ways you can make your talks more effective. Let's take a look at them.

The Agenda

Know your topic and plan your agenda a few days before the meeting so you're well prepared. (Be able to present the talk without reading it and lead a discussion afterward.) Wherever possible use actual equipment to illustrate your points. Coordinate hand-out literature or other material you intend to use at the meeting.

Limit the length of your presentation. Given your operation, you would be the best judge of how much time to set aside. Generally speaking, a half-hour is adequate. Allow for questions and answers afterwards—about 15 minutes.

Use visual examples. There's something to be said for seeing is believing. If you're talking about ladders, have one handy so that you can point out such things as loose rungs or split siderails. If you plan to talk about the danger of using patched up hand tools, show a few samples. Consider a chisel with a mushroomed head; a hammer with a taped handle.

Do a wrap-up. Reinforce the important points brought out during the meeting. Thank your staff for their interest and enthusiasm.

The Format

Start the meeting out on a positive note. After welcoming your staff, promote team work and how toolbox meetings not only provide valuable information but give everyone the opportunity to get together and exchange ideas. Be sure to compliment a job well done. Morale plays a bigger part than people think in affecting productivity and job satisfaction.

Keep it informal. Even though you may be using this resource as well as others, use your own words in making the actual presentation. For effective and rewarding results, do what's comfortable for you.

Invite people to participate. The purpose of any toolbox talk is to get people to think about safety problems. Make the

talk a hands-on session. Have your people name hazards and what to do about them. Encourage them to offer suggestions to improve safety. When asking questions, use open-ended questions instead of questions that require only a yes or no answer.

The Topic

Choose timely topics. Gear your talks to safety problems you are encountering at the moment or that you anticipate in upcoming jobs.

- Review recent injuries—
What happened?
Why did it happen?
What should have been done?
- Review recent safety violations—
What was the violation?
What hazard did it create?
What injury could have occurred?
- Review upcoming work schedule—
What hazards are you concerned about?
What safety equipment should be used?
What procedures should be followed?

The Place and Time

Hold the meeting in your work area. We recommend holding the meeting first thing in the morning or immediately after lunch when the workday will least be interrupted and the work area relatively quiet.

Hold a toolbox meeting once a week to reinforce your company's philosophy that job safety is important.

We hope our toolbox talks help you in the daily operations of your business. Keep them handy. Like any tool, they can't help unless you use them. If you have any questions, contact your CNA loss control representative.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



TOOLBOX TALKS

AMERICAN FIRE SPRINKLER ASSOCIATION • **CNA** COMMERCIAL INSURANCE

(make a photocopy for each session)

SIGN-IN SHEET

Date:	Company Name:	
Project Number/Name:	Meeting Location:	Person Conducting Meeting:

Items Discussed:

Problem Areas or Concerns:

Attendees:

Comments:

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





TOOLBOX TALKS

AMERICAN FIRE SPRINKLER ASSOCIATION • **CNA** COMMERCIAL INSURANCE

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



BACK INJURIES IN CONSTRUCTION

25% of injuries in construction are back injuries. Construction has the highest rate of back injuries of any industry, except transportation. Every year, a back injury causes 1 in 100 construction workers to miss work — usually missing about 7 workdays, but sometimes more than 30. Most of the back problems are low-back injuries. Repeated injury to your back can cause permanent damage and end your career.

THE HAZARDS

Most back injuries are sprains and strains from lifting, lowering, carrying, pushing, and pulling materials. You are at risk of low-back injury if you must twist while carrying heavy loads, work bent over continuously, or stay in other awkward postures.

PROTECT YOURSELF

Injuries can be reduced by planning, changing how work is done, and training workers and supervisors.

PLAN

- Warm-up exercises before work can help reduce muscle injuries.
- Cut down on carrying. Have materials delivered close to where they will be used.
- Try to store materials at waist height.
- Raise your work to waist level, if you can. Pipefitters use pipe stands. Masons have adjustable scaffolds to keep the work at waist height.

- Make sure floors and walkways are clear and dry. Slips and trips are a big cause of back injuries.
- Take rest breaks. When you are tired, you are more prone to injury.

GET HELP

- Use carts, dollies, forklifts, and hoists to move materials — not your back.
- Use carrying tools with handles to get a good grip on wallboard or other odd-shaped loads.
- If materials weigh more than about 50 pounds, do not lift them by yourself. Get help from another worker or use a cart.

MOVE CAREFULLY

- When lifting or carrying materials, keep the load as close to your body as you can.
- Try not to twist, when lifting and lowering materials. Turn your whole body instead.
- Lift and lower materials in a smooth steady way. Try not to jerk the lift.
- When you pick up materials off the ground: —Try supporting yourself by leaning on something while lifting. —Don't bend over; instead, kneel on one knee and pull the load up on to your knee before standing. (Wear knee pads when you kneel.)

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACK INJURIES IN CONSTRUCTION

Page 2

APPRENTICES

Apprentices get some of the hardest work to do. Being young and strong, they sometimes carry more weight than they should. Make sure apprentices are protected against back injuries, so they don't end up with back problems and have to leave the trades.

Work with your employer to decide how the work can be changed to protect you and your co-workers from back injuries. Build back-safety into any training. Fewer injuries mean better productivity and lower costs.

WHAT ABOUT BACK BELTS?

Some companies have workers wear back belts. Back belts may help someone recovering from a back injury. But there is not much evidence they can prevent injuries. Back belts should never be used instead of making work safer.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





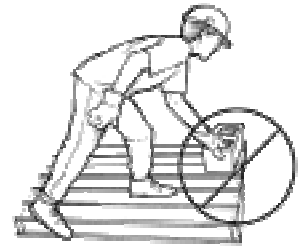
MINIMIZING MUSCULOSKELETAL FATIGUE

How to get through a day's work and still have something left over

The bending, twisting, and lifting that you do on the job can be hard on your back.

Forward bending is an awkward posture that puts stress on your back. Bending stretches the ligaments and muscles and can pull the joints of the back into unstable positions. Over time this posture can stretch the back part of the disc, leading to damage. In this posture the over-stretched muscles of the back are less able to protect the ligaments, joints, and discs.

Twisting pushes the joints of the back together, while forcing others apart. Tight ligaments and muscles can be pulled excessively. The outer casing of the discs can be damaged by constant twisting forces.



LIFTING WHILE BENDING FORWARD OR TWISTING OR CARRYING A HEAVY LOAD CAN DAMAGE YOUR BACK. LIFTING ALSO BECOMES A RISK IF THE BACK IS NOT POSITIONED OR MOVED PROPERLY WITH THE LOAD.

TIPS FOR REDUCING THE RISK OF INJURY TO YOUR BACK

There are three ways of reducing the stress on the back from your job.

1. Look at your job, equipment, and procedures:

- Reduce the weights you lift. Reduce the distance you carry a load. Reduce the amount you twist.
- Reduce the frequency of lifting.
- Lift in a safe range.

2. Use your body correctly to do the job:

- Keep the load close to the body. Keep your feet apart for a stable stance. Position your feet prior to lifting to reduce twisting.
- When faced with lifting an object beyond your safe limit. Get help!

3. Take care of your back by stretching and exercising:

- Include a brief warm-up as part of your routine.
- If you work bent over, stand up and do a "backwards bend" at least every hour.

If you stand for long periods, or work overhead, squat or bend the spine from time to time.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Asbestos in Construction

Impact on Building Owners

1. Building and facility owners must use due diligence to inform employers and employees about the presence of ACM or PACM. All thermal surface insulation material or sprayed on or troweled on surfacing materials in buildings built prior to 1980 are to be treated as PACM until the building owner demonstrates that the material contains less than 1% asbestos. Building owners are required to notify employees who will work in areas adjacent to areas containing ACM or PACM, prospective employers bidding on work in areas adjacent to ACM or PACM, all employers of employees on multi-employer jobsites who will be performing work adjacent to ACM, and building tenants occupying areas adjacent to ACM. Due diligence must be exercised to determine the presence and location of ACM or PACM. On job sites, any employer discovering ACM or PACM is required to notify the building owner and all other employers involved. Building owners must post signs at entranceways to mechanical rooms or other areas where ACM may be accessible or easily disturbed.

2. Building owners must notify the following of the presence of ACM or PACM:

- Prospective employers whose employees may be expected to work in or adjacent to areas containing materials.
- Tenants who occupy areas containing ACM or PACM.
- Employees of the building who work in the area of the material.

3. Certain maintenance and custodial employees are considered to be included in Class III or IV and must comply with the appropriate work practice and control requirements.

4. Workers in Class III are those likely to disturb the material. This may include working above suspended ceilings, pipe repairs, or mechanical repairs. These workers must receive training and use wet methods, local ventilation where feasible, and isolate the work area if feasible. If exposure levels cannot be shown to be below the PEL, respirators and medical surveillance are also required.

4. Class IV workers are those who perform maintenance and custodial activities with the potential of contact with the material but disturbance is not likely. They must receive 2 hour awareness training. Wet methods and HEPA vacuuming is to be used for debris clean-up and ACM or PACM specific dust prevention practices including the use of low abrasion pads and low speeds apply to floor buffing operations.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





Electrical Safety

The following rules apply only to electrical installations used on the jobsite, both temporary and permanent:

1. Extension cords used with portable electrical tools and appliances shall be of three-wire types. Grounds are never to be removed from the extension cords.
2. Temporary lights shall be equipped with guards to prevent accidental contact with the bulb. Guards are not required when the reflector is constructed in such a way that the bulb is deeply recessed.
3. Temporary lights shall not be suspended by their electric cords unless cords and lights are designed for this means of suspension.
4. Splices shall have insulation equal to that of the cable.
5. Electrical and extension cords or cables are not to be laid on floors, in walkways, etc., unless it is impractical to do otherwise. They should be suspended or secured in such a way as not to block or hang in walkways, doorways or work areas.
6. Panel boxes shall have a cover on them at all times, except when being serviced and when a temporary cover is in place it should be marked "HOT" to denote live current.
7. Explain to the employees which ground fault system is being used, either GROUND FAULT CIRCUIT INTERRUPTERS OR ASSURED EQUIPMENT GROUNDING CONDUCTOR PROGRAM.

With electricity we are dealing with something that cannot be seen and is still the most useful power controlled by man. It is useful but can be a very destructive power to both man and material if the proper precautions are not taken. The danger is always there and we must know what means of protection can be used to eliminate the hazards.

Portable Power Tools

In construction portable power tools with defective wiring cause many injuries. The following safe practices are recommended:

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

1. Use tools with three wire plug and make sure connections are tight.
2. Check tool, equipment and cables frequently for safe condition.
3. Disconnect tool before making adjustments or repairs.
4. When using power tools in a wet area, use caution. The shock hazard is increased.

ELECTRICAL OUTLETS

BEFORE USING - make a safety check for loose cable connections, bare wires, cracked outlets and missing or damaged face plates.

WHEN USING - be sure plug fits firmly and check for any signs of heating caused by faulty connections.

TO REMOVE CORD - GRAB AT PLUG

Yanking a cord from an outlet can:

- Break cord insulation and wires
- Pull loose wire connections
- Bend plug prongs
- Spread clips inside outlet

ABOUT THE THREE (3) PRONG PLUG

Guard it! It is your shock LIFEGUARD. Never cut off the third prong to fit an older two-hole outlet. Never use a two-wire extension cord with this three-prong plug. If using an adapter at a two-hole outlet, be sure the pigtail is attached to face plate screw. (NOTE: Screw must be tested for known "ground source".)



HOUSEKEEPING ON THE JOB

You have a pretty good idea how safe a job is just by looking at it before you start to work. Even a "Sidewalk Superintendent" knows this. A job that looks clean, with everything in its place, is a safe job. That's all we mean when we talk about job housekeeping.

Good housekeeping calls for just two things:

1. Keep trash and loose objects picked up and dispose of them regularly.
2. Stay organized. Store all materials, tools and equipment in their place.

These are the fundamentals of good house-keeping and they're simple enough. If we don't follow these two rules, we're letting ourselves in for trouble.

Putting the rules to work is not so simple. A grand cleanup once a week won't do the trick. Housekeeping is a job that can't be put off. We have to do it regularly. It's up to each individual to be their own jobsite housekeeper.

When you see something lying around where it could trip an individual or fall on them, put it in a safe place. Don't wait for someone else to do it. If it's something that he or she will be looking for, you can put it safely where they can see it.

You've seen jobs, and probably worked on some, where it wasn't safe to put your foot down without first looking twice to be sure you weren't going to twist an ankle or run a nail through your shoe. A job like that is poorly run, badly managed. Probably it's losing money as well as causing accidents.

Some jobs have walkways, aisles, stairs, and ladders by which you get from one place to another. It's particularly important that these lines of travel be kept safe and clear of loose objects. Workers often carry loads on these routes. They can't always pick their steps or look around to be sure that nothing is going to trip them or fall on them.

A wet or greasy walkway may cause a bad accident. If you see a treacherous spot, make it your business to do some sweeping, mopping or scraping.

Brick, tile, pipe, conduit, steel rods and similar materials scattered about the job or insecurely piled on scaffolds or platforms can cause accidents. All material should be organized in its designated place. Each kind of material has its own characteristic. But some rules for piling apply to all kinds:

First, you have to consider how the material is going to be taken out of the pile. If it's going to be a fast-moving operation with a big tonnage being unloaded in a short time, be sure to leave space for the worker and the equipment that will have to do the work.

Be courteous. Never store material in such a way that it will endanger a worker who has to work on it or will make a backbreaking job for the workers.

Other points to think about are:

1. The strength of the support if you're placing material on a floor, platform or scaffold.
2. The stability of the ground if you're piling a heavy load.
3. The height of the pile so it won't topple.
4. The need for building racks if it's pipe you have to stack.
5. The wisdom of waiting for the proper equipment to "mechanically" handle heavy or awkward materials.
6. Good lighting in job is critical and enhances good housekeeping. Poor lighting, on the other hand, increases the probability of accidents. When you find a light out or other lighting problem, report it and get it fixed immediately.

It's not hard to keep a job clean if all useless materials, boxes, scrap lumber and other trash are picked up and removed regularly. Remember, if they're allowed to accumulate for even a few days, your jobsite becomes a messy, unsanitary and unsafe place to work.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Goggles — Gloves

Goggles

There is nothing new about wearing goggles for eye protection. Every job is using them to a greater or lesser degree. But the question always arises as to who should not be asked to wear eye protection.



There is no job throughout construction that does not carry a potential eye hazard. In analyzing eye injury cases, it is found that the most common are caused from foreign bodies in the eye, flying objects, dust, and horseplay. The jobs include office workers, laborers, operators, warehousemen, millwrights, drivers, mechanics, carpenters, and so on down the line.

Actual reported cases describe accidents in which a laborer was cleaning out one thing or another when some of the contents of a chemical nature splashed in his eyes and resulted in the loss of his sight. Goggles were not worn, since they were not considered necessary for that type of work or worker. But follow this injury and others like it and you will find that most could have been prevented if the right eye protection had been used.

There's No Such Thing As Being Too Safe!

Gloves

Your hands are your wage-earners.

Hands are hurt more often than any other part of the body.

Hand injuries don't have to occur. As talented as your hands are, they can't think, they're your servants, and it is up to you to think and keep them out of trouble.

Be sure you wear the right kind of gloves for the particular kind of work you are doing.

When you wear gloves, you aren't trusting to luck and you're not taking unnecessary chances.

Wear gloves when you are doing a job that needs them, but, not around moving machinery.

Time spent in preparing your hands for the job will not only save trouble for you but will probably save time in doing the job.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



COURTESY AND SAFE DRIVING

The ability to drive a motor vehicle with courtesy and consideration for pedestrians and other motorists is one sure sign of a professional driver. Do you consider yourself a pro? Or do you bulldoze your way through traffic, race to beat a changing light or speed through residential areas? If you perform any of these unsafe maneuvers, you are a poor example of your profession.

What does it mean to be courteous? How can we be courteous when the other guy is always trying to get the jump on your vehicle?

It's easy! Don't get caught in any "me first" situations. In all cases, yield the right-of-way. Give a little ground. Trying to squeeze two or more objects into the same space just doesn't work. Believe it. Many drivers have tried and have met with a violent crash.

Courtesy means respect for others as well as yourself. Being self-centered and bull-headed while you are behind the wheel is asking for trouble.

Why not develop a courteous attitude? Obeying traffic rules, yielding the right-of-way, signaling your intentions and driving a safe vehicle are just some of the

courtesies we professional drivers can extend.

Traffic rules were established to minimize the road hazards and to give every driver a fair break. Racing through stop signs, speeding and driving to the left of the center line are all examples of a poor driving attitude.

In every situation, the right-of-way is something that is to be given, not taken. If the other driver is not following the rules, let him have the right-of-way, even if it really belongs to you. Otherwise, you will be gambling with the lives of your passengers and yourself.

Signal your intentions when making a turn or changing lanes. Make the other drivers aware of what you plan to do.

Keep your vehicle in top notch condition. Follow recommended maintenance procedures, check tires frequently and keep your vehicle clean.

Throughout the year, make due care, courtesy and common sense your gift to all fellow motorists.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Asbestos in Construction

Impact on Repair and Maintenance Contractors

Repair and maintenance and some renovation operations, which are likely to disturb ACM or PACM, are defined as Class III asbestos activities. Even the incidental cutting away of small amounts of ACM to access mechanical or structural components is considered Class III. Operations may include maintenance/repair of pipes and valves, boilers, air handling units, heat exchangers, and tanks, activities above suspended ceilings, cable pulling, work on HVAC systems, repair/replacement of lighting fixtures, and replacing ceiling tiles.

Requirements include:

- Establishment of a regulated area with demarcation, warning signs, barriers, limited access to authorized people, prohibited activities, and supervision by a "competent person".
- Initial air monitoring by competent person. Periodic monitoring when exposures are expected to exceed the PEL. Notify employees of monitoring results.
- Use vacuum cleaners with HEPA filters to collect all debris. Clean debris promptly and place in leak-tight container.
- Use wet methods where feasible.
- If necessary to achieve compliance with the PEL, the following controls should be used:

Local ventilation.

Ventilation of the regulated area.

Enclosure or isolation of process.

Use respiratory protection if controls do not reduce exposure to below PEL.

- The following work practices are prohibited regardless of exposure level:

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





Use of high speed abrasive disc saws unless equipped with point of operation ventilation or enclosure.

Use of compressed air to remove materials containing asbestos.

Use of dry sweeping, shoveling or other dry clean-up methods.

Use of employee rotation to achieve exposure reduction.

- Where operations involve drilling, cutting, abrading, sanding, the use of mini-enclosures, glove bag systems, or drop cloths is required.
- Where the PEL is exceeded or where the employer does not have a negative exposure assessment, plastic barriers and drop cloths should be used to contain the area in addition to respiratory protection.
- Respirators must be worn during the operation where thermal surface insulation is likely to be disturbed and in emergencies. Where respirators are used, the employer should institute a respirator protection program in compliance with 29CFR1910.134.
- Protective clothing is required if exposure exceeds the PEL or a negative exposure assessment is not produced.
- Employee training is required to include a 16-hour Operations and Maintenance course.
- A medical surveillance program is required for employees engaged in Class III activities for a combined total of 30 days per year and for employees who wear negative pressure respirators.
- At multi-employer worksites, inform other employers at the site of the asbestos related operations, and the requirements pertaining to the regulated area.
- The general contractor is required to act as a general supervisor over the work covered by this regulation as evaluated whether the asbestos contractor is in compliance.
- Building owners are required to evaluate the location and presence of ACM or PACM and are required to notify contractors who will perform work on or adjacent to the material.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



STRETCHES FOR COMMON WORK POSTURES

BACKWARD STRETCH



When working in a crouched, bent, or stooping position for a prolonged period, take regular breaks by standing up and bending backwards three times. This will help relieve muscle tension.



FORWARD STRETCH



When working overhead in an arched position for prolonged periods, take regular breaks by returning to stable footing and bending forward three times.



Illustrations from *Stand/Lift/Carry*, Construction Safety Council of Ontario, 1993.
To order the complete book, phone 1-800-781-2726.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



THE MATERIAL SAFETY DATA SHEET

MSDS

Material Safety Data Sheets or MSDS, if read and followed, are a powerful means of controlling chemical exposures.

MSDS are written by chemical manufacturers for the chemicals they produce or import. The purpose of the MSDS is to communicate information on the recommended safe use and handling procedures for that chemical.

Categories

MSDS may look different, yet the Occupational Safety and Health Administration (OSHA) requires that all MSDS must provide certain categories of information about the chemical substance or mixture:

- n identification (physical and chemical),
- n hazardous ingredients,
- n emergency and first aid procedures,
- n recommended control measures,
- n physical and health hazards,
- n safe handling precautions,
- n date of preparation/revision,
- n manufacturer's name, address and phone number.

Your employer is being required to assemble and provide unhindered access to a MSDS collection for all of the chemicals found in your work area. Know where this MSDS collection is located. Read and follow the MSDS recommendations.

Identification

What product/chemical is this MSDS for?

Hazardous ingredients

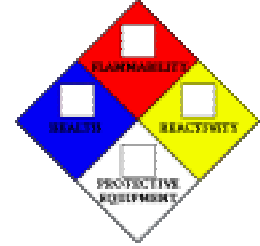
How much of this material can I safely be exposed to?

How will I know if I am overexposed to this chemical?

Emergency and first aid procedures

What first aid steps should I follow? What will happen to me if this chemical ...

- is swallowed?
- gets onto my skin?
- is breathed in?
- gets into my eyes?



Recommended control measures

What type of control measures should I use to protect myself?

What should I do if there is a spill or leak?

Physical hazards

What are the physical hazards posed by this chemical?

If it catches fire, what should I use to put it out?

Are there conditions or materials that this chemical should not come into contact with?

Health hazards

What are the health hazards posed by this chemical?

Safe handling precautions

What is the proper way to safely handle this chemical?

Manufacturer's name address, phone

Who made/imported this chemical?

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



SLIPS AND FALLS

Each year too many construction workers are injured by slips and falls.

Slipping on the floor is bad enough, but falling from a height can be disastrous.

How can falls be prevented? Keep your work areas neat clean and orderly and your eyes open!

Orderliness plays a big part in preventing slips and falls. For the purposes of this discussion let's define debris as items laying around that could cause a slip, trip or fall. These items include but are not limited to: pipe, extension cords tools, boxes, trash, etc. Debris lying around on floors and working areas is an open invitation to accident. Keep the work areas clean, neat and orderly. It reflects on you and your company's professional image and in the quality of your safety program.

Weather increases hazards, particularly in winter when debris becomes snow covered and cannot be seen. Ice conditions create additional dangers. Sand and/or an appropriate type of "ice melt" should be applied to icy areas. Wet weather causes muddy feet which contribute in turn to slips and falls. Wipe your feet before climbing steps or ladders and before entering the work area.

When exposed to a fall greater than six feet, guardrails, nets, floor-hole covers or other form of fall protection must be used. If these "passive"

forms of fall protection are not feasible, a personal fall restraint system may be appropriate to prevent the worker from falling. A personal fall arrest system may be needed to protect workers from striking the lower levels in the event they do fall.

Scaffolding must rest on firm footing and must have all the bracing installed. When using multi-level staging, the scaffolding must also be anchored to the structure. Scaffold planks must completely cover the working level. Slippery elements such as water, ice, snow, oil, mud etc. must be eliminated or controlled as appropriate. Fall protection as described above is required on scaffolds when the worker is exposed to a fall of 10 feet or greater. Makeshift devices such as buckets, blocks, boxes etc should not be used to extend the reach of the workers.

When using a ladder, always maintain a "three point contact." This means holding on with both hands and having one foot on the rung. Or, having both feet on the rungs and holding on with one hand. When using the stairs use the guardrail or handrail. Keep the stairs free of debris, pipe, extension cords tools, boxes, trash, etc. Carrying items that would affect the safe use of stairs and ladders is forbidden.

REMEMBER! Your eyes are your best defense against slips and falls. Watch your step and look where you are going.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Asbestos in Construction

The OSHA Standards

On August 18, 1994 OSHA issued a final regulation covering the occupational exposure to asbestos for general industry (29CFR 1910.1001), and construction (29CFR 1926.1101). Although portions of the rule were to become effective on October 11, 1994, OSHA issued an extension of the start-up date to Oct. 1, 1995 and issued several clarifications. The revisions and clarifications have the greatest impact on building owners and contractors. The standard's requirements depend on the nature and Class of the work operation which involves asbestos exposure.

Some of the significant requirements include:

1. Asbestos Containing Material (ACM) is defined as any material, which contains more than 1% of any form of asbestos. Previously there was no low quantity cut-off.
2. Presumed Asbestos Containing Material (PACM) is defined as any thermal system insulation and sprayed on or troweled on surfacing material in buildings constructed no later than 1980. Building owners are to treat PACM as ACM until inspection or tests prove otherwise.
3. Permissible exposure limit (PEL) is 0.1 fiber per cubic centimeter and an action limit was eliminated. The PEL is no longer the primary trigger for many controls. A variety of work practices are associated with certain types of activities, regardless of actual exposure. An excursion limit of 1.0 fibers per cubic meter is allowed for 30 minutes.
4. A classification scheme of asbestos related work and related control practices includes 4 categories as follows:
 - Class I - This is the highest risk activity involving removal of thermal system insulation (TSI) and other sprayed on or troweled on surfacing ACM or PACM. Negative pressure enclosures are required for work in this classification in addition to numerous work practice controls such as exposure monitoring, use of wet methods, respiratory protection, protective clothing and laundering, shower facilities, medical surveillance, training, waste disposal, and recordkeeping. Some requirements (protective clothing, hygiene facilities, clearance sampling) are not needed if removal of less than 25 linear feet or 10 square feet of TSI and concentrations less than PEL.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



- Class II - This activity involves the removal of non-thermal surface ACM or PACM. This may include roofing material, floor tile, wallboard, siding shingles, and mastic material. A regulated area must be established which includes demarcation, limited access, respirator use (where needed), prohibition of certain activities such as eating and smoking, and the presence and supervision by a "competent person". Negative pressure enclosures may be required on indoor class II activities based on the assessment by a competent person. Specific work practice procedures are defined for various work activities. Periodic exposure monitoring is required unless a negative exposure assessment is made for the job.
 - Class III - This activity involves repair and maintenance where ACM or PACM is likely to be disturbed. Disturbing is defined as activities which disrupt the matrix, crumble, pulverize or generate visible dust. Work practices required include glove bag use, wet methods, mini-enclosures, ventilation and respiratory protection, drop cloths and plastic barrier isolation. A 16 hour training program consistent with EPA requirements for education maintenance and custodial staff as set forth in 40CFR763.92(a)(2) is required for workers performing this activity.
 - Class IV - This class refers to maintenance and custodial activities during which employees contact ACM or PACM and activities to clean-up debris of ACM or PACM. Workers must receive a 2 hour awareness training program and use wet methods, HEPA vacuums, and respirators (where required).
5. The construction standard 1926.1101 contains many paragraphs and describes the specific requirements for each of the four classes. These sections include:
- (a) Scope – construction, alteration, repair, maintenance, renovation ...
 - (b) Definitions (Class I, II, III, IV, disturbance, competent person, regulated area)
 - (c) Permissible exposure limit and excursion limit
 - (d) Multi-employer worksites – information to other contractors
 - (e) Regulated areas – if over PEL or reasonable possibility of release over PEL, limit access, signs, demarcation, competent person supervision, respirators inside, no eating/ smoking inside
 - (f) Exposure monitoring – initial monitoring by competent person, can use objective data which “closely resembles” work, periodic monitoring for Class I and II

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





TOOLBOX TALKS

AMERICAN FIRE SPRINKLER ASSOCIATION • **CNA** COMMERCIAL INSURANCE

- (g) Methods of compliance – engineering controls (vacuum cleaners, wet methods, prompt cleanup, ventilation, no compressed air or dry sweeping), respirators if possibility to disturb
- (h) Respiratory protection – needed for Class I and II, and for Class III if TSI may be disturbed or if over PEL
- (l) Protective work clothes – whole body suit, head cover, gloves, foot covers if over PEL or Class I and II if greater than 25 linear feet or 10 square feet removal
- (j) Hygiene facilities – needed if Class I if over 25 linear feet or 10 square feet removal
- (k) Communication of hazards – duties of building owners, duties of employers to employees, signs around regulated area, labels on containers, training (for Class III 16 hour course)
- (l) Housekeeping – vacuuming with HEPA filter, waste disposal in sealed bags
- (m) Medical surveillance – if greater than 30 days exposure for Class I, II, and III work (does not depend on exposure level), needed for respiratory protection program, initial and annual exam includes work history, X-ray, pulmonary function, GI exam
- (n) Recordkeeping - sampling or objective data, medical, training, notifications
- (o) Competent person – inspections of worksite, set up regulated area, training of competent person

In each of these paragraphs, the rule describes the specific requirements which apply to each of the four classes of asbestos work.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





Floor and Wall Openings

Unprotected holes or openings in the floors or walls at construction sites are extremely dangerous. They need to be securely covered or guarded in order to protect against injuries resulting from falls through these openings. Serious injuries and even deaths have occurred when workers have fallen through holes, shafts or other openings which were unguarded, covered by materials that were not strong enough to support the workers or protected by improperly secured barricades or covers.

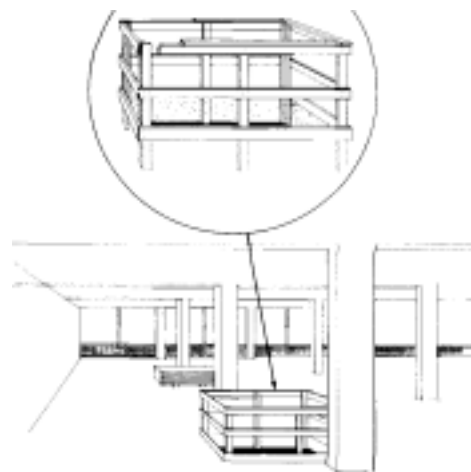
Work safety requires that we eliminate job hazards and take every reasonable effort to minimize accident risks to protect job hazards and take every reasonable effort to minimize accident risks to protect workers from disabling falls through unprotected floor or wall openings.

The following requirements need to be considered with regard to floor and wall openings on a construction site:

- a. In construction, floor holes into which persons can accidentally walk are to be guarded by either a standard railing with standard toeboards on all exposed sides, or be securely covered and marked. Safety nets, Personal Fall Arrest Systems, or personal restraint systems may also be used as appropriate.
- b. In construction, wall openings, from which there is a drop of more than 6 feet and where the bottom of the opening is less than 39 inches above the working surface, are to be guarded with a guard rails. Safety nets, Personal Fall Arrest Systems, or

personal restraint systems may also be used as appropriate.

- c. A floor hole cover shall be of sufficient strength and construction so that it can withstand at least twice the load anticipated to be placed on it and secured so that it can't be accidentally displaced.
- d. Where there is a danger of materials falling through a floor or wall opening, the opening is to be protected by a standard toeboard or a solid enclosing screen.
- e. The bottom of a wall opening which is less than 4 inches above the working surface is to be protected by a standard toeboard or an enclosing screen.
- f. Whenever work is being performed on a floor or wall opening, the area below these holes should be properly roped off or barricaded.



In addition to the above requirements, every employee on the job is to be warned about the danger of leaving

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

BACK INJURIES IN CONSTRUCTION

Page 2

floor and wall openings unguarded. Unguarded openings should be reported and guarded as soon as possible to avoid a fall injury or fatality.

Always notify your supervisor of any unprotected floor and wall openings and ensure they are protected before working in the area.



WATER DAMAGE PREVENTION – Top 3 Causes

The following information is based on CNA Commercial Insurance claim information for the period between January 1997 and December 2000. A review of the general liability line of the AFSA Insurance Program, conducted by the AFSA Safety Committee revealed the following:

- 72% of the dollars paid on general liability claims (\$22.8 Million) are paid to cover the costs resulting from water damage incidents.
- 79% of the number of claims (1,085) are water damage claims.
- The average cost per claim is approximately 21 thousand dollars.
- Water damage claims are more likely to occur after the work was completed and the contractor had left the job site.

A “loss driver” is an identified cause or trend that most severely affects a line of insurance. The loss driver in the AFSA general liability line is clearly water damage. Specific causes of the larger fire sprinkler related water damage claims can be broadly categorized as:

1. **Pipes or components that burst as a result of freezing, inadequate heat or insulation,**
2. **Problems with couplings or fittings and**
3. **Improper gluing of plastic pipe.**

In an effort to reduce these losses the following reminders are provided in the **AFSA Water Damage Prevention Program**.

FREEZE PREVENTION

Pipes freezing are a common cause of loss for wet systems. Pipes should be protected from freezing with the use of antifreeze loops or

proper heating. Insulation and caulking must be adequate to prevent cold drafts from affecting the system.

On dry systems roof/attic areas are most susceptible to overlooked residual water. These areas must be checked for poor drainage (low point drains) to prevent water accumulation and frozen/burst pipes during cold seasons. This is further clarified by NFPA 25, 9-4.4.3.3, which states,

"Low points in dry pipe sprinkler systems shall be drained after each operation and before the onset of freezing weather conditions. "In addition, the inspection form in Figure B-3 shows, as part of the weekly inspection, that low points are to be drained as frequently as needed."

(Note: the contractor is responsible for installing low point drains and providing identification signs on them)

A formal, documented procedure for checking the pitch of piping in dry systems should be in effect. This procedure should require the use of a 2', or longer, levels. The use of torpedo levels should be discouraged due to their restricted accuracy. This should also require a documented procedure for verifying that all pipes were properly drained before turning the system over to the owner.

GLUING PRECAUTIONS

Poorly glued connections on plastic systems are a common cause of water damage. Only qualified personnel should be allowed to install the system. Quality control checks should be performed on connections and joints.

METAL CONNECTIONS

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Press fittings on metal pipe have a tendency to separate causing extensive water damage. The most common cause is incorrectly turned or partially seated retaining pins for which a special wrench is usually required. The presence of a fire pump adds a new element of stress on these connections caused by fire pump hammer. Quality control checks on these critical fittings should be conducted and only qualified personnel should be installing the system.



STRETCHING AND EXERCISING TO REDUCE THE RISK OF WORK-RELATED MUSCULOSKELETAL DISORDERS (MSDs)

Ergonomics is the science of fitting the job to the worker. When there is a mismatch between the physical requirements of the job and the physical capacity of the worker, work-related musculoskeletal disorders (MSDs) can result. Workers who repeat the same motion throughout their workday, do their work in an awkward position, use a great deal of force to perform their jobs, repeatedly lift heavy objects or who face a combination of these risk factors are most likely to develop MSDs.

GOOD JOB DESIGN

These risk factors are best minimized through good job design. Good job design should provide the opportunity for people to change postures, sit, stand or walk a short distance as a normal part of their duties. It is important to include task variety in the design of work. This means mixing up periods of intensive keyboard use or heavy lifting with other activities that involve a change of posture and different mental demands.

When a variety of tasks are not available it is important to take more short pauses so the muscles performing the task have a chance to recover. It is also important to reverse the postures that have been adopted as part of the task. An excellent way of achieving this is by the use of posture reversal exercises or stretches.

Benefits of Stretching and Exercising

Stretching and exercising before and during work is a good idea, provided it is done properly. A frequent change of position can release tension and improve circulation to the working muscles, tendons and joints. Strong, healthy muscles and tendons are less likely to be injured and are necessary to maintain proper working positions and postures. Therefore, exercising and stretching to

promote strength and flexibility plays an important role in reducing your risk of developing WMSDs.

Before You Start

Employees who have pre-existing conditions such as acute neck or lower back pain; degenerative disc disease; moderate to severe osteoporosis; pregnancy; acute or inflammatory arthritic conditions of the shoulder, elbow, forearm, hands, hips and/or knees; hand/wrist disorders, such as carpal tunnel syndrome; acute lateral epicondylitis; or spinal stenosis, should consult their health provider to ensure that these exercises and stretches will not exacerbate their condition.

RULES

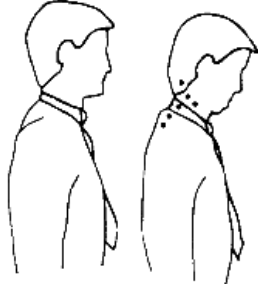
1. **Start out easy**
2. **Do exercises regularly**
3. **Increase gradually working up to doing a few of these exercises a few times every day.**
4. **Make sure you relax**
5. **Hold the stretch or repeat as indicated.**
6. **Do not over-stretch.**
7. **Stop if you feel discomfort when performing an action.**
8. **Remember to do each side.**
9. **Consult your health care provider if you have a pre-existing condition.**

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Several exercises, grouped by the body parts affected, are shown on the following pages.

NECKS

Chin Tuck



Raise the head to straighten the neck. Tuck the chin in and downwards creating a double chin. Hold for 10 seconds and repeat several times.

Head Turns



Close eyes and very slowly turn head to look over left shoulder and hold for 10 seconds. Turn head the other way and hold for 10 seconds. Repeat 5 to 10 times.

Note: Those with acute neck pain, degenerative disc disease or moderate to severe osteoporosis should consult their physician before doing this exercise.

SHOULDERS AND BACKS

Shoulder Shrug



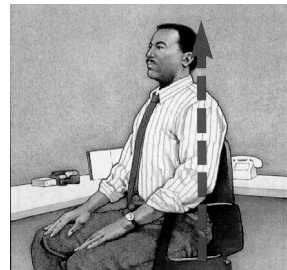
Sit straight and bring shoulders up towards ears. Hold for 3 seconds. Relax. Repeat twice.

Arm Circles



Stand with arms raised horizontally and slightly in front of shoulders, palms down, and feet shoulder-width apart. Rotate arms in forward circular motion for 15 seconds. Relax. Repeat sequence three or four times.

Cable Stretch

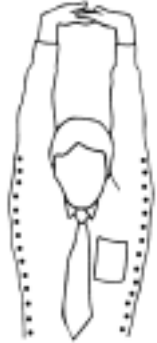


Sit up straight and imagine you have a cable attached to the top of your head. Feel the cable

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

slowly pull you up higher and higher. Hold a few seconds. Relax and repeat 3 times.

Reach for the Sky



Raise hands over head, stretching as high as possible. Then bring arms back down. Rest and repeat twice.

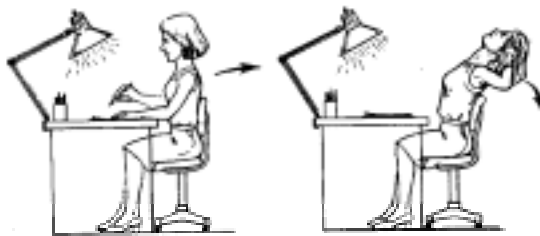
Shoulder Stretch



Put your hands up, with forearms raised. Push your arms back, squeezing your shoulder blades. Hold for a few seconds. Relax and repeat 3 times.

Note: Those with acute inflammatory or arthritic conditions of the shoulder should consult their physician before doing this exercise.

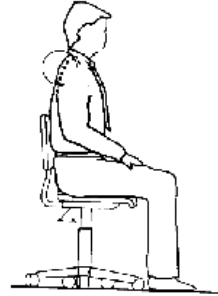
Executive Stretch



Sit upright with your hands clasped behind your head. Lean back into chair. Gently pull your elbows back as far as you can. Hold for 3 seconds. Relax and repeat twice.

Note: Those with acute neck pain or inflammatory or arthritic conditions of the shoulder should consult their physician before doing this exercise.

Backward Shoulder Rolls



Rotate both shoulders backwards keeping arms relaxed and by sides. Repeat 3 to 5 times.

Disc Reliever



Standing up straight with feet slightly apart, place hands in hollow of back. Focus eyes on a point straight ahead. Bend backwards over hands without bending knees, then straighten up. Repeat 10 times.

Note: Those with degenerative disc disease, acute lower back pain, spinal stenosis, or pregnant women should consult their physician before doing this exercise.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

LEGS AND FEET

Hip and Knee Rock



Stand with your hands on your hips. Place feet apart and rock from side to side, bending alternate knees. Repeat 10 to 20 times.

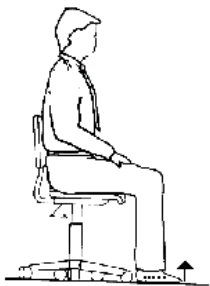
Note: Those with arthritic conditions of the hips and/or knees should consult their physician before doing this exercise.

Foot Rotation



While seated, hold onto the chair with hands on either side. Straighten leg and lift foot a few inches off floor. Rotate foot and ankle both ways (point toes up) and extend (point toes down). Repeat several times per foot.

Foot Presses



Sitting erect in chair, press down alternately with ball and heel of right foot several times. Repeat with left foot.

ARMS AND HANDS

Finger Stretch



Spread your fingers as far apart as possible. Hold for 5 seconds. Relax. Repeat 5 times.

Wrist Flex



Put your right elbow on a table or desk, with your hand raised. With your left hand, gently bend your right hand back toward your forearm. Hold for 5 seconds. Relax. Repeat on the other side.

Note: Those with acute inflammatory or arthritic conditions of the elbow or forearm or hand/wrist disorders such as carpal tunnel syndrome should consult their physician before doing this exercise.

Thumb Stretch

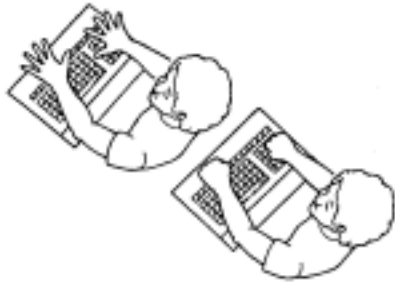


Stretch out right hand. Gently pull the thumb down and back. Hold for 5 seconds. Repeat with left hand.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Note: Those with acute inflammatory or arthritic conditions of the elbow or forearm or hand/wrist disorders such as carpal tunnel syndrome should consult their physician before doing this exercise.

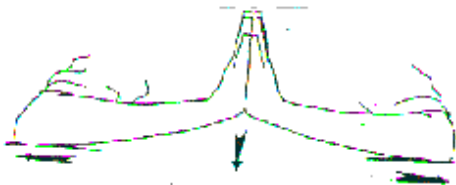
Hand Stretch



With palms down, spread thumbs and fingers as far apart as possible. Hold for 5 seconds. Relax. Repeat twice.

Note: Those with acute inflammatory or arthritic conditions of the elbow or forearm or hand/wrist disorders such as carpal tunnel syndrome should consult their physician before doing this exercise

Palm Press

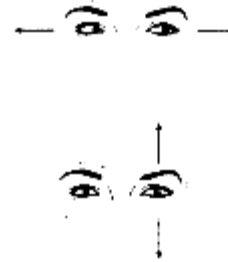


Place palms together, point fingers toward ceiling. Keeping palms together, try to push heels of hands towards floor. Hold for 10 seconds.

Note: Those with acute inflammatory or arthritic conditions of the elbow or forearm or hand/wrist disorders such as carpal tunnel syndrome should consult their physician before doing this exercise.

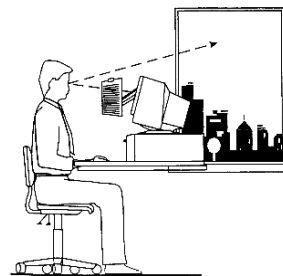
EYES

Eye Movement



Sit up straight, face forward and repeat this sequence several times without moving head. Look up, then down. Look left, then right.

Visual Rest



Look up and away from screen. Focus on a distant object (more than 3 feet away) for 20 seconds. For example, look out of the window or at a picture on a far wall. Shift vision back to screen and refocus.

Remember

Many jobs require stressful positions and activities. Changing stressful postures by changing tasks or taking a short pause can help. Incorporate exercise and stretching into your daily routine to reduce your risk of developing a work-related musculoskeletal disorder.

References:

Waikar, Wickstrom, Swanson, Sauter, Mangum, Lee, *A review of physical exercises recommended for VDT operators*, Applied Ergonomics(1992)

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Work Health Authority, *Exercises for Office Workers*, Officewise (1997)

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION

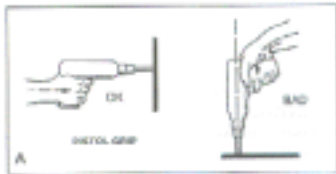


CHOOSING SAFER HAND TOOLS IN CONSTRUCTION

Construction workers use many hand tools, such as, hammers, screwdrivers, pliers, and tin snips.

THE HAZARDS

If you use hand tools over and over every day, you can injure your hand, wrist, or arm. You can do this if you must hold a tool tightly for a long time or keep twisting the handle, for instance. You can get carpal tunnel syndrome, trigger finger, white finger, and other painful problems. They can force you to quit construction work.



PROTECT YOURSELF

You can buy "safer" hand tools. Then, you can use them better.

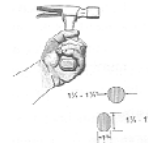
WHEN YOU BUY A HAND TOOL:

- I** Look for a tool that needs **less force** to use it.
- I** Look for a tool that **weighs less**. It can put less stress on your hand. (On some jobs you may need a heavier tool for more force.)
- I** Look for a tool that is **balanced**, that doesn't tip forward or backward when you hold it.
- I** **Look at the handle:**
 - It should be **comfortable in your hand** — not too thick or too small or too short.

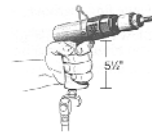
- It should be easy to use with your right and your left hands.



- It should not conduct electricity or heat. (Work with a cold handle can make some repetitive stress injuries worse.)
- It should **not hurt your hand when you hold tight**. You do not want sharp edges or finger grooves.
- If you can, get a non-slip handle. If you can, get a handle with a cover made of soft materials. Ridges on a handle can hurt your hand.



- If you need to use a lot of force on the job, the handle should be **long enough for your whole hand** — not just your fingers. (You want a "power grip," not just a "pinch grip.") You can use a long handle as a lever to add to the force of a tool and save your hand

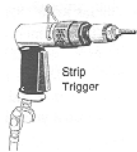


The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CHOOSING SAFER TOOLS IN CONSTRUCTION

Page 2

- You may need a bigger handle, if you wear **gloves** when you use the tool.
 - For some tools, the handle should have a **spring return**; this re-opens the tool for you after you use it. The spring return saves wear and tear on your finger muscles.
 - A **bent angle or adjustable angle** on some tools can help you keep your wrist straight. (You don't want a bent angle for some jobs.) When you work overhead, you may need different tools so you can keep your wrist straight.
 - You may want to get a rubber or plastic sleeve for the handle to make it safer.
- I** A power tool should have a long trigger, so you can use more than one finger at a time.
- I** Get a power tool with reduced vibration and noise levels. Too much vibration can damage the nerves in your hand and cause "white finger." If a tool vibrates, you have to grip harder and can hurt your muscles.



- I** If more than one person will use a tool, try to find one that's comfortable for everyone to hold. You may need different tools for left-handed and right-handed workers and for workers with big and small hands.

WHEN YOU USE A HAND TOOL

- I** Keep the tool sharp and in good condition. This way, you can reduce the force you must use on the tool — and reduce stress on your hands and wrist.

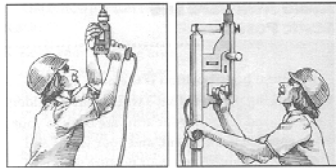
The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CHOOSING SAFER TOOLS IN CONSTRUCTION

Page 3

- I** Try to rest your hands during the day. Even a perfect tool can hurt you if you must use it over and over.
- I** Lay down the tool or put it in a holster when you don't need it.
- I** If a tool stand is provided, use it to support the weight of the tool to minimize awkward postures.

YOU SHOULD KNOW



- I** One tool cannot do all jobs. If you try to use a tool for a job it was not designed for, the job will be harder to do.
- I** Many tools in the stores are labeled "ergonomic" tools; don't be fooled. You are the one who can tell if a tool is comfortable and easy to use. Try many tools until you find one you like. Everyone has a different hand size, strength, and preferences.
- I** How you use a tool is as important as which tool you use. Try not to use one tool a long time doing the same thing over and over without a rest break.
- I** A good hand tool improves productivity; it helps you get your job done well.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



SEAT BELTS

THE THREE COLLISIONS

The National Safety Council's Injury Facts 2000, reports the following information regarding the use of safety belts:

- Reduce fatal injury to front seat occupants by 45% and reduce the risk of moderate to critical injury by 50%. For light truck occupants those figures increase to 60% and 65% respectively.
- Safety belts provide the greatest protection against ejection. In 1998 fatalities, 21% of unrestrained passengers were ejected from the vehicle compared to 1% for those who were restrained with a safety belt.
- Lap/shoulder belts should always be used even in a vehicle equipped with air bags.
- Seat belts saved an estimated 11,088 lives in 1998.

To understand the value of safety belt use, it's important to understand some of the dynamics of a crash. Every motor vehicle crash is actually comprised of three collisions.

The Car's Collision

The first collision is known as the car's collision, which causes the car to buckle and bend as it hits something and comes to an abrupt stop. This occurs in approximately one-tenth of a second. The crushing of the front end absorbs some of the force of the crash and cushions the rest of the car. As a result, the passenger compartment comes to a more gradual stop than the front of the car.

The Human Collision

The second collision occurs as the car's occupants hit some part of the vehicle. At the moment of impact, unbelted occupants are still travelling at the vehicle's original speed. Just after the vehicle comes to a complete stop, these unbelted occupants will slam into the steering wheel, the windshield, or some other part of the vehicle interior. This is the human collision.

Another form of human collision is the person-to-person impact. Many serious injuries are caused by unbelted occupants colliding with each other. In a crash, occupants tend to move toward the point of impact, not away from it. People in the front seat are often struck by unbelted rear-seat passengers who have become high-speed projectiles.

The Internal Collision

Even after the occupant's body comes to a complete stop, the internal organs are still moving forward. Suddenly, these organs hit other organs or the skeletal system. This third collision is the internal collision and often causes serious or fatal injuries.



So, Why Safety Belts?

During a crash, properly fastened safety belts distribute the forces of rapid deceleration over larger and stronger parts of the person's body, such as the chest, hips and shoulders. The safety

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

BACKING PROBLEMS

Page 2

belt stretches slightly to slow your body down and to increase its stopping distance.

The difference between the belted person's stopping distance and the unbelted person's stopping distance is significant. It's often the difference between life and death.

Excerpts from "Sudden Impact," NHTSA, 1992.



DRIVE DEFENSIVELY

We always hear mention of defensive driving, but do we really know what defensive driving means? Do we realize the commitment that we have to make to become a defensive driver? Defensive driving means driving so as to prevent accidents in spite of the actions of others or the presence of adverse driving conditions. Simply stated, defensive driving means no surprises.

Now let's talk about the commitment required to become a defensive driver. To illustrate this commitment let's look at the detailed requirements of the National Safety Council's defensive driving program. The object of defensive driving is to drive without having a preventable accident. Defensive driving requires the knowledge and strict observance of all traffic rules and regulations applicable to the area in which the vehicle is being operated.

Defensive driving requires a constant alertness for the illegal acts and driving errors of other drivers, and a willingness to make timely adjustments in your own driving so that these illegal acts and errors will not involve you in an accident. Defensive driving requires a knowledge of all the adjustments required in your driving for the special hazards presented by abnormal, unusual or changing conditions—in the mechanical functioning of your vehicle, type of road surface, weather, degree of light, kind of traffic, and your physical condition and state of mind.

Defensive driving requires a thorough knowledge of the rules of right-of-way and the willingness to yield the right-of-way to the other driver whenever necessary to avoid an accident. Defensive driving requires an attitude of confidence that you can drive without ever having a preventable accident. There is no doubt that a professional code for defensive drivers is not easy to follow. As professionals, however, you must show the way for other drivers and do your best to drive defensively. Let's take a brief look at how we can accomplish all that is expected by the code. Basically, you must follow three basic steps.—

See the hazard—when driving, think about what is going to happen or what might happen as far ahead of encountering a situation as possible. You should never assume everything will be "all right."

Understand the defense—specific situations require specific ways of handling. Become familiar with the unusual conditions which you may face and learn them well so that you can apply them when the need arises.

Act in time—once you've noted a hazard and understand the defense against it, act! Never take a "wait-and-see" attitude.

Taking these three steps and keeping the professional drivers code in mind, you'll learn to "give in" a little; to tailor your driving behavior to the unexpected actions of other drivers and pedestrians; to the

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

DRIVE DEFENSIVELY

Page 2

unpredictable and ever-changing factors of light, weather, road and traffic conditions; to the mechanical condition of your vehicle; and even to how to feel.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

CNA CONSTRUCTION



Accident Investigation

What should be Investigated ?

1. Accidents involving personal injury or property damage
2. Near-miss accidents
3. Hazards that have the potential for causing an accident

Why should accidents, near misses, and hazards be investigated ?

1. Prevent future accidents by identifying unsafe conditions
2. Create a legal record of what occurred (discoverable)

When to investigate?

Right after the Accident happens because:

1. Witnesses are available, and remember more facts
2. The scene will be most like it was when the accident occurred
3. There is a better chance of preserving important evidence

Where to investigate ?

1. The site where it happened
2. Secure the site as soon as possible

Who to interview ?

1. Anyone involved in the accident
2. Eyewitnesses

3. Anyone who heard or knows something about the accident
4. Anyone that knows something about the conditions that might have contributed to the accident.

Sequence of Events

1. Notification of Accident / Incident
2. Speed is of essence, go immediately to the scene
3. Take Emergency Action as needed
4. Secure the area
5. Collect Investigation Tools
 - Notebook
 - Accident Investigation Form (use as a guideline)
 - Tape / Ruler
 - Camera
 - Tape recorder (optional)
6. Interview Involved employees, any witnesses at the site
 - Ask open ended questions
 - Restate what was said

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

- Ask for suggestions

7. Investigate thoroughly

- Take Photos
- Take Measurements
- Do sketches
- Collect physical evidence
- Look for multiple causes

8. When all the facts are in:

- Complete the accident investigation form
- State the facts, no embellishment, avoid editorializing
- Wording critical - “Claimant States, alleges”
- Do not recommend actual corrective measures, offer only suggestions for possible improvement

9. Management’s responsibility

- Review the report
- Determines the correct causes to prevent recurrence
- Determine corrective Measures to be taken
- Follow-up on correction

The HAYSTACK Approach:

Steps to proper accident investigation

Help Obtained, when someone is injured

Area Secured, when necessary

Your witnesses have been identified

Selected materials to use in the investigation

Took action to resume operations, when appropriate

Asked witnesses what happened

Cause of accident determined; other hazardous conditions also identified and corrected

Knowledge of accident shared by preparing an Accident Investigation Report and taking other follow up actions

Tips for arranging Interviews:

1. Interview witnesses one at a time and as soon as possible
2. Interview people involved in the accident first, then employees, then others
3. Conduct interviews at the accident site whenever possible
4. Look for FACTS , not FAULT. Be questioning in your interviews, no accusing
5. Ask witnesses to explain what happened. Reenact the accident IF this can be done safely without repeating the accident
6. When On-site interviews are not possible, interview one witness at a time in a private location where witnesses will be most comfortable.

Tips for Interviewing:

1. Ask Open Ended Questions (Those needing an answer other than yes or no)

2. Don't Interrupt a witness (Make a note and ask your question when he or she finishes)
3. Take the fewest possible notes while the witness is speaking (be attentive)
4. Restate the information to be sure you understand it
5. Get answers to "Who, What, Where, When, How, and Why ?"
6. Rephrase the questions the witness didn't answer
7. Solicit ideas on ways to prevent future accidents
8. Thank witnesses for their time, information, and suggestions



JOB SITE FOREMAN SAFETY RESPONSIBILITIES

INTRODUCTION

The key to success in any construction loss prevention program is its actual implementation on the job site. Field supervision is the main mechanism by which the loss prevention policy and procedures are implemented. The attitude of individual workers toward the company loss prevention program is dependent upon the attitude of their supervisor. The foreman's actions in directing the work are the critical link in delivering success. If foremen are given clear responsibilities for job site safety, and if they are held accountable through a performance review and reward system, the likelihood of accidents will be reduced helping to achieve greater construction quality, productivity, and worker safety. Safe operations are practiced on the job site, not in the home office. Effective loss prevention programs are a result of the involvement and commitment of all members of the construction team, from the chief executive officer to the worker on the job site.

However, in accomplishing the desired objectives, Forman play the most critical role. As the principal representative of management seen daily by the workers performing the actual construction work, a supervisor has direct control of the activities of the workers.

The foreman must be thoroughly familiar with the duties and responsibilities of all parties involved in the loss prevention program. It is essential that the supervisor who has overall responsibility for the production, quality, cost, and scheduling of a project also be held principally accountable for job site safety.

As the company representative on the job site for management, the supervisor must understand the economic impact of accidents and incidents. The foreman who understands the mechanics of direct and indirect accident costs, as well as overhead implications for workers' compensation and other insurance coverages, is in a better position to make intelligent decisions in directing the work activities. Increasing the awareness of the individual workers on

the impact of their actions can greatly affect the business results.

FOREMAN RESPONSIBILITIES

The foreman is the primary project leader and must be held accountable for the project's safety performance. They must also be the principal implementers of the company loss prevention policy and procedures. The key roles and related responsibilities are outlined below:

- **Knowledge** – Have the knowledge to carry out all the training, site inspections, accident investigation, and recordkeeping roles defined below. Understand the principles of loss prevention as well as the company policies and procedures. Have a thorough understanding of the operations and hazards expected, controls to be used, company policies, and legal safety standards which apply to the hazard.
- **Site Safety Compliance** – The foreman must be given full authority to require workers of all levels on the job site to comply with the established work rules and other applicable loss prevention procedures. They must also follow proper pre-job and pre-task planning procedures and establish specific elements of the loss prevention program.
- **Site Inspections** - Continually check the job site to determine the level of implementation of loss prevention procedures and to assess the practices and site conditions. Any unsatisfactory conditions should be promptly reported and corrected. Check the job frequently to determine if the proper procedures are being followed. Be sure that potential hazards are being safeguarded against and that no new hazards have developed. This includes verifying that personal protective equipment is being worn and used properly and that all other equipment is being properly used.
- **Communication** - Hold periodic group meetings and weekly tool box talks and promote other means of communications with workers to ensure awareness of site safety. Reward outstanding performance and promote feedback and involvement of the workers in the loss prevention program.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Communication must flow back to senior management to advise of areas where help is needed and areas where there was superior performance.

- **Recordkeeping** - Maintain job site performance records, training, inspections, investigations, statistics, and other means to assess the level of implementation. Take corrective action for potential problem areas. Report and record the performance of the crew and any problems with the implementation of any element of the loss prevention program.
- **Worker training** - Determine the level of knowledge and job requirements of each individual worker. If there is a gap, it is up to the foreman to assure the proper training or support is provided and maintained. Give special attention to new or inexperienced workers since they are most "at risk" on the job site. Conduct periodic safety training sessions (e.g., tool box meetings) to familiarize crew members with safety performance indicators, lessons learned from previous accidents, and other pertinent information which will promote work safety.
- **Accident Investigation** - Require that all injuries and incidents be promptly reported and fully investigated to prevent future accidents. As the most knowledgeable individual working with the crew, the foreman is in the best position to determine what went wrong, why it happened, and how future occurrences can be prevented. This information must be shared with management so that recordkeeping requirements can be met, as well as benefits derived from the insight gained through the investigation.

- **Goal Setting** - Participate with upper management in the development of supervisor safety goals. Some measurable goals include: experience modification reduction, Lost Workday Injury Rate (LWDIR), training goals, inspection goals, and budgeting goals.

ACCOUNTABILITY AND PERFORMANCE MEASUREMENT

Safety programs and safety success require an active, motivated and knowledgeable foreman. In order to measure the level of performance periodic reviews should be undertaken to identify weaknesses and strengths of each foreman in carrying out his or her safety roles and responsibilities. An action plan to address areas for improvement should be outlined during the review and then monitored throughout the year. Feedback consistent with the level of achievement towards reaching the action plan expectations should be provided.

The following is a suggested review process to evaluate and hold the foreman accountable for safety at the job site. This should be tailored to comply with your company or site specific safety program. Each Supervisor should be given this score card when hired so that they understand what is expected. If the bargaining agreement disallows a formal performance review, the form could be used as a management guide to evaluate the individual followed by an informal meeting with the foreman to address strengths and weakness.

SCORING

- 1) **Poor** -- For the most part the foreman is not performing up to expectations. Remedial action is required.
- 2) **Below Average** -- Foreman occasionally takes responsibility and performs effectively but over-all expectations are not being met. Retrain and instruct the employee on improvements needed to achieve at least an Average rating.
- 3) **Average** -- Meets expectations consistently. Additional training and expectations needed to achieve at an Above Average level should be discussed.
- 4) **Above Average** -- Exceeds expectations occasionally. With additional training and motivation could achieve excellent rating within one year.
- 5) **Excellent** -- Exceeds expectations consistently. Role model and training example for all other Supervisory personnel.

SAFETY SCORE CARD

Rate the foreman in each category below based on the above scoring. Offer constructive comments as warranted.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

1. Completes accident/incidents reports on a timely, factual basis. Provides workable effective recommendations to prevent recurrence.	1 2 3 4 5	Comments:
2. Takes the initiative by communicating with management about status of job site safety and ideas for improvement.	1 2 3 4 5	Comments:
3. Knows the most significant exposures at the job site (i.e. material handling, falls, work zone safety, theft, alcohol/drug, housekeeping, safe driving) and keeps focused on controlling these.	1 2 3 4 5	Comments:
4. Takes charge of operations that are not routine to make certain good safety practices are followed.	1 2 3 4 5	Comments:
5. Performs regular inspections of job site exposures and program compliance. Informs employees and shop personnel of defects ensuring corrective action is taken. Takes the initiative in notifying management of persistent deficiencies.	1 2 3 4 5	Comments:
6. Performs new employee orientation and follows up with the new employee to ensure safe practices are adhered to. Takes corrective action when necessary to re-enforce safe job practices. Makes no assumptions concerning an employees' skills.	1 2 3 4 5	Comments:
7. Sets a good safety example for all employees.	1 2 3 4 5	Comments:
8. Consistently enforces company safety rules and if necessary uses the company disciplinary procedures to correct unsafe behavior. Works with each employee without favoritism.	1 2 3 4 5	Comments:
9. Conducts appropriate meaningful tool box talks encouraging the employees to participate and offer suggestions.	1 2 3 4 5	Comments:
10. Is knowledgeable in OSHA compliance and continues to demonstrate a willingness to stay abreast of OSHA issues.	1 2 3 4 5	Comments:
11. <u>Accident Experience</u> Frequency - # of accidents _____ Severity - # of lost work days _____ Frequency - # of first aid cases _____ Property losses - # _____/\$ _____	1 2 3 4 5	Comments:
12. Experience modification reduction	1 2 3 4 5	Comments:
ACTION PLAN:		

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice. 3





FREQUENTLY ASKED QUESTIONS ABOUT ERGONOMICS

Definition

What is ergonomics?

Ergonomics is the science of fitting the job to the worker. The term ergonomics comes from the Greek word “ergos” meaning work and “nomos” meaning natural laws of. It involves the worker’s interaction with tools, equipment, environment, jobs, tasks, work methods, work rates and other systems. When there is a mismatch between the physical requirements of the job and the physical capacity of the worker, musculoskeletal disorders (MSDs) can result.

Musculoskeletal Disorders

What is a work-related musculoskeletal disorder (WMSDs or MSDs)?

MSDs are injuries and disorders of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs. They do not include injuries resulting from slips, trips, falls or similar accidents. Examples of MSDs include carpal tunnel syndrome, tendinitis, sciatica, herniated disc and low back pain.

What is the difference between carpal tunnel syndrome and tendinitis?

Carpal tunnel syndrome is the entrapment of the median nerve of the hand and wrist in the passageway (tunnel) through the carpal bones of the wrist. It results in symptoms such as pain, tingling and night numbness in the fingers and pain on gripping. Tendinitis is the inflammation of a tendon, usually associated with repetitive, forceful exertions, often involving rotation around a joint such as the wrist or elbow.

Which workers are most likely to develop MSDs?

Workers who repeat the same motion throughout their workday, do their work in an awkward position, use a great deal of force to perform their jobs, repeatedly lift heavy objects or who face a combination of these risk factors are most likely to develop MSDs.

How long does it take to develop a work-related musculoskeletal disorder?

This is difficult to predict. An employee may notice symptoms such as muscle, joint or tendon soreness within the first several weeks of a new job. Workers with pre-existing medical problems may be at higher risk of developing symptoms than healthy workers. Some disorders may take several years before symptoms are identified. Some employees may never develop a MSD.

Are MSDs caused by things people do at home (e.g., knitting, gardening)? Are smoking or obesity potential factors?

Clearly, risk factors for the development of MSDs are not found exclusively at work. Home/life activities usually related to recreation or hobbies, such as playing certain string instruments, knitting, carpentry, or playing racquet sports may involve risk factors related to musculoskeletal disorders. There are also personal risk factors that may contribute to these types of disorders. For example, aging, physical health, smoking and obesity are risk factors for the development of MSDs. However, the employer still should try to eliminate workplace risk factors that contribute to the development or aggravation of MSDs.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

Is there a difference between men and women in the incidence rate of MSDs?

There are some differences in the incidence rates. However, this may merely reflect differences in employment patterns. For example, the work force in highly repetitive data entry operations (which may create upper extremity problems) is often predominantly female. Therefore, it is difficult to separate the effect of biology from other demographic and economic factors.

Is stress a factor in developing work-related musculoskeletal disorders?

Some studies have shown a relationship between psychosocial factors and MSDs. Psychosocial factors, such as the amount of control over one's job, appear to play a role. Control over how the job is done is particularly important in situations where the demands of the job are high. Examples are tasks involving quotas or piecework compensation. In these cases, the worker has little control, the job is often highly stressful, and these conditions may contribute to the development and reporting of MSDs. Supervisory and peer support at work may also be an important factor in helping to reduce risk factors for MSDs.

Why are there so many more work-related musculoskeletal disorder claims now than there were 20 years ago?

There have been MSDs for a long time. A physician by the name of Bernardino Ramazzini described them more than 250 years ago. There has been an increase in claims for these disorders over the last several decades. One reason for the increase is changes in production rates. In many industries, competitive pressures consistently increase production line speeds, which increases repetitiveness and reduces rest breaks for tissues to recover. An increase in public awareness may also contribute to increased reporting.

Prevention

Is it possible to eliminate or reduce MSDs and related costs?

MSDs are often very easy to prevent. Redesigning a workstation, or padding a tool handle are typical of the fixes used in ergonomics programs. Practical experience in solving ergonomics problems is plentiful. Ergonomic interventions may include:

- Adjusting the height of working surfaces to reduce long reaches and awkward postures.
- Putting work supplies and equipment within comfortable reach.
- Providing the right tool for the job and the right tool handle for the worker.
- Varying tasks for workers (e.g., job rotation).
- Encouraging short authorized rest breaks.
- Reducing the weight and size of items workers must lift.
- Providing mechanical lifting equipment.
- Using telephone headsets.
- Providing ergonomic chairs or stools.
- Supplying anti-fatigue floor mats.

What are the essential elements of an effective ergonomics program?

The following program elements are essential to an effective ergonomics program:

- Management Leadership and Employee Participation
- Hazard Information and Reporting
- Job Hazard Analysis and Control
- Training
- MSD Management
- Program Evaluation

Experts, available literature and many employers agree that, to be effective, ergonomics programs need to include these basic elements. These core elements are typical of any comprehensive safety and health program such as the OSHA Safety and

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Health Program Management Guidelines, the OSHA Meatpacking Guidelines, the draft consensus standard developed by the ANSI Z-365 committee, and many State safety and health program regulations.

Do workplace ergonomics programs actually work?

Employers of all sizes have had great success in using ergonomics programs as a cost-effective way to prevent or reduce MSDs, keep workers on the job and boost productivity and workplace morale.

A recent General Accounting Office study of several ergonomics programs found that these programs reduced MSDs and associated costs for those employers (GAO/HEHS-97-163). GAO also found that the programs and specific job fixes were not necessarily costly or complex for employers. (The GAO report can be accessed in the publications section of OSHA's Ergonomics Web page at <http://www.osha-slc.gov/SLTC/ergonomics/index.html>.) Many employers have used a flexible framework that includes the six key elements mentioned above. Some examples of their success include:

Red Wing Shoes (Minnesota shoe manufacturer) cut workers' compensation costs by 75%, even after adding two new plants. They modified work stations and gave employees adjustable chairs.

Fieldcrest-Cannon (Georgia textile manufacturer), working with their union, cut MSDs from 121 to 21 in just 3 years. They credit their success to worker involvement in designing systems to limit the need for workers to bend and reach.

Fresno Bee (California newspaper) reduced medical and temporary disability costs by 80% and saw an improvement in employee morale. The Bee redesigned adjustable workstations, instituted timed work breaks, and paid for eyeglasses, if needed, to read video display terminal screens.

Woodpro Cabinetry (Missouri cabinet manufacturer) saved \$42,000 in workers' compensation costs by bringing down its injury rates. The company added a conveyor to reduce the workers' need to lift and carry materials.

OSHA agrees that the basic program approaches implemented by these and many other companies are the most effective way to reduce MSDs and should guide the development of a flexible, performance-based program standard. In addition, the fact that employers already are achieving positive results is the best available evidence that ergonomics programs are feasible in controlling MSD hazards and reducing MSDs.

Do back belts prevent low back pain?

Evidence shows that wearing a back belt neither reduces injury rates nor the number of lost workdays. Employees should only be required to wear a back belt as a condition of employment if a physician prescribes it for a previous medical condition. Under no circumstances are back belts considered personal protective equipment.

Will wearing a wrist splint prevent carpal tunnel syndrome?

No. Although wrist splints help maintain a neutral wrist posture, there is some evidence that they do not change the pressures inside the carpal tunnel. Moreover, wearing a wrist splint in jobs with risk factors may transfer the stress to other parts of the body and cause injury. If the wrist cannot bend easily, and the job still requires wrist flexion, for example, the upper arm orientation has to change. To avoid creating disorders at other body locations, it is necessary to analyze the job requirements and reduce risk factors. Wrist splints are not considered personal protective equipment, and should only be worn if prescribed by a medical practitioner.

Will Vitamin B-6 supplements prevent carpal tunnel syndrome?

No. A few years ago, some reports claimed that Vitamin B-6 could prevent carpal tunnel syndrome. A recent study contradicted those results. Thus, there is no clear answer.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Do stretching exercises help prevent work-related musculoskeletal disorders?

It is better to modify jobs to eliminate risk factors for disorders than to encourage stretching exercises. However, just like in athletics, stretching can play an important role in preventing, but not eliminating, MSDs.

How frequent and long should rest periods be to prevent MSDs?

Nobody knows for sure. However, physiological principles suggest that it is better to take short breaks frequently instead of a few breaks of longer duration. Shorter frequent breaks give the tissues of the body time to recover immediately after use. It may be better to think of such breaks as “recovery” breaks rather than “rest” breaks. It is important to design recovery breaks into jobs rather than merely telling employees to take breaks. Unless recovery breaks are a mandatory part of the work process, it is easy for supervisory and peer pressure to discourage taking recovery breaks.

What is an ergonomic chair?

Look for adjustability and lumbar back supports. Good chairs should be able to accommodate a wide range of shapes and sizes of people. Probably the most important adjustment is seat pan height. It is also important to have the ability to adjust seat pan angle. A padded support for the low back, which is called a lumbar back support, helps reduce the stress on the spine.

Before buying a chair, however, it is important to think about the tasks the employee performs and the work environment in which the chair will be used. Specifically, it is critical to remember that work organization affects the amount of time spent sitting in a chair. Organizing the work so that workers can change postures and get up from their chairs may be more important than purchasing the best ergonomic chair available.

What is an ergonomic computer keyboard?

Computer keyboard manufacturers have started promoting certain keyboards as “ergonomic.”

Although some of this is advertising hype, a number of innovative keyboard designs have been developed. Most serious efforts at redesigning keyboards have centered on minimizing wrist motions and awkward wrist postures. Such designs may reduce risk factors such as wrist deviation. Some of these keyboards have documented improvements in productivity (e.g., typing rates), but little research has been conducted to demonstrate that “ergonomic” keyboards actually prevent injuries. Moreover, it is critical to remember that issues of work organization can significantly affect the amount of time spent keying, which may be the most important factor.

How heavy is too heavy a load?

It depends on a variety of factors. For example, a weight held far from the torso is more stressful than one held close to the torso. Lifts from floor level or above the shoulders, and lifts that require a person to twist the body also are more stressful. Lack of, or poorly designed handles on the object also can increase the stresses on the body. Loads should be lighter when lifts are frequent.

The National Institute of Occupational Safety and Health (NIOSH) has developed a Lifting Equation for Manual Materials Handling, which provides a method for calculating a recommended maximum weight to be lifted under a variety of conditions. Call 1-800-35-NIOSH (1-800-356-4674) or your CNA Loss Control Representative for more information.

Return-to-Work

If a doctor says my employee cannot perform a job because of work-related musculoskeletal disorders, do I have any options?

Yes. Ultimately, the best medicine for injured workers is to return to work as soon as safely possible. Analysis of claims shows that the longer a worker is in the industrial insurance system, the harder it is for him or her to return to work. You are encouraged to develop strong return-to-work policies and procedures which provide opportunities for employees who are temporarily disabled due to on-the-job injuries.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



Safe Use of Hand Tools

Of all the equipment placed at our disposal, the common hand tools, which we take for granted, are the most useful and the most often abused.

A recent review of construction injuries reveals quite a number of minor accidents involving the use of hand tools. To counteract this trend, it would be wise to review the basic rules governing the use of hand tools.



5. Use wrenches of the right size for the job. Face the jaws on an adjustable wrench in the direction of the pull.
6. Never apply a wrench to moving machinery; stop the machine, then remove all tools before starting it again.
7. See that pipe wrench jaws are sharp and chains in good condition so they will not slip.
8. Never use any tool in such a way that you will be injured by it if it slips. Pre-analyze your movements and position your body accordingly.
9. The construction industry calls for the use of many types of hand tools. Handle them with care; treat them carefully and use them exactly for the purpose for which they were made.

1. Choose the right tool for the job. Never use a makeshift.
2. Use only tools in good condition - no tools with cracked or broken handles, none without handles, none with mushroomed or broken heads.
3. Keep keen-edged blades sharp; store them safely when not in use.
4. Do not use a hammer with a hardened face on a highly tempered tool such as a drill, file, or jig. Chips may fly.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



BACK TO BASICS

As a sprinkler fitter, your job requires a lot of lifting of materials and equipment. The situation is worsened when working in an awkward position or in the cold. You stand a far better chance of remaining fit and pain-free if you'll stick with the basics in lifting and handling materials.

Many painful injuries happen to construction workers because they forget several basic manual material handling suggestions. Here are a few pointers about lifting and handling:

- First, think of your tender toes, in case something heavy drops. Always keep those toes of yours under protective cover; wear safety shoes.
- Think of your hands. Wear good tough gloves when you handle anything rough, sharp or splintery.



- Use material handling devices whenever possible to move material with minimal exertion. Items such as dollies, carts, pipe stands, come-alongs, two-wheelers, hydraulic/electrical hoists or lifts are designed to protect your precious back—use em!

- Before you lift,

make sure your body is prepared to lift by stretching your back, neck, shoulders, arms and legs.

- Be sure you've got a secure grip and solid footing.
- Keep the load close to your body, to minimize the strain. Lift smoothly—don't jerk as you lift.
- See that fingers and toes stay in the clear when lifting and handling.
- Don't twist your body when carrying a load; pivot with your feet instead of your spine.
- When a load is too heavy or awkward to handle alone, ask for help.
- Plan your path of execution and make sure it is free of debris and obstacles.
- Whenever possible, push rather than pull.
- Make sure work levels are at waist height when standing and elbow height when sitting whenever possible.
- If you have to work in one position for a long period of time, take time to stretch your back, neck, shoulders, arms and legs.

Always play it safe and smart. Stick with the basics in all of your lifting and handling of materials and equipment.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



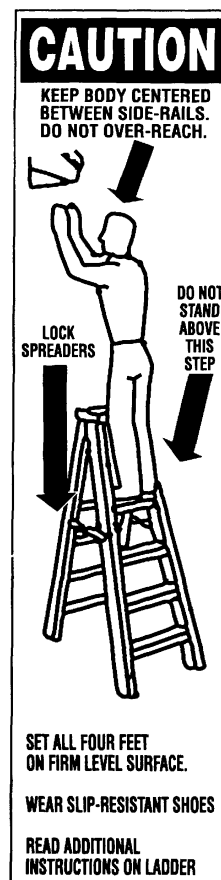
Proper Step Ladder Set Up

Injuries arising out of the use of step ladders are more frequent than you may expect. Here are some simple safety tips to keep you from being injured:

- a. Always inspect the ladder you are going to use before you use it.
- c. Never climb a damaged, bent, or broken ladder. All working parts must be in good working condition.
- d. Make sure you choose the ladder you need, taking into consideration the working height you will need to reach.
- e. Always set the ladder on firm level surfaces with a secure footing.
- f. Do not use ladders on slippery surfaces.
- g. Do not place ladders on boxes, bricks, scaffolds or any unstable to gain additional heights.
- h. Always be sure that the ladder is fully opened, spreaders secure, and pail shelf is in position.
- i. Do not place a ladder in front of a door (especially if it opens towards you). If needed notify others in the area, and use

signs and barricades so the door will not be used.

- j. Keep the ladder close to the work so that you will not be over-extending.
- k. Never store materials on the ladder or permit materials to accumulate on the steps or at the base of the ladder.
- l. Use three points of contact (hands and



The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACK INJURIES IN CONSTRUCTION

Page 2

feet) at all time while on the ladder.

- m. Follow the manufacturer's instructions and the warning decals on the ladder for proper and safe use.



SEAT BELTS

The National Safety Council's Injury Facts 2000, reports the following information regarding the use of safety belts:

- Reduce fatal injury to front seat occupants by 45% and reduce the risk of moderate to critical injury by 50%. For light truck occupants those figures increase to 60% and 65% respectively.
- Safety belts provide the greatest protection against ejection. In 1998 fatalities 21% of unrestrained passengers were ejected from the vehicle compared to 1% for those who were restrained with a safety belt.
- Lap and shoulder belts should always be used even in a vehicle equipped with air bags.
- Seat belts saved an estimated 11,088 lives in 1998.

Most vehicles in use today are equipped with safety belts. The problem is that many drivers and passengers fail to use them. Many people have arguments against the use of belts, but little evidence to support their objections. Let's examine a few of these objections and see what the experts at the National Safety Council have to say about them.

"Safety belts are alright when I have a long way to travel, but on short trips they're a real nuisance."

Buckling and unbuckling a few extra times is a heck of a lot easier than banging your head

against the windshield should you have an accident. Besides, most motor vehicle accidents happen within 25 miles of home and at speeds below 40 miles per hour.

"If I'm in an accident, I don't want to be trapped in my vehicle during a fire or if it goes into the water."

Chances are that if the crash is severe enough to trap you in the vehicle, you will be trapped even if you aren't wearing a belt. Besides fires occur in only 0.2% and submersion in only 0.3% of all injury producing accidents. Even then your safety belt can increase your chances of escape by keeping you from being knocked unconscious.

"I'm a good driver—never had an accident. Why do I need safety belts?"



Statistics show that four out of five drivers involved in accidents never had one before. In addition to reducing injuries and saving lives in accidents, safety belts are comfortable, give you better control and make you less tired. Once the safety belt habit is acquired, you will automatically buckle up every time you get into your vehicle.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

BACKING PROBLEMS

Page 2

"It's a free country and no one can make me wear seat belts if I don't want to!"

That's right—no one can force you to use safety belts. We do live in a free country and we do have freedom of choice. Hopefully, you will make the right choice and make the use of safety belts a habit. They do save lives.

BACKING PROBLEMS

Page 2

The National Safety Council's Injury Facts 2000, reports the following information regarding the use of safety belts:

- Reduce fatal injury to front seat occupants by 45% and reduce the risk of moderate to critical injury by 50%. For light truck occupants those figures increase to 60% and 65% respectively.
- Safety belts provide the greatest protection against ejection. In 1998 fatalities 21% of unrestrained passengers were ejected from the vehicle compared to 1% for those who were restrained with a safety belt.
- Lap and shoulder belts should always be used even in a vehicle equipped with air bags.
- Seat belts saved an estimated 11,088 lives in 1998.

To understand the value of safety belt use, it's important to understand some of the dynamics of a crash. Every motor vehicle crash is actually comprised of three collisions.

The Car's Collision

The first collision is known as the car's collision, which causes the car to buckle and bend as it hits something and comes to an abrupt stop. This occurs in approximately one-tenth of a second. The crushing of the front end absorbs some of the force of the crash and cushions the rest of the car. As a result, the passenger compartment comes to a more gradual stop than the front of the car.

The Human Collision

The second collision occurs as the car's occupants hit some part of the vehicle. At the moment of impact, unbelted occupants are still travelling at the vehicle's original speed. Just after the vehicle comes to a complete stop, these

unbelted occupants will slam into the steering wheel, the windshield, or some other part of the vehicle interior. This is the human collision.

Another form of human collision is the person-to-person impact. Many serious injuries are caused by unbelted occupants colliding with each other. In a crash, occupants tend to move toward the point of impact, not away from it. People in the front seat are often struck by unbelted rear-seat passengers who have become high-speed projectiles.

The Internal Collision

Even after the occupant's body comes to a complete stop, the internal organs are still moving forward. Suddenly, these organs hit other organs or the skeletal system. This third collision is the internal collision and often causes serious or fatal injuries.

So, Why Safety Belts?

During a crash, properly fastened safety belts distribute the forces of rapid deceleration over larger and stronger parts of the person's body, such as the chest,

hips and shoulders. The safety belt stretches slightly to slow your body down and to increase its stopping distance.

The difference between the belted person's stopping distance and the unbelted person's stopping distance is significant. It's often the difference between life and death.

Excerpts from "Sudden Impact," NHTSA, 1992.



BACK INJURIES

Minor back strains and sprains, usually associated with lifting or handling tasks, occur often to workers. These injuries usually manifest as upper or lower back pain. Low back pain is second only to the common cold as the most frequent cause of absence from work. Most low back pain incidents abate quickly, and generally allow workers to return to work. However, severe sprains and strains, which may be associated with incidents such as falls from heights or automobile accidents, will usually require longer periods for recovery.

In addition to the many minor sprains and strains which are common in industry, low back pain cases are also the most chronic and costly back ailment. Chronic cases usually are not attributable to a specific event, although many in industry mistakenly attempt to relate such cases to particular events. These back injuries can be viewed as cumulative trauma, developing over a period of weeks, months, or years, and result in nonspecific low back pain. Because of the tendency to relate all back injuries to a single traumatic event, usually the activity being performed at the onset of symptoms, workers suffering from low back pain may be seen as malingerers, especially when this activity is lighter work.

LOW BACK PAIN

Unlike common sprains and strains, which are known to involve muscles, tendons, and ligaments, non-specific low back pain is termed “idiopathic”, having no known specific cause.

The condition is painful and can seriously impair a person's ability to function. Although low back pain is usually episodic in nature, chronic or residual pain due to cumulative trauma may develop. Chronic, rather than episodic pain most often affects workers in their 40's. Among still older workers, those in their 50's and 60's, the incidence of low back pain tends to decrease.

INCIDENCE

The largest incidence of low back pain for males occurs between the ages of 20-24, and for females between 24 and 34. However, younger workers tend to have less severe disorders than their older counterparts. Usually, the condition improves quickly in younger workers. The most severe cases tend to occur to workers in their late 30s and 40s. The average age of patients undergoing discectomy (surgery to the discs to repair damage) is 42.

Low back pain is pervasive throughout our population, 80% of the general population experience some form of the condition at some point in their lifetimes. Sciatica, a neuritis of the sciatic nerve running through the back of the thigh near the low back, affects 40% of the general population at some time in their life. Sciatica and low back pain are often linked, and sometimes are difficult to differentiate. Fourteen percent of the population are experiencing low back pain at any given time. Low back **impairment** (reduced ability to function) affects about 11% of the U.S. working population each year.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

BACK INJURIES

Page 2

Low back **disability** (lost time or restricted work) affects about 2.0% of the industrial population each year, which accounts for 20% to 25% of compensation claims for lost wages. In terms of low back cases overall, relatively few cases account for the vast majority of costs.

Total annual costs for low back injuries in the United States has been estimated at \$20 billion dollars or more. Low back pain is clearly a serious and prevalent problem in our society. Only 25% of low back cases account for 95% of the costs. Larger insurance carriers pay out millions per working day for low back claims.

RETURN TO WORK

Following injury, 81% of patients can be expected to return to work, with the odds of returning to work decreasing with the length of time the employee is away from work. After a worker has been away from work with a back injury for 2 years, the probability of ever returning to work is nearly zero (McGill, Rosen). Social and psychological variables are more predictive of return to work than the physical severity of the injury. Consequently, there exists a limited time frame for employers to get workers back to work. If employers require full recovery before allowing workers to return, the employer has increased the probability that the worker will never return. Alternative, "light duty", or modified work is generally less expensive in the long term than requiring "100%" recovery. The 100% rule is generally viewed by experts as one of management's inadvertent contributions to the problem of costly low back pain.

Following an initial episode of back pain, a worker is 4 times more likely to have a recurrence. The group of workers that have

already experienced an episode of low back pain are the most likely candidates for future episodes. No elaborate screening tests are needed to identify these workers, since they are known to employers through injury records.

CAUSES

The specific cause of low back pain is unknown. Most authorities believe that low back pain is caused by changes in the spine, usually as one gets older. Heavy workloads are thought to merely trigger the occurrence of symptoms. Due to the natural aging process, most of us can expect to experience some amount of low back pain in our lifetimes. When activities involve strenuous work, frequent handling of materials, frequent bending or twisting, or handling of heavy loads, the probability for injury increases.

MATERIALS HANDLING

Manual materials handling tasks are associated with 63% of cases, and include lifting tasks, twisting, bending, reaching, and excessive weights. Also associated with low back pain are prolonged sitting, and exposure to vibration, as when driving or riding on vehicles. Personal or psychological variables such as smoking, obesity, and low job satisfaction are also associated with low back pain cases.

While personal variables are difficult to control, controlled worksite conditions can be achieved through good job or task design. Good job design also can improve job satisfaction, making claims less likely. Manual materials handling tasks represent an area where employers have much opportunity to improve job designs in order to prevent low back injuries.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

PREVENTION: ERGONOMICS

Good ergonomic job design, including proper workplace layout, appropriate use of mechanical aids, appropriate seat design, optimum work levels, sit/stand workstations, and matching object weights to human capabilities can go far toward reducing low back injuries. It has been estimated that good ergonomic job design can be expected to reduce compensation claims by up to 33%. Some ergonomists claim that up to 50% of costs could be avoided.

Good job design can prevent initial episodes, and also reduce costs of claims by allowing the injured worker to stay on the job longer, and by permitting the worker to return to the job sooner. Good design should be the first approach attempted to reduce injuries and associated costs.

Other measures may include employee selection, and worker training. All measures are necessary in order to substantially reduce low back episodes.

CAN TRAINING PREVENT INJURIES?

Until recently, most prevention efforts have focused on training workers with limited regard to job design. The results of such efforts have been poor to mixed. Effects of training have been temporary at best, since they do not represent permanent change. When production demands are high, workers tend to revert back to old ways of doing the job. Often, these are "short-cuts" that are quicker, but present greater risk of injury. One of the primary reasons for this lack of success with training has been poor job design. Workers cannot usually be trained to work beyond their physical limitations without mechanical assistance. However, since training presents one of the lower cost potential solutions

to this problem - at least initially - it has been a very popular approach among safety professionals and employers. One study (Scholey) compared the incidence of low back pain among **physiotherapists** involved in back care education with the incidence of low back pain in a control group. Such educators are very knowledgeable about care of the back, safe lifting, and related topics. But this seems to have made little difference, as they too experience back pain. No significant difference in incidence or recurrence was found between the two groups!

IDENTIFICATION OF HAZARDS

In 1993, the National Institute of Occupational Safety and Health (NIOSH) published a technical report which was a follow-up to their 1981 technical report on lifting guidelines. The NIOSH lifting guidelines were established as an effort which combined several different approaches to estimating stresses on the low back into a single set of equations. This mathematical model (an equation or set of equations that attempts to represent physical reality mathematically) has been used to estimate the compression force on the disc between the fifth lumbar vertebrae and the sacrum, the site of about half of all low back pain incidents. The input variables include the position of the load in relation to the body. Also included is the frequency of the lifting task, and the vertical distance that the load is moved. This model has been useful for estimating low back stress, but has several limitations. The model assumes only a smooth lift (no jerk) with two hands, and assumes no space constraints.

The NIOSH model is easily applied and therefore useful to the loss control professional. Various other models and methods are available for assessing manual materials handling tasks as

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACK INJURIES

Page 4

well. These include force limits determined through psychophysical studies, biomechanical analyses, EMG based studies, and other related approaches. Detailed discussion of each of these is beyond the scope of this bulletin.

ERGONOMIC JOB DESIGN

Once a task or set of tasks has been identified as hazardous, a thorough approach to redesign should be followed. Generally, the hazardous task should be:

- 1) **eliminated** - through materials flow redesign, automation, revised work layout, or mechanization.
- 2) **mechanized, assisted, or supported** - by adding materials handling devices such as lift-tables, converting lifting and lowering tasks to pushing and pulling tasks by use of slides, chutes, conveyors; convert carrying tasks to pushing and pulling tasks by using carts, dollies, conveyors; using other assists/supports such as adjustable chairs with back rests for prolonged sitting, and sit/stand workstation stools or benches, to allow for changing postures.
- 3) **performed within population capabilities and limitations - reduced and optimized** - reduce lifting and lowering requirements by breaking up loads, providing loads at optimal vertical and

horizontal locations; optimizing layout to reduce reaching, bending, and twisting; keeping all force requirements within population capabilities: reducing push and pull forces by using air bearings, ball caster tables, or large diameter casters on push or pull carts.

Obviously, these approaches overlap to some extent. The first effort should be to eliminate altogether the need to handle materials manually. A review of materials flow can determine if the materials are unnecessarily deposited temporarily, and then later moved again. Have materials moved directly to their final destination whenever possible. Mechanizing or automating can also eliminate lifting, lowering, pushing, or pulling tasks. Finally, tasks which are not eliminated or mechanized should be carefully designed to match the worker population's capabilities and limitations.

DESIGN AXIOMS

The following design axioms or principles are useful to guide the design of jobs to eliminate unnecessary hazards.

- * **DO NOT LIFT THAT WHICH MUST BE LOWERED LATER**
- * **DO NOT LOWER THAT WHICH MUST BE LIFTED LATER**
- * **USE GRAVITY, DO NOT OPPOSE IT**
- * **CONVERT LIFTING/LOWERING TASKS TO PUSHING/PULLING TASKS**

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACK INJURIES

Page 5

Do not store materials on the floor that could be stored on a platform. This will eliminate both the lifting and lowering elements of the materials handling tasks. Likewise, avoid storing materials on high shelves, especially heavy materials that may create a falling hazard as well. Don't have workers move objects against gravity, as from a low cart up to a conveyor, and from that conveyor to a higher shelf. However, the opposite direction of flow, going with gravity, is more desirable.

- * **AVOID EXTREMES OF JOINT MOVEMENT**

- * **AVOID STATIC MUSCLE LOADING (exertion without movement)**

- * **PROVIDE ADJUSTABILITY, FIT A RANGE-NOT THE AVERAGE**

- * **GIVE SUPPORT TO THE BODY**

- * **DO NOT HAVE THE WORKER REACH BEHIND**

An example of extreme joint movement is a worker bending at the waist to retrieve heavy parts from the bottom of a barrel. Instead, find a way to dump the barrel, preferably onto a platform near waist height. Static muscle loading is any prolonged posture which requires exertion to maintain, such as bending forward over a work table. Instead, adjust the table height, or adjust the worker's standing level (raise or lower the worker). A rule of thumb is to have the work activity at about two to four inches below the worker's elbow height. For any prolonged posturing, such as a seated typist or draftsman, occasional posture changes are desirable. Adjustability is necessary whenever different workers use the same workstation. A good chair is important support for seated workers, while armrests or supports, even frontal support to the chest, may be recommendable for a worker whose arms or back may be statically

loaded, as in working above heart level, or a draftsman or dentist that must lean forward. Workplace layouts should be designed to avoid having workers reach behind to deposit or retrieve items. This action usually induces a twisting of the spine that can cause serious spinal injury when performed repeatedly, especially if a load is added.

- * **KEEP LIFTS BETWEEN KNUCKLE AND SHOULDER HEIGHT**
- * **LET THE WORKER GET CLOSE TO THE LOAD**

The optimum vertical location for lifting an object is grasping the item at about 30 inches from the floor. The closer to this vertical location a lift is, the better. Even more important is whether or not the worker can get close to the load, and stay close to the load when depositing it. Any obstruction to getting the worker close to the load should be removed through redesign of the task.

- * **REDUCE VIBRATION AT ITS SOURCE**

- * **REDUCE TRANSMISSION OF VIBRATION**

- * **AVOID 4-8 HZ VIBRATION OF THE WHOLE-BODY**

- * **REDUCE THE DURATION OF EXPOSURE TO VIBRATION**

Exposure to whole-body vibration is known to increase the likelihood of low back pain. Vibrations should be reduced to the extent possible. This can be accomplished by various vibration damping techniques, redesign of equipment, addition of vibration absorbing materials, and rotating workers to reduce exposure. Vibration affects many workers that operate equipment or machinery, especially

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACK INJURIES

Page 6

vehicles. Truck drivers are usually exposed to whole-body vibration, often for long periods.

* **LISTEN TO THE WORKER/LET THE WORKER HAVE A SAY**

Workers that have been performing tasks or jobs for many months or years usually have some good suggestions on how the job design could be improved. This valuable source of information should not be overlooked.

SELECTION

The most reliable selection effort is a carefully collected medical history and thorough examination. X-rays or other radiologic exams are not recommended as part of the medical examination. Several studies have shown surprisingly little relationship between clinical symptoms and radiologic changes of degeneration. Isometric strength capability has been shown to be a useful predictor of problems. The probability of a musculoskeletal disorder is up to three times greater when lifting requirements approach or exceed a worker's isometric strength capability. However, some researchers find this approach fundamentally flawed, since most work is performed dynamically, not statically. Data on dynamic strength testing concerning effectiveness in reducing low back injury is not currently available.

TRAINING

Employee training in safe lifting practices, while a part of the corrective action process, should not be considered the sole remedy. Several studies

indicate that current industrial training by itself has limited to no effect on low back injury rates.

Since uninjured workers are more difficult to motivate, training may be more appropriate for:

- * Injured workers - who are more motivated to act safely following an injury.
- * Management - who require information about low back injuries, and the need for offering encouragement and follow-up, not requiring 100% recovery before allowing a return to work, and providing modified, alternative, or part-time work.

Some jobs, where the tasks performed and risk factors to which workers are exposed may vary considerably during the work shift, may be inherently difficult to design or control (i.e., firefighters, police, beverage or other delivery). For these types of jobs worker selection and training can be used to help control injuries. Emphasis on high quality technical training on safe lifting procedures relating to specific job tasks should yield the best results.

EQUIPMENT

Many new equipment designs now account for ergonomics considerations. Easily available are such devices as various types of lift tables, turntables, spring or pneumatically loaded leveling tables, mechanical lifts which can be loaded flat on the ground ("zero-lifts"), mobile or portable conveyors, inverters which turn or orient materials, and myriad other devices. In

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACK INJURIES

Page 7

addition, height adjustable worktables and angled bin or tote racks are inexpensive and available. For information on materials handling products, the Materials Handling Institute in Pittsburgh, PA, may be of assistance. Formed in 1945, the Institute consists of consultants, manufacturers, and integrators of materials handling systems, and addresses the technical and product specific elements of the materials handling industry. In 1988, the Materials Handling Industry of America was formed to allow broader representation of the entire materials handling industry. MHIA sponsors educational and trade events such as "ProMat", an international material handling show and forum held in the United States. Their toll free number is 1-800-722-6832.

PERSONAL PROTECTION

An effort to afford workers personal protection in the form back belts which workers wear around their waste has been a popular attempt to control back injuries. However, mounting scientific evidence suggests that belts are very little, if any, protection to workers. Nor have belts been found to offer a psychological or motivational advantage to workers. There is some concern that belt wearing increases a worker's blood pressure, and therefore introduces new risks, especially to workers with compromised cardiovascular systems. A better approach is good job design.

REFERENCES

Low Back Pain, Snook, Stover H., Liberty Mutual Insurance Company - Harvard School of Public Health, presented at Occupational Ergonomics II Engineering Conference, University of Michigan, Ann Arbor, MI, June 1990.

The Cost of Compensable Low Back Pain, Webster, Barbara S., Snook, Stover H., Journal of Occupational Medicine, Vol. 32, No. 1, January 1990.

Occupational Biomechanics, Chaffin, Don B., Andersson, Gunnar B., John Wiley & Sons, New York, NY, 1984.

Manual Materials Handling, Kroemer, K. H. E., presented at the Human Factors Society Annual Meeting, Denver, CO, October 1989.

Work Practices Guide for Manual Lifting, Technical Report, National Institute of Occupational Safety and Health, Division of Biomedical and Behavioral Science, Cincinnati, OH, 1981.

Applications Manual for the Revised NIOSH Lifting Equation, DHHS Publication number 94-110, National Technical Information Service, Washington, DC, 1994.

Human Aspects of Occupational Vibration, Wasserman, Donald E., Elsevier, New York, NY, 1987.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION

BACK INJURIES

Page 2

Industrial back problems, a control program, McGill, C. M., *Journal of Occupational Medicine*, 10:174-178, 1968.

Treating the many facets of pain, Rosen, N. B., *Business & Health*:7-10, May, 1986.

Back pain in physiotherapists involved in back care education, *Ergonomics*, Vol. 32, 1989, pp 179-190.

Fitting the Task to the Man, 4th Ed., Grandjean, Etienne, Taylor & Francis, Philadelphia, 1988.

Making the Job Easier: An Ergonomics Idea Book, National Safety Council, Chicago, 1988.

The effect of an abdominal belt on trunk muscle activity and intra-abdominal pressure during squat lifts, McGill, S., Norman, R. and Sharratt, M., *Ergonomics*, Vol. 33, no.2, 1990.

Effects of industrial back supports on physiological demand, lifting style and perceived exertion, Marley, R. J., and Duggasani, A. R., *International Journal of Industrial Ergonomics*, vol. 17, no. 6, 1996.

Effects of back support on intra-abdominal pressure and lumbar kinetics during heavy lifting, Woodhouse, M., McCoy, R., Redondo, D., and Shall, L., *Human Factors*, vol. 37, no. 3, Human Factors and Ergonomics Society, Santa Monica, CA, 1995.

Lifting belts: a psychophysical analysis, Lavender, S., and Kenyeri, R., *Ergonomics*, vol. 38, no. 9, Taylor & Francis, Philadelphia, 1995.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



FLOOR OPENINGS – COVER OR PROTECT

Covering a floor opening with a piece of plywood requires more than just laying the material over the hole, and nailing it down.

Total safety on the job means a total job of eliminating a hazard. Half a job... inadequate or incomplete jobs of covering hole hazards can result only in half, inadequate, or incomplete accident prevention.

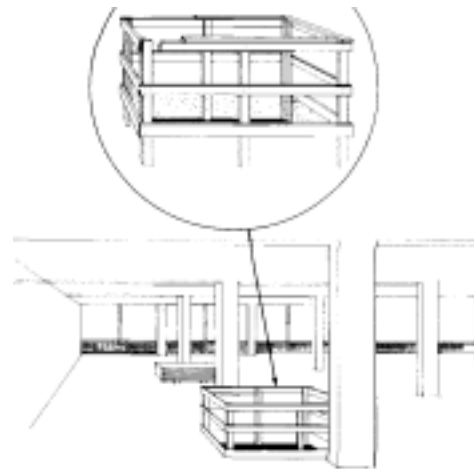
A recent accident illustrates the point. A carpenter on a floor above called down to a laborer to hand him a sheet of plywood. The laborer walked over to a sheet lying on the floor, picked it up, took a step or two forward in the act of standing the plywood up, and he went sailing right down through the floor hole, which was meant to contain an air duct. Why did it happen?

Although originally nailed down with 8d concrete nails, the plywood over the hole wasn't large enough. It did not overlap the hole adequately. The traffic over it caused the plywood to spring until it loosened the nails. Floor hole covers must adequately cover the hole, be secured in place and be able to withstand twice the weight that is intended to be placed on it. Consider the weight of workers, tools, equipment and aerial lifts. Strong consideration should be given to barricading the area to prevent aerial; lifts and equipment from falling into the hole (even if it is covered).

The plywood over the hole wasn't marked in any way. There was no warning of any kind on it. The worker mistook it for a piece of loose material lying on the floor. Floor hole covers

must be marked "FLOOR HOLE COVER". A common way to do that is with florescent spray paint.

The worker wasn't told about it. He wasn't made aware of the fact that the covering of floor openings was a required job procedure to prevent accidents. Nor was he told that he must maintain and report such danger spots. A good job-site-specific safety orientation identifies the potential hazards, trains the workers on how to eliminate the hazards of the job and outlines the process for reporting jobsite hazards.



Anything less than total safety is no safety at all. The total safety attitude must be kept in mind when floor openings are being covered.

1. The hole should be covered securely, with a cover big enough and strong enough to prevent failure.
2. It should be marked with a danger warning.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACKING PROBLEMS

Page 2

3. Every employee on the job should be warned about it.



DON'T GIVE FIRE A CHANCE

There's plenty of air, plenty of fuel, and plenty of ignition sources around construction sites—so everyone must be on the alert to prevent fire. Here are some ways to keep the job from going up in smoke. Did you know the probability of a building catching fire is greatest while it's under construction? Here are some good practices in fire prevention.

- n Keep the site clean.
- n Store combustible materials away from ignition sources.
- n Report any possible fire hazards that you notice: open flames, sparks, and electrical equipment that appears to need repairs.



- n On hot-work jobs or when open flame equipment is used, appoint a “fire watch” to keep an eye out during and at least a half hour after hot work is performed, be sure the fire watch can call for help in the event of an emergency, be sure combustibles are safe from ignition, have a fire extinguisher immediately available for welding, torch cutting and any work involving open flame or flammable liquids.
- n Help protect temporary electric wiring from possible damage. In case of a fire in or near live electrical equipment, use a dry chemical extinguisher, and not water.

- n Don't smoke near flammables, in "No Smoking" areas, or while re-fueling equipment. Make sure cigarettes and matches are out.
- n Always use approved safety cans or the original manufacturer's container to store flammable liquids. Keep these containers closed when not in use, and never store them near exits or passageways.
- n Clean up any spills as soon as they occur. Put saturated rags into closed metal containers.
- n Watch to see that canvas tarps, plastic sheeting or other flammable/combustible items don't get close to space heaters. Take care to see that heaters aren't accidentally tipped over.
- n Know where the closest fire-protection equipment is located, and how to use it. Check to see that fire-fighting equipment is in the clear, in proper condition, and ready for instant use.



If a fire does break out, call the fire department. If you are able to use a fire extinguisher, remember the PASS process: Pull the pin, Aim at the base of the fire, Squeeze the handle, and Sweep back and forth as you approach the fire until it is extinguished.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



WATER DAMAGE PREVENTION – General Reminders

The following information is based on CNA Commercial Insurance claim information for the period between January 1997 and December 2000. A review of the general liability line of the AFSA Insurance Program, conducted by the AFSA Safety Committee revealed the following:

- 72% of the dollars paid on general liability claims (\$22.8 Million) are paid to cover the costs resulting from water damage incidents.
- 79% of the number of claims (1,085) are water damage claims.
- The average cost per claim is approximately 21 thousand dollars.
- Water damage claims are more likely to occur after the work was completed and the contractor had left the job site.

A “loss driver” is an identified cause or trend that most severely affects a line of insurance. The loss driver in the AFSA General Liability line is clearly water damage. Specific causes of fire sprinkler related water damage claims, valued at greater than \$50,000 can be broadly categorized as follows:

- pipes or components that burst as a result of freezing, inadequate heat or insulation
- problems with couplings or fittings not including freezing
- improper gluing of plastic pipe
- sprinkler head discharging

In an effort to reduce these losses the following reminders are provided in the AFSA Water Damage Prevention Program.

- Provide customers 24 hour emergency contact in the event that a leak is discovered after the contractor’s employees have left the facility. Emergency contact information should also be available on the company after hours voice mail system, marketing information, and website as applicable.
- Provide customers a copy of NFPA 25, operations and maintenance instructions and the Contractor's Material & Test Certificate signed by Fire Marshall, or other authorized person, as evidence that the system was tested and accepted.
- Provide each company supervisor with a disposable camera. A good place to store this camera is in the glove compartment of each company vehicles.
- If a water damage incident occurs, follow the guidance provided in the AFSA Water Damage Prevention Program. Some key points to remember are:
- Respond immediately. Close the sprinkler control valve and open the main drain. Do everything possible to contain the water and protect computers, sensitive equipment and other property from damage.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

- Take pictures and or video of the scene. Conduct an in depth investigation of the incident and write down the names, addresses, phone numbers of all who were involved in or witnessed the incident.
- Report this information to the insurance carrier ASAP. Be careful not to commit your self or the insurance company to any liability! Be sure you discuss this with all field employees and office personnel who might find them selves providing information regarding a claim.



INTERNAL THEFT PREVENTION

Introduction

Pilferage, employee theft, internal theft, all these terms boil down to one thing, just plain stealing. In this country, we have reached crisis proportions sociologically and economically concerning this issue. Usually, the concern is regarded as just the “cost of doing business”. Over a period of time, this can have disastrous effects on your business and the economy as a whole.

The Scope of the Internal Theft Exposure

Statistics can be interpreted many ways and can quickly become outdated. Statistics do however give us a base for understanding the scope of the internal theft problem.

In the last 30 years internal theft has been considered the number one cause of business failure in the United States. Thirty percent of bankruptcies in the United States were caused by internal theft. \$40 million dollars in cash and merchandise per day is the estimated daily loss. This far exceeds the monetary loss of crime in the streets. The U.S. Department of Commerce says that between \$5 billion and \$20 billion in internal theft losses occur each year. No matter what figure you use we are talking about billions of dollars. In a recent study, retail losses from internal theft estimated a loss of \$12.9 billion with annual sales of \$1.9 trillion dollars.

Causes of Internal Theft

Societies have used the terms “rotten apples”, “moral laxity”, and “undesirables and their associates”, as substantiating the causes of theft. The true causes can be categorized into four general areas; employee attitude, management responsibility, managerial dishonesty and other factors.

Employee Attitude

Employee attitude can be affected by dissatisfaction with the job. Individuals may feel justified in stealing as a

result of this. An individual may feel that a company is not paying them what they are worth or that they have been passed over for promotion. A person may feel that the work conditions are substandard or unsafe. A business may be strong enough to withstand stealing in the eyes of some other employees. In many cases, employees don't believe they are hurting anyone.

Management Responsibility

Management can be responsible when providing inadequate supervision, ignoring work standards, and assigning low priority to basic security controls. Penalties for internal theft may be rather insignificant resulting in little fear of being caught. If known thieves are not getting caught, disciplined or fired, then other employees reason that stealing must be an acceptable practice.

Managerial Dishonesty

Employees learn from their bosses. Managers establish the norm for the employees to follow. Any behavior that conforms to what is perceived to be acceptable will not be considered dishonest. A recent study of fidelity losses indicated long term employees with positions of responsibility have a greater loss potential. Those thefts involve large sums of money over long periods of time.

Other Factors

The fact that inflation is affecting our life-styles also tends to push the employees in trying to stretch their paycheck. Employment uncertainty and recession as well as bankruptcy or impending mergers may also push an employee into a state of mind where dishonesty seems less of a criminal act. Many of these factors tend to cause employees to lose their sense of loyalty. Also, there are needs to cover up a gambling debt or the need to pay for expensive drug habits that also weigh in as a factor in reducing the level of honesty of an employee.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

INTERNAL THEFT PREVENTION

Page 2

Warning Signals

There is no fail-safe technique for identifying the dishonest employee. The potential for theft exists in all employees. Efforts therefore should be directed at the mainstream rather than the stereotype. An employee exhibiting a few of these signals does not mean you have a criminal on your hands. You are looking for consistency and frequency in a wide range of signals. It may only be circumstantial.

Too often, the signs are accredited to chance, coincidence, or eccentricity and ignored. To successfully detect theft and prosecute against the criminal, evaluate and compare the theft warning signals from merchandise and equipment, from theft protection devices, from records and documents, from personal behavior, from employee activities, and from customers or outsiders.

Signals from Theft Protection Devices

- Signs of forced entry at perimeter doors and windows, such as scratches near locks, damaged door jams, broken panels, etc.
- Alarm system wires broken, damaged, or jumped.
- Frequent false alarms or frequent inability to close premises because the system shows a break somewhere.
- Electronic security devices frequently in need of repair and inoperable.

Signals from Records and Documents

- Discrepancies between inventory records and physical counts.
- Controlled documents missing or out of sequence.
- Unexplained alterations in inventory records.
- Documents not properly signed or countersigned.
- Excessive use of substitute records because originals are "lost".

Signals from Personal Behavior

- Symptoms of substance abuse, Patterns of absenteeism (Monday, Friday),

- Heavy gambling on horses, cards, numbers, sports, etc.
- Disgruntled, dislikes, boss or company, and complains about being underpaid or over worked.
- Never takes time off or vacation, or comes in during vacation or day-off.

Signals from Employee Activities

- Coming in too early or staying too late for no good reason.
- Habitual carrying of gym bags, shopping bags, etc.
- Habitual wearing of loose-fitting clothing.
- Rapid loading of a truck while the other trucks are loaded more slowly.
- Presence of employees in an area where they have no legitimate business.

Signals from Customers and Outsiders

- Frequent customer complaints of shortages or substitutions in shipments.
- Unusually friendly relationship among employees and such outsiders as truck drivers, repair men, trash collectors.
- Frequent contact among employees and visitors, especially those visitors who carry shopping bags or other containers.
- Presence of outside personnel (telephone repair, building service, salesman, etc.) in areas where they have no legitimate business or communicating with employees they have no business dealing with.
- Many customers always dealing with one employee and refusing to buy from anyone else.

Controlling Internal Theft

These theft prevention strategies can be categorized into four areas: Pre-employment screening, procedural controls, improving employee job satisfaction, and an apprehension and prosecution policy.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



INTERNAL THEFT PREVENTION

Page 3

Pre-Employment Screening

A comprehensive employment application form should be developed that affords the basis for an in-depth exploratory check of the applicant's background. The form should be consistent with federal and state requirements and should include, as a minimum, information about residence, education, job history and references.

- The applicant's references and previous employers should be checked, either by mail or phone. If the telephone is used, all questions should be direct. Letter inquiries should be designed using "check-off"-type questions, not requiring narrative answers, and should include a self-addressed, stamped envelope.
- A list should be developed of questions to be asked, during the job interview, that are intended to provide insight into the person's character.

Procedural Controls

These controls are designed to limit the opportunity for theft by making it more difficult to accomplish successfully. Gaining the agreement of the employees is important. Without their agreement and understanding, there may be damaging effects on morale.

- Employers should develop a set of written security procedures that also outline the company's policy for dealing with an employee caught stealing.
- A copy of security procedures, as well as other company policies (such as borrowing tools), should be provided to each employee; a signed statement of its receipt should be obtained.
- A notice should be posted, in a conspicuous location, stating that dishonesty will not be tolerated and that all offenders will be dismissed.
- Responsibilities and functions should be separated so that no one employee has control over all parts of a given transaction.

- Workflow should be organized so that the work of one employee acts as a check on that of another.
- Employees should account for tools and materials through inventory control. A program should be established of regularly scheduled inventories, combined with unannounced or "surprise" inventory checks performed by other than stock room personnel.
- Keys to the premises should be controlled and a record maintained of employees to whom keys have been assigned.
- Check employees who arrive early or stay late when there is no need to do so.
- Use care in allowing employees free access to store rooms or to other sensitive areas.
- Keep valuable items locked up with the appropriate manager in possession of the keys. Also, keep all storerooms locked.

Apprehension and the Prosecution

The fear of being caught, dismissed, and possible prosecution with threat of a jail term is undeniably effective as a control strategy. Dishonest employees must be prosecuted to the full extent of the law. Where warranted, strong positive action must be taken. Its pays for itself in terms of a recognized deterrent.

- Management should uphold company policies regarding employee thefts, judging every employee by the same objective criteria. Failure to take decisive action or failure to be consistent can have an adverse effect on successful prosecution and the attitude of employees in the future.
- When an employee is suspected of internal theft, local police should be consulted. Employers should be familiar with the evidence required and the procedures that should be followed. An employer should seek professional legal

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

INTERNAL THEFT PREVENTION

Page 4

consultation when setting up a prosecution policy.

Conclusion

Internal theft can seriously affect the economic stability of a business. Management needs to implement policies to control internal theft. Businesses who have a good employee selection program, publicize to employees that stealing will not be tolerated, and establish control

strategies to detect employee theft, usually have lower levels of dishonestly.

Beware of the “theft contamination”. Once dishonesty gains a foot-hold in a business, it can spread.

To be effecting in reducing the potential of internal theft, the four control strategies outlined must be integrated into a comprehensive prevention program that gives consideration to an employee’s morale and legal rights. You can start to control your losses today.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



TRAINING FOR BACK INJURY PREVENTION

The theory of training workers to lift properly to prevent injuries appears sound, but is fraught with practical difficulties:

- The quality of training programs varies widely.
- Compliance with recommended lifting procedures is inconsistent and also varies widely.
- There is considerable confusion about what constitutes a “proper lift”, and no single technique appears to be the best choice in all scenarios.

Here are some of the many techniques that have been advocated:

- straight back/bent knee lift
- ‘kinetic lift’ (back is kept ‘mostly’ straight while knees are unbent, but feet, chin, arm, hand, and torso postures are prescribed)
- free-style lift
- stoop-lift (bend at the waist and straight knees)
- squat-lift (bent knees)

Scientific studies show mixed results regarding the ability of training programs to reduce injuries.

Snook et al. (1980) compared the number of back injuries in companies that conducted training programs in ‘safe lifting’ to the number of back injuries in those that did not; the numbers did not differ significantly.

But some training programs have been followed by decreases in back injuries, for example, an 8% reduction was found in a British cigarette manufacturer after training, and a

50% reduction was found in underground coal mining following training. Some case studies found a greater number of injuries but reduced lost time, possibly due to changes in management attitudes and workers’ increased willingness to report injuries early.

Training for management and supervisory staff in how to respond to low back pain and injury once the injury has occurred is a very important aspect of any cost reduction plan.

Additional possible approaches to back injury prevention training include *fitness training* and overall *wellness training*.

In summary, here are some pros and cons about training:

PROS: Concept appears valid, but is difficult to prove.

CONS:

- Uninjured workers are difficult to motivate.
- Quality of training is not generally good, presentation is often poor, content varies widely, follow-up is lacking.
- People tend to revert to previous habits and customs if practices trained to replace previous ones are not reinforced and refreshed.
- Emergency situations, the unusual case, as sudden quick movement, increased body weight, or reduced physical well-being may overly strain the body if these conditions did not exist at the time of training.
- **Designing a safe job is fundamentally better than training people to behave safely.**

References/Further Reading:

Kroemer, K.H.E., Personnel training for safer material handling, *Ergonomics*, vol. 35, no. 9, Taylor & Francis, Philadelphia, 1992.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

TRAINING FOR BACK INJURY PREVENTION

Page 2

Snook, S., Liberty Mutual/Harvard School of Public Health, presentation notes for engineering summer conference, University of Michigan, Ann Arbor, 1989.



ROADS AND WEATHER

Rain, snow and wind make driving extremely hazardous. In fact, the adverse weather conditions create double trouble.

Congested traffic, winding curves and steep hills make driving difficult enough during normal conditions. But, when we combine these road conditions with wind and wet weather, a whole new set of circumstances are introduced.

We must adjust our driving for these conditions. Keep your distance. Remember, you need a lot more room to stop on slippery roads. Anticipate stops and slow down gradually. Be extra cautious at intersections.

When driving on a slippery surface, never slam on your brakes. These sudden stops can throw you into a skid. Keep steering control and wheels rolling by using short, rapid jabs on the brake pedal.

Rapid acceleration and too-hard braking cause most skids, but a sudden steering movement can also whip your vehicle into a slide. Slow down well ahead of turns and curves. Plan ahead for lane changes and move into them gradually. Be sure to signal your intentions to traffic behind.

If you do go into a skid, follow these rules:

- Don't hit your brakes or over-steer.
- Take your foot off the gas and steer in the direction the rear of the car is sliding. That is, if the rear of the vehicle slides right, turn your wheels right. If your rear slides left, turn wheels to the left.
- When you feel the recovery, straighten your wheels and roll on.

The danger of trailer jack-knifing is also present on wet roads. What happens is that the speed of trailer surpasses that of the vehicle creating a hinging effect. The trailer whips around with great force, throwing the vehicle out of control.

Routine vehicle maintenance is important throughout the year. However, during inclement weather, we rely on vehicle equipment that we sometimes take for granted. Before each trip, make sure all lights are working properly. Check your windshield wipers, tire pressure, heater defroster, and be sure you are carrying a set of tire chains. One of the few good feelings about driving in bad weather is knowing that you're in a safe vehicle.

Be prepared for the unexpected. Keep your vehicle in top-notch condition, increase your following distance and adjust your speed accordingly.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.



WATER DAMAGE PREVENTION – Miscellaneous Precautions

In an effort to reduce water damage from fire sprinkler systems, the following miscellaneous precautions are provided in the **AFSA Water Damage Prevention Program**.

SPRINKLER HEAD ISSUES

Where sprinkler heads are subject to physical damage (such as in a gymnasium or warehouse). You must notify the owner in writing of the exposure and make recommendations for addressing the exposure. If the owner is not willing to comply with the recommendations, it should be documented to avoid future liability for damaged heads.

WATER FLOW ALARMS

On systems equipped with water flow alarms, the system must be installed in such a way that it has the capability to monitor every branch in the system. This is especially important, for example, when a single sprinkler line or head is installed to protect an exposure (such as a spray booth or laundry chute) in a non-sprinklered building.

If the system is to be restored, the owner must be notified, especially if the water flow alarm is inoperative, as leaks could develop and result in significant water damage. The owner must take full responsibility for monitoring the system and shutting it off in the event of a malfunction.

This owner notification and assumption of monitoring responsibility is critical if the systems has to be charged at the end of a work day, on weekends or before holidays as leaks could develop and result in significant water damage.

MISCELLANEOUS

Believe it not, sprinkler system testing/inspection services often result in water damage as a result of improper drainage. Check the location of external drains (2" main and inspector's test connections) to

assure safe flow areas. Have the owner review and approve the flow area before testing to prevent damage or washout of nearby items.

Ensure deluge valves are correctly tested to prevent tripping and extensive water damage (Mall fire curtains, special spray on open transformers etc.)

OWNER RESPONSIBILITIES

Customer site personnel should be fully briefed on the status of the installation and alerted to when the system is fully charged. The following should be done even if the Contractors Material Test Certificates (CM & TC) have already been signed by the Authority Having Jurisdiction (AHJ).

- The owner must be provided a copy of NFPA 25 and the operations and maintenance instructions.
- The owner must be aware of the location of all control valves and sectional control valves.
- Keys for closets and control valves must be readily available should a leak occur.

The proper Contractors Material Test Certificates (CM & TC) must be used for above and below ground piping as required by NFPA 13. These must be completed and given to the owner.

A complete inspection of the entire jobsite with the owner must be documented on an inspection checklist. The contractor and the owner must sign the document where the owner acknowledges that:

- the work was completed
- the owner received training on and understands Operation & Maintenance responsibilities
- the owner received a copy of NFPA 25

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Asbestos in Construction

Impact on Building Custodial and Maintenance Operations

Maintenance and custodial activities, which involve contact with ACM or PACM and clean-up activities, are defined as Class IV. Examples of such work includes sweeping, mopping, dusting, cleaning, and vacuuming of ACM or PACM such as flooring or any material where asbestos containing dust may have accumulated. Maintenance work involving active disturbance of ACM or PACM is defined as Classification III.

The following requirements apply:

- Use vacuum cleaners with HEPA filters to collect all debris. Clean debris promptly and place in leak-tight container.
- Use wet methods where feasible.
- Employees performing these activities are required to receive a 2-hour asbestos awareness training course.
- When working in a regulated area, the employee must conform to the requirements of the area.
- Stripping of floor finishes is required to be performed using low abrasion pads at a speed lower than 300rpm and be done wet.
- Burnishing or dry buffing can be done only on floors with sufficient finish to avoid contact with the flooring material.
- Building owners are required to evaluate the location and presence of ACM or PACM and are required to notify contractors or employees who will perform work on or adjacent to the material.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





Aerial Lift Mounting and Dismounting Procedures

Numerous injuries have occurred when individuals improperly mounted and dismounted from aerial platforms. These injuries range from sprains and strains, to even more painful and disabling injuries such as fractured or broken arms and legs.



Safe mounting and dismounting procedures include the following:

- a. Always use “three point contact” with the machine, face the machine when you enter or leave the machine.
 - b. Clean your shoes and wipe your hands before climbing on. Use handrails, ladders or steps (as provided) when mounting the platform.
 - c. Never use control levers as a hand hold when climbing on or off.
 - d. Never step on foot controls when mounting or climbing off.
 - e. Never attempt to mount or dismount a moving machine.
 - f. Never walk or climb the elevating assembly to gain access to an elevated platform (nor do so to leave a platform).
 - g. Make certain that all handrails, toe boards, and gates and entry chains are in place and secured before raising the platform.
 - h. Enter and exit the platform from the ground only.
- “Three point contact” means that 3 out of 4 points (hands or feet) are in contact with the machine at all times during mount and dismount.***

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



BACK INJURY PREVENTION IN CONSTRUCTION

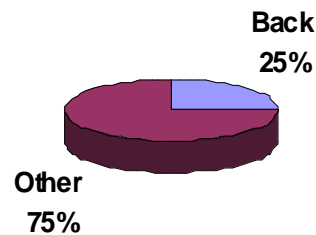
Construction work puts physical stress on the body. Various studies have shown that the construction trades have a higher incidence of back injuries and muscle strains than many other occupations.

INJURIES

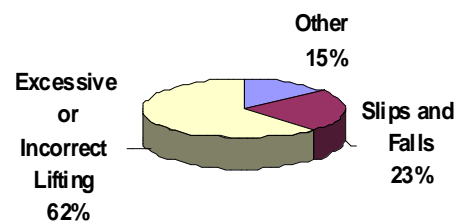
Over the years, back injuries have consistently accounted for about 25% of all the lost workday injuries in the construction trades according to the Bureau of Labor Statistics. Pain in the back and joints is a major factor in forced retirement from the construction trades and in workers seeking less demanding occupations. Such changes are often accompanied by a serious reduction in living standard.

INJURY CAUSES

In construction, about half of the back injuries are attributed to lifting excessive weight or lifting incorrectly while roughly 23% are the result of slips, trips and falls. Workers lifting and carrying equipment or materials can be injured when they use improper techniques, twist repeatedly, stand in awkward positions, or try to handle heavy loads without help. Most back injuries are the result of everyday wear and tear rather than a single traumatic event. The cause is generally not a single lift but damage done over time. Back injuries also result from slips, trips, and falls caused by bad weather or poor housekeeping. Repeated twisting, awkward postures, heavy lifting, and prolonged vibration can all contribute to back pain and injury. Unfortunately, once back pain is experienced, the chances of it recurring increase greatly.



Construction Lost Workday Injuries



Causes of Back Injuries

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

INJURY PREVENTION PROGRAM

To reduce back injuries on the job, a prevention program is necessary, covering factors such as ergonomics, housekeeping, workplace posture, proper lifting techniques, and exercises.



ERGONOMICS

Ergonomics efforts should focus on designing tools, equipment and work methods to fit the worker and prevent manual material handling injuries. Materials handling equipment should be provided and used whenever possible to minimize the need for manual handling.

HOUSEKEEPING

Back injuries from slips, trips, and falls can sometimes be prevented through good housekeeping. Proper storage of material and regular cleanup of debris is critical. Debris and clutter accumulate quickly in construction. In addition to creating trip/fall hazards, poor housekeeping can prohibit the effective operation of mechanical materials handling equipment. As a result, more material is handled manually, creating greater risk of back and other injuries. Failure to keep work and travel areas clear can impede the handling of materials and increase the risk of injury. Plans for housekeeping should cover storage, garbage disposal, and clear work and travel areas.

Well-planned storage is an important part of back injury prevention. When storage locations are not designated, material tends to get dumped anywhere. Sooner or later the material has to be moved elsewhere, often by hand and in a rush. This increases the risk of back injury.

Management should designate storage areas, arrange for bins and disposal, put housekeeping provisions in contracts, and ensure that subcontractors meet storage and clean-up requirements.

Clean up should take place:

- I At the end of each work day or shift
- I When trades finish one job and are ready to move on to another area
- I When workers or crews change
- I When scrap and clutter start to impede work progress and material flow

WORKPLACE POSTURE

Maintaining proper posture is the most critical part of good back care. Using your muscular system to control posture minimizes the effects of everyday wear and tear on your spine.

Lower back muscles are short, small muscles designed to keep us upright. They are called “anti-gravity” muscles and are usually very strong since they have to work almost continuously.

Stomach muscles are big, broad muscles designed to support your spine and take some of the work load off the small lower back muscles. When you don’t use your stomach muscles, the back muscles lose this important support system and become overloaded. The resulting muscle imbalance makes the spine susceptible to injury. Therefore, maintaining good posture by using

BACK INJURY PREVENTION IN CONSTRUCTION

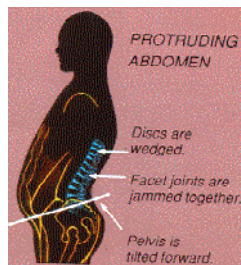
Page 3

your stomach muscles is essential to proper back care.

Any position held too long is not good for your back. Aches and pains from prolonged working postures are nature's way of warning you to change positions. If these warnings are continuously ignored, you will be vulnerable to low back injury.

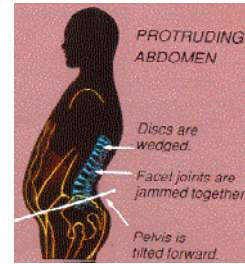
Unbalanced Pelvis – Weak position vulnerable to injury

When you stand with your stomach protruding, your pelvis is tilted down and your back has an increased curve. In this position, stress is concentrated in your lower back, making it vulnerable to injury. Tightening the lower stomach muscles will straighten the pelvis and correctly align the lower spine.



Balanced Pelvis – Strongest position for the back

When you stand properly with chin tucked in, shoulders back and down, and pelvis level, there is a slight natural inward curve in your lower back. This is the correct posture and the strongest position for your back. Maintaining a level, balanced pelvis is essential to proper back care and helps prevent potential back problems.



Correct Posture

Correct posture is not an erect, military pose but an alignment that maintains the naturally occurring curves in your spine. You have an inward curve (lordosis) at two places in your spine—neck and lower back. You have an outward curve (kyphosis) in your upper back. Keeping your spine aligned in this manner reduces everyday stresses on your back and minimizes the effects of the normal aging process on the spine.

LIFTING TECHNIQUES

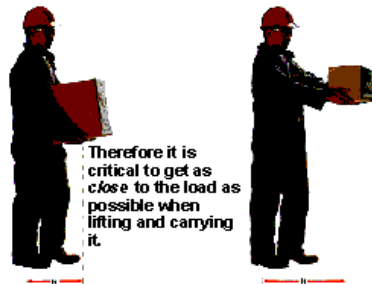
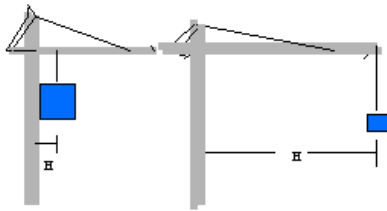
Lifting Capacity

Lifting a weight that is too heavy, lifting in an awkward position, twisting your body when lifting or doing excessively heavy work are all common causes of low back problems. The following lifting models illustrate the need for good work technique.

A Tower crane's lifting capacity is reduced the further the load is away from the mast. Our lifting capacity is also reduced the further a load is away from our spine.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

H = The horizontal distance
When H is increased, the crane's capacity to lift the load is decreased.



Therefore it is critical to get as close to the load as possible when lifting and carrying it.

Lifting Grip

To ensure solid contact when lifting heavy objects, use your entire palm, not just your fingertips.

Unloading

1. Lower the load, maintaining the natural curve of your back.
2. Push the load into place.
3. When lowering a load onto a deep shelf, put it on the edge of the shelf first. Then push it into place.

Carrying

1. Keep your lower back in its normal arched position and use your legs to lift.

2. Maintain a good grip and keep the load close to your body.
3. Maintain a clear line of vision. Pick up your feet to turn. Do not twist.

Proper Lifting



1. Plan your Move.
 - Size up the load and make sure your path is clear.
 - Get help as needed.
 - Use a dolly or other materials handling equipment if possible.
2. Use a wide, balanced stance with one foot slightly ahead of the other.
3. Get as close to the load as possible.
4. Tighten your stomach muscles as the lift begins.
5. When lifting, keep your lower back in its normal arched position and use your legs to lift.
6. Pick up your feet and pivot to turn. Don't twist your back.
7. Lower the load smoothly, maintaining the natural curve in your lower back.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

Transferring Weight

1. Pull the object towards you while transferring your weight to the lift side.
2. Lift only to the level required.
3. Shift your weight to the other leg while pushing the object into position. Do not twist.

Exercise

To protect your spine, the muscles supporting your back must be both strong and flexible.

Construction work strengthens some muscles while others that are not being used become shorter and weaker, creating a muscle imbalance. A regular exercise program can help to keep muscles balanced and reduce the risk of lower back injury. A pre-work stretching program is highly recommended. Warming up prepares your body for the physical work ahead and helps minimize the risk of injury.

A good exercise program should include both stretching and strengthening exercises. The three essentials are:

- Warm-up
- Workout
- Cool down

Remember; check with your doctor before starting any exercise program.

Disregard the old maxim “no pain—no gain.” Your muscles can be brought to excellent condition by using a sensible and slow approach. If an exercise causes pain, don’t do it. With a new exercise program, however, temporary muscle ache is normal and may be expected.

Spending 5 – 10 minutes a day on back exercises can help make a significant difference in how good your back feels and how well you function during the day.

Remember – practicing the principles of proper back care will help to prevent or minimize back problems.

Practice these four rules for back injury prevention.

1. **WARM UP – before you start work.**
2. **TONE UP—with a good exercise program.**
3. **SIZE UP—the load. Don’t lift more than you can safely handle.**
4. **WISE UP—by using good lifting techniques and materials handling equipment.**

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.



PROTECT YOURSELF WITH PPE

Hard hats, goggles, face shields, earplugs, steel-toed shoes, respirators. What do all these items have in common? They are all various forms of personal protective equipment, designed to protect workers from injury and illness.

Yet, data from the Bureau of Labor Statistics show:

- Hard hats were worn by only 16% of those workers who sustained head injuries, although two-fifths were required to wear them for certain tasks at specific locations;
- Only 1% of approximately 770 workers suffering face injuries were wearing face protection;
- Only 23% of the workers with foot injuries wore safety shoes or boots;
- About 40% of the workers with eye injuries wore eye protective equipment.

A majority of these workers were injured while performing their normal jobs at regular worksites.

OSHA standards require employers to furnish and require employees to use suitable protective equipment where there is a "reasonable probability" that injury can be prevented by such equipment. The standards also set provisions for specific equipment.

While use of personal protective equipment is important, it is only a supplementary form of protection, necessary where all hazards have not been controlled through other means such as engineering controls.

Engineering controls are especially important in hearing and respiratory protection which have

specific standards calling for employers to take all feasible steps to control the hazards.

HEAD PROTECTION

Cuts or bruises to the scalp and forehead occurred in 85% of the cases, concussions in 26%. Over a third of the cases resulted from falling objects striking the head.

Protective hats for head protection against impact blows must be able to withstand penetration and absorb the shock of a blow. In some cases hats should also protect against electric shock. Recognized standards for hats have been established by the American National Standards Institute (ANSI).



EYE AND FACE PROTECTION

Injured workers surveyed indicated that eye and face protection normally was not used or practiced in their work areas, or it was not required for the type of work performed at the time of the accident.

Almost one-third of face injuries were caused by metal objects, most often blunt and weighing one pound or more. Accidents resulted in cuts, lacerations, or punctures in 48% of the total, and fractures (including broken or lost teeth) in 27%.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

PROTECT YOURSELF WITH PPE

Page 2

Protection should be based on kind and degree of hazard present and should: 1) be reasonably comfortable, 2) fit properly, 3) be durable, 4) be cleanable, 5) be sanitary, and 6) be in good condition.

EAR PROTECTION

Exposure to high noise levels can cause irreversible hearing loss or impairment. It can also create physical and psychological stress.

Preformed or molded ear plugs should be individually fitted by a professional. Waxed cotton, foam or fiberglass wool earplugs are self-forming.

Disposable earplugs should be used once and thrown away; nondisposable ones should be cleaned after each use for proper maintenance.

OSHA has promulgated a final rule on requirements for a hearing conservation program. Information on the program is available from the OSHA office nearest you.

ARM AND HAND PROTECTION

Burns, cuts, electrical shock, amputation and absorption of chemicals are examples of hazards associated with arm and hand injuries. A wide assortment of gloves, hand pads, sleeves and wristlets for protection from these hazards is available.

The devices should be selected to fit the specific task. Rubber is considered the best material for insulating gloves and sleeves and must conform to ANSI standards (copies available from ANSI, 1430 Broadway, New York, NY 10018).

FOOT AND LEG PROTECTION

Sixty-six percent of injured workers were wearing safety shoes, protective footwear, heavy-duty shoes or boots, and 33% were wearing regular street shoes. Of those wearing safety shoes, 85% were injured because the object hit an unprotected part of the shoe or boot.

For protection against falling or rolling objects, sharp objects, molten metal, hot surfaces and wet, slippery surfaces, workers should use appropriate foot guards, safety shoes or boots and leggings. Safety shoes should be sturdy and have an impact-resistant toe. Shoes must meet ANSI standards.

TORSO PROTECTION

Many hazards can threaten the torso: heat, splashes from hot metals and liquids, impacts, cuts, acids, and radiation. A variety of protective clothing is available: vests, jackets, aprons, coveralls, and full body suits.

Fire retardant wool and specially treated cotton clothing items are comfortable, and they adapt well to a variety of workplace temperatures. Other types of protection include leather, rubberized fabrics, and disposable suits.



RESPIRATOR PROTECTION

Information on the requirements for respirators to control of occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, and vapors is available in 29 CFR 1910.134. Proper selection of respirators should be made according to the guidance of ANSI

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

PROTECT YOURSELF WITH PPE

Page 3

REMEMBER!!!

Using personal protective equipment requires hazard awareness and training on the part of the user.

Employees must be aware that the equipment alone does not eliminate the hazard. If the equipment fails, exposure will occur.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



THE RIGHT-OF-WAY

According to National Safety Council's Injury Facts 2000, 11.4 million accidents occurred in 1999. Of these, "angle collisions" cause the greatest number of deaths, about 9,200 in 1999. Many of these motor vehicle accidents involved a driver's failure to yield the right-of-way. Many people died because a driver failed to give another motorist the courtesy of the road. How many times do you find yourself in a me-first situation—too bullheaded to give up the road?

Right-of-way is probably one of the most misunderstood of all driving rules. It simply refers to a motorist's right to cross an intersection ahead of another vehicle.

This rule was established to determine the order of preference of all vehicles traveling



on our streets and highways. Without right-of-way rules, driving would be a mass

of confusion, with drivers always trying to beat each other through an intersection. Right-of-way rules are designed for all of our safety.

What are some of the precautions you can take to prevent right-of-way accidents? A relatively simple solution is to yield the right-of-way in every situation, whether or not it is required by law. To be more specific, if there is any doubt about there being enough room to pass on a narrow stretch of roadway, let the other vehicle go first. When entering a freeway, yield the right-of-way to vehicles already traveling the freeway. Those vehicles should not have to alter their speed or swerve to make room for your approach. Don't jump the gun at a four-way stop. The first to come to a complete stop should be given the right-of-way.

Since failure to yield the right-of-way is the second most frequent violation involved in fatal accidents, a good driver should be thoroughly familiar with right-of-way rules. Knowing when you do have the right-of-way is not as important as knowing when you don't. By following the basic rule that it is the responsibility of every driver to

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACKING PROBLEMS

Page 2

do everything possible to protect other drivers and pedestrians, we will greatly reduce the possibility of an accident.

Remember, accidents don't just happen. Many are caused by drivers who violate the rules of the road. Obey these rules, drive safely and whenever in doubt, yield the right-of-way.



TOOLBOX TALKS

AMERICAN FIRE SPRINKLER ASSOCIATION • CNA COMMERCIAL INSURANCE

TOOL BOX TALKS

Fire Extinguishers

Have you inspected your fire extinguishers lately? Are they fully charged, strategically located, accessible and ready for use? Or, are they laden with dust, obscurely hidden in some corner, affording a false sense of security?

So often, fire extinguishers are purchased with enthusiasm, a vital need; and then, suddenly, because they are not regularly used, they are relegated to a secondary position in our operation.



The fact that fire extinguishers are our first line of defense in the event of fire should warrant a periodic and thorough inspection of them. Fire extinguishers must be kept clean to attract attention, they must be kept accessible to eliminate lost time when needed, and the rubber hose, horn or other dispensing component must be checked to guard against blockage.

The following is a brief resume of the classification of fires, and the recommended extinguisher to be used on each:



CLASS "A" FIRES:

Ordinary combustible such as rubbish, paper, rags, scrap lumber, etc. These are fires that require a cooling agent for extinguishment. Recommended extinguishers are—water through use of hose, pump type water cans, pressurized extinguishers.

CLASS "B" FIRES:

Flammable liquids, oils and grease. Fires that require a smothering effect for extinguishment. Recommended extinguishers—Carbon Dioxide, Dry Chemical and Foam.

CLASS "C" FIRES: Electrical equipment. Fires that require a non-conducting, extinguishing, agent. Recommended extinguishers—Carbon Dioxide and Dry Chemical.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



CONTRACTOR'S EQUIPMENT: A GUIDE TO BETTER SECURITY

Recent news stories tell a grim story about theft and vandalism in the workplace. Construction sites are no exception.

“Security on construction sites should be a major concern for all contractors. The total losses due to theft and vandalism on construction sites have been increasing dramatically over the past decade. Exact figures are not available, but estimates place the losses in the billions of dollars.”

(American Insurance Services Group, Inc.)

While you may not be able to keep professional thieves from stealing your property, you can make it extremely difficult for them, and virtually impossible for amateurs.

The layout of a construction job site and its corresponding security plan often make the difference between controlling losses and suffering costly thefts. A job site without guards, fencing, adequate lighting or controlled exits makes a very easy target.

There is no perfect security program because job sites in different locations require different protective measures. After you read this bulletin, review the enclosed Contractor's Equipment Self Audit to evaluate your program and consider improvements.

Poor Security Affects Everyone

Remember, when job sites have inadequate security, contractors and their subcontractors are exposed to:

- Theft by employees, and the public resulting in loss of material and time delays to procure replacements.

- Vandalism by employees, former employees, local gangs or children.
- Arson or accidental fires caused by vandals, vagrants or children.
- Injuries or fatalities to children who wander onto an unprotected construction site.

Theft Costs You in Many Ways

Some contractors ignore job site theft or decide not to take action against it. They simply add stolen property cost to job costs. These direct costs can be substantial. As much as 3-5% of the job cost, according to one estimate. But there are also some significant indirect costs of job site theft:

- When stolen tools aren't available, delays inevitably occur and productivity drops.
- Contractors sometimes buy cheap tools to cut theft losses. These tools may be too shoddy to steal, but they also negatively affect productivity because they work poorly, wear out quickly and break.
- When theft is rampant at a job site, employees' tools are likely to be stolen. Some union contracts hold employers responsible for theft of employees' tools.
- Employer-tolerated theft hurts employee morale. Honest workers don't like working where theft is ignored. Poor morale leads to poor productivity and friction. Management is seen as weak and ineffective.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CONTRACTOR'S EQUIPMENT: A GUIDE TO BETTER SECURITY

Page 2

Even if you are willing to endure the direct costs of theft, you may want to consider the indirect costs.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION

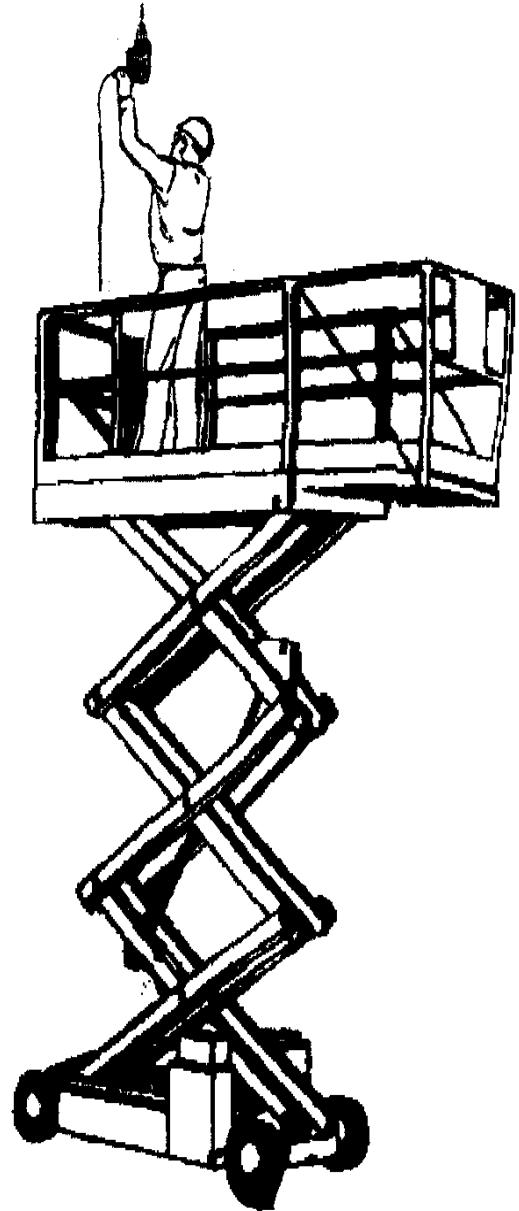


Aerial Platform Safety

Falls from elevations can result in serious injuries and even death. Aerial platforms are designed and built with safety features to help minimize the potential for worker injuries. These features include handrails, midrails and toeboards to help prevent falls and injuries arising from falling materials.

Remember the following guidelines to prevent serious injuries and even death:

- a. Never use ladders, planks, steps or other devices to provide additional reach or gain greater height.
- b. Do not lean over or sit or climb on the platform railing.
- c. Always keep both feet on the platform floor at all times.
- d. Make sure the access gate (both top and mid-rail) is closed at all times
- e. Read and follow the manufacturer's recommendations for proper and safe use of the equipment.



The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



MATERIAL HANDLING ON CONSTRUCTION SITES

Manual material handling is the largest single cause of lost workday injuries in construction. One out of every four work injuries happens because someone lifted, carried, pushed, or pulled something the wrong way, or lifted beyond his or her capacity.

Workers should be trained on proper and safe material handling techniques either manually or by using mechanical means. The use of correct handling techniques is one of the ways to help reduce injuries.

INJURIES

The most useful part of your body in handling materials safely is not your back or legs, but your head. Untrained workers often do the job the hard way and soon get tired which leads to possible injury. The following are some key potential injury areas that can occur when material is improperly handled.

BACK PAIN

Back pain, especially low back pain, is second only to colds and other respiratory problems as the leading cause of lost time on the job. Many workers suffer from low back pain, much of which results from improper handling of materials.

Fatigue is the most common cause of back pain, resulting from doing heavy, repetitive jobs for an extended period of time with the body in an unnatural position. It also can result from light jobs where the body is not in a normal position, such as bending over a low bench or desk. A short warm-up session before beginning a heavy task, and occasional stretch breaks can help avoid fatigue.

Sudden, acute pain from a muscular strain may often be easily treated. Don't ignore any form of back pain. Seek medical advise and treatment as soon as possible.

HERNIA

A hernia is caused by a weakness in the abdominal wall which ruptures, pushing a part of the abdominal contents through the wall, causing a bulge or lump. While most common in males, women too, may suffer hernias. Hernias do not only affect workers in heavy industry, as most think. Any weakness in the abdominal wall is susceptible to a hernia when unsafe lifting habits cause overstretching of the abdominal muscles.

STRAINS

Improper handling techniques can cause strains in other areas than the back. Strains to hands, wrists, arms, neck, shoulders, and legs are also common. They too can be prevented by using proper material handling methods.

Continuous straining to any of these areas can lead to more serious problems.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations.

MATERIAL HANDLING ON CONSTRUCTION SITES

Page 2

PROTECTING YOURSELF

When you must manually lift an object, consider the following general lifting suggestions:

- Size up the load-Seek assistance if you think you need it.
- Get close to the load, with one foot alongside the load, and one foot behind it for balance. Get a firm grip on the object, with your palms, not your fingers.
- If possible, squat to the load, keeping your back straight-not necessarily vertical, just straight.
- Draw the load close to you, with the weight centered over your feet. Test to see that it's not too heavy.
- Lift by straightening your legs, avoiding quick, jerking motions. Your legs should provide most of the power to lift, not your back.
- Avoid twisting with a load, shift and move your feet instead.
- When lifting above waist height, set the load down on a table or bench, shift your grip, and then lift again.
- Lifting comfortably is most important. Judge the most comfortable position for yourself.

PREPARING FOR THE LIFT

- Stand comfortably as close as you can to the load, with feet apart for balance.
- If the load becomes too heavy or clumsy to lift on your first try, don't attempt the lift again.
- If possible, squat to the load, keeping your back straight. Try to avoid bending.
- Wear gloves that provide a good grip. Grasp the load firmly with your hands, with your fingers beneath the load if possible. Test it first to see that it's not too heavy.

CARRYING THE MATERIAL

Carrying objects not only exposes you to possible injury, but also to other workers on the jobsite. Consider the following:

- Use two people if needed and agree in advance how a load will be moved.
- Don't let the object obstruct your vision, be sure of where you're going.
- Don't twist your body to change directions; use your feet instead. Twisting with a load puts enormous stress on the spine.
- Check the corridors, floors or stairs over your planned route. Check to see the surface is clean and in good condition.
- Carry any pipe, barstock or other long objects on your shoulder with the front end high.
- Never change your grip during a lift unless you can support the weight somehow during the grip change.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



MATERIAL HANDLING ON CONSTRUCTION SITES

Page 3

- If you can't make it as far as you thought you could, stop, put the load down and rest.

CARRYING MATERIAL UP AND DOWN STAIRS

Workers carry items up and down stairs many times a day. Some points to consider are as follows:

- Be sure handrails, even temporary ones, are in place.
- Check to see how adequate the lighting is even if the job is still under construction. Take extra time on stairways. Make sure there's no loose nails, cans of paint, misplaced claw hammers, or similar objects on the stairs to trip over.
- Walk with your knees and feet pointing outward at an angle while descending stairs, instead of walking with feet and knees pointing straight ahead. Going straight ahead with feet and legs puts unnecessary strain on the knees.

PLACING THE MATERIAL

Placing and storing the material properly is important. Consider these points:

- Face the final resting spot for the load you're carrying with your whole body. Do not twist the load into its final place.
- Don't forget where your fingers and toes are. Allow enough room to place the load so you can move all of you out of the way. Put one corner of a box or similar item down first, so your fingers can be removed from beneath the load.
- Reverse the lifting motion by bending your knees and squatting down with the load, keeping it close to your body, again without bending your back.
- Test the item for stability where you place it before you leave it.

PUSHING AND PULLING

Pushing and pulling objects are preferable to lifting and carrying them. But, there is still potential for injury.

Consider the following:

- Push whenever possible instead of pulling.
- Push or pull at waist height and try to avoid bending.
- Be sure you can see over and around the material being moved.
- Avoid steep ramps whenever possible. On all ramps, back down.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



MATERIAL HANDLING ON CONSTRUCTION SITES

Page 4

OTHER LIFTING SITUATIONS

- Don't stretch from the ground.
- When lowering an item from shoulder height, push against it first to test its weight and stability. Slide it as close to your body as you can, and hold the item close while lowering it.
- When lifting items from or to high places, use a safe ladder. Do not stand on boxes or other stacked material.
- Rounded objects such as gas cylinders, drums, and small tanks can shift suddenly, as their contents may slosh back and forth or the rounded surfaces may begin to roll. Be extra careful.
- Partner lifts can best be accomplished when two individuals who are about the same size pair up. Have lifting signals so you can both move in unison. Good communications is extremely important.

STORING MATERIALS

Where and how material is stored affects both safety and the efficiency on a jobsite. Size things up first and plan ahead when finally storing the material. Instead of just putting material "here and there" on the jobsite, try to use logic as to where materials, tools, equipment, and other items should be unloaded and stored for safety and convenience.

Especially watch the storage of materials in tiers: secure various layers to prevent falling. That includes wood and bricks, and skidloads of materials such as tiles, shingles, and plumbing supplies.

The unloading of building supplies can be one of the most dangerous tasks at the worksite. Never allow new workers to do the unloading alone. Instead, someone with rigging and mobile equipment experience should supervise unloading and loading activities to assure materials are stored properly. Key suggestions are as follows:

- Store materials, equipment, and tools out of the way, in the most convenient location possible.
- Keep aisles and passageways—outside and inside—from being blocked by supplies. Stored materials must not block exits and emergency equipment.
- Used lumber, when stacked, should have nails removed first.
- Combustible/flammable materials should be stored in a manner that will minimize any fire potential. They shouldn't be in the way of mobile equipment, or in a place where workers might perform any hot work. All smoking should be prohibited. A fire extinguisher must be readily available.
- Scaffolds and work platforms must not be used to store or accumulate piles of material or debris. There should only be as much material stored as can be used by the immediate operations.
- Plan difficult storage moves well in advance. Always arrange stored material in a secure manner.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.





GROUND-FAULT CIRCUIT INTERRUPTORS

GENERAL INFORMATION

According to the National Safety Council's Injury Facts 2000, approximately 500 fatalities per year are the result of "electrical current."

Electric tools and equipment must be ground properly grounded. This is critical on construction sites where electrical panels, tools and cords are subject to constant abuse and moisture. Injuries and deaths can result from the improper grounding of tools. In the event of a ground fault, a Ground Fault Circuit Interrupter (GFCI) will open the circuit to prevent injury. The following information is to train workers to identify and correct potential electrical hazards when using tools.

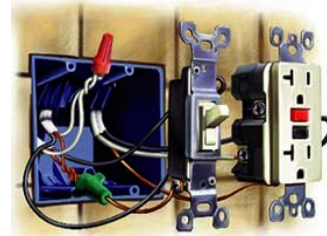
It is possible for a tool to operate with a defect or short in the wiring. The use of a ground wire protects the operator from the defect or short and is mandatory for all but double-insulated electrical power tools. A ground-fault circuit interrupter (GFCI) should be used with all electrical power tools. GFCIs do not prevent shock, they limit the duration of the shock so the heart is not affected. There are three types of body reactions to current flow.

- Below one milliamperes (.001 ampere) - This level may be felt as a slight tingle and normally causes no injury. However, a sick person, particularly one with a coronary condition, may be injured by a current 1/100 of this value.
- "Let-go" current is the maximum current at which an individual, grasping a conductor or tool, can release it by using the muscles directly affected by the current. "Let-go" current is about 16

milliamperes for men and about 10 milliamperes for women. This level does not normally damage human tissue.

- Lethal currents for healthy persons may be as low as 18 milliamperes. When current at this level, or higher, flows through the chest cavity, the chest muscles may contract and could cause breathing to stop. If the current is maintained, unconsciousness and death will result. Ventricular fibrillation is another potentially lethal result of shock. In this case, the heart ceases its rhythmical pumping action and feebly quivers to effectively stop blood circulation.

GROUND FAULT CIRCUIT INTERRUPTERS



When an electrical tool is functioning properly, all the current that flows into it should also flow out of it through intended paths. When an electrical fault or "leak" develops, the return current is less than the current supplied. The difference flows to ground through some unintended path.

A ground fault circuit interrupter (GFCI) is used to open a circuit (within as little as 1/40 of a second) when a relatively small amount (five milliamperes) of current strays from its intended path. A typical electric circuit consists of a "hot" conductor that supplies power to the electrical device, the electrical device itself, and a return conductor. Ideally, all the current that enters the "hot"

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

conductor should flow through the electrical device and then into the return conductor. However, if some of the current "leaks" out of either of the conductors or the device, and makes contact with the user. It can cause serious injury. The cause of the "leak" is usually defective insulation. The GFCI detects this "leakage" and de-energizes the circuit.

However, the GFCI will not protect the worker from line-to-line contact hazards (such as a worker holding two "hot" wires or a hot wire in one hand and a neutral wire in the other hand). It does provide protection against the most common form of electrical shock hazards - the ground fault. It also provides protection against fires, overheating, and destruction of insulation on wiring.

GFCI TYPES/USAGE

The common types of ground fault circuit-interrupters that are available are as follows:

- **Circuit Breaker/GFCI Type** - Located at the power supply or in a circuit breaker panel controlling all outlets in a circuit. The circuit breaker GFCI serves a dual purpose - not only will it shut off electricity in the event of a "ground-fault", but it will also trip when a short circuit or an overload occurs. Protection by the GFCI covers the wiring and each outlet, served by the branch circuit.
- **Receptacle Type** - This type of GFCI is used in place of a standard duplex receptacle. It fits into the standard outlet box and protects against "ground faults" whenever an electrical tool is plugged into the outlet. Receptacle-type GFCIs

can be installed so that they also protect other

- electrical outlets in the branch circuit. All GFCI circuitry is contained in the unit.
- **Portable Type** - Where permanent GFCIs are not practical, portable GFCIs can be used. One type contains the GFCI circuitry in a plastic enclosure with plug and receptacle slots in the front. It can be plugged into a standard receptacle; then, the electrical tool is plugged into the GFCI. Another type of portable GFCI is an extension cord combined with a GFCI. It adds flexibility in using receptacles that are not protected by GFCIs.
- The most convenient GFCIs used on construction sites are the portable type. It allows protection and ease of movement for workers going from one location to another. All GFCIs should be checked and returned to their proper storage location at the end of the day.

PREVENTING AND ELIMINATING HAZARDS

GFCIs can be used successfully to help protect against electrical hazards on construction sites. Tripping of GFCIs - interruption of current flow - is sometimes caused by wet connectors and tools. It is good practice to limit exposure of connectors and tools to excessive moisture by using watertight or sealable connectors. Providing additional GFCIs with shorter cords can prevent tripping caused by the cumulative leakage from several tools or by leakages from extremely long circuits.

Based on AISG, Ground Fault Protection for Electrical Tools, 1995.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Lockout/Tagout Training – Overview

Have you ever been working in the basement when someone upstairs turned the lights out? Suddenly you are in total darkness, and your immediate reaction is to let out a yell.

This usually brings the lights back on, along with an apology from the person who absent-mindedly flipped the switch.

In this case, there is usually no harm done. But what if you were checking a machine and someone flipped a switch that started the machine operating. The results would not necessarily be as innocuous.



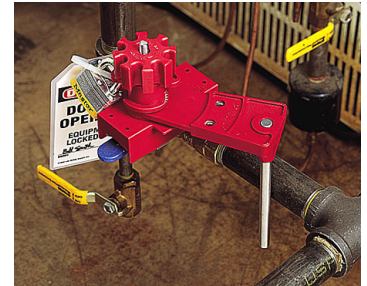
What are the steps for

lockout/Tagout?

- 1) Communicate (affected employees and your supervisor)
- 2) Identify Power Sources. What are some potential power sources, and potential injuries?

- β Electricity – Electrical Shock
- β Chemical – Chemical Exposures and Burns

- β Moving Machinery – Amputation, crushing injuries, cuts, fractures
 - β High Temperature – burns (give my injection molding story)
 - β Hydraulic Pressure – Exposure to hot or dangerous fluids (also moving machinery)
 - β Stored Energy – can be chemical, thermal, hydraulic, pneumatic or gravity
- 3) Shut down the equipment
 - 4) Isolate the energy to the machine (turn off the power at the panel box, etc)
 - 5) Lock out the energy source.
 - 6) Release all stored energy
 - 7) What is the next step? (test it)



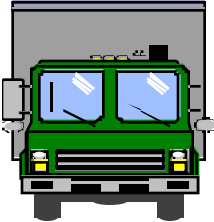
REMEMBER:

- Multi employee lockout
- Shift change procedures

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



BACKING PROBLEMS



While backing is to be avoided whenever possible, every driver must make some backups on nearly every trip. And you know how to back, as demonstrated when

getting a license, but how often do you forget some basics?

The first thing is that all backing must be done slowly. Skillful drivers can perform the backing maneuver time after time with the greatest of ease, but you'll never see a good driver back at high speed.

In order to be rated competent, every driver must be able to control the progress of the vehicle all the time—every time the vehicle is in motion. This skill is easily demonstrated in forward movement. Since this is the way you go most of the time, the driver's seat is placed up front.

When moving in reverse, the driver is still up front, and he can't see so well behind. In addition steering wheels are no longer the lead wheels, and control of direction is awkward. Concentrate on the fact that in reverse movement controls are reversed, and response to steering is sluggish.

Before reversing, get a clear view of the spot into which you must back. If it's a normal, familiar backing situation with good clearances, back in as long as you can see the backing path clearly in the rearview mirrors.

If the place is strange, or if there is any question about clearances, the good driver will get out of the vehicle and survey the place that must be backed into. Note any obstructions, low-hanging

wires or signs, or fire escapes. Clearances must be wide enough and high enough.

The expert will drive as close as possible before starting to backup, make the turn on the driver's side, if possible, so that you can see the back of the vehicle swinging into position. At all times be sure to watch clearances on both sides through his rearview mirrors. When within a few feet of your stop, lean out and look directly behind the vehicle until the backup is completed.

Many good drivers use another person to direct their backing maneuver. Standing at the rear where the guide can be seen either directly, or through mirrors by the driver, the guide gives positive signals for steering, slowing and stopping.

Experts know that hard bumps mark the poor driver, so they take no chances on a bang-up finish. Above all, approach every backing maneuver with caution, and a soft touch on the gas pedal. Too much speed in backing can ruin a driver's day.

Good drivers who must go into a dead-end alley or driveway where there's no turnaround usually will back in from the street, so as to avoid the necessity of backing out into traffic. If necessary to back into the street, they will get someone to flag down traffic or to signal when the way is clear.

Drivers in residential neighborhoods should never start backing out of a parking space without first walking around to make sure there's nothing in the way. There have been too many cases of children stopping to play behind a parked vehicle, only to be crushed when a driver

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACKING PROBLEMS

Page 2

backed up without looking. Such obstacles as children, tricycles, boxes and the like cannot be seen through the rearview mirrors.

Expert drivers agree that backing is a slow, tedious and sometimes dangerous operation and they try to avoid it whenever possible. When backing cannot be avoided, be in control of the vehicle, even in reverse motion, always take it slow and easy.

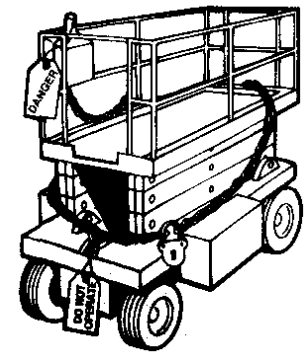


Aerial Lift - Pre-operational Inspection

Before you begin your workday, you must inspect your machine and report all deficiencies. Do not operate the machine until all deficiencies are corrected and all systems are in good operational condition.

Check for the obvious defects.... Test the controls....

- a. Check for missing, damaged or unreadable safety signs.
- b. After starting, recheck all gauges and lights.
- c. Check for broken, missing, damaged or missing retaining devices.
- d. Check pivot pins for damaged or missing retaining devices.
- e. Check all control functions, including emergency stop mechanism, from upper control station and the lower control station (if provided).
- f. Check the tires for cuts, bulges and pressure as specified by the manufacturer.
- g. Perform all maintenance procedures outlined by the manufacturer of your machine.
- h. Check the steering, right and left.
- i. Check for cracked welds and other evidence of structural damage.
- j. Be certain you have full travel and automatic break control.
- k. Check hydraulic systems for leaks and damage.
- l. •Be certain you can lower an elevated platform.
- m. If the aerial lift does not respond correctly when each control is operated, do not use the machine until it is fixed.
- n. If defects are identified make sure that you get the unit repaired by a qualified vendor. Do not attempt to repair defective equipment.
- o. Prevent others from using defective equipment by locking out or tagging the unit.



- Move slowly until you are operating properly.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

WARNING:

**BE CERTAIN YOU CAN CONTROL
ELEVATING FUNCTIONS, SPEED AND
DIRECTION BEFORE MOVING**

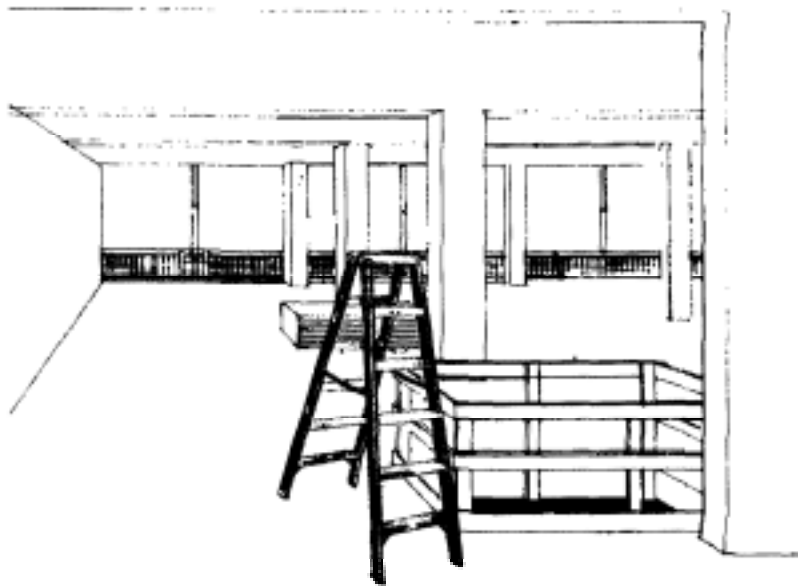


Fall Protection Requirements Apply !

The Occupational Safety and Health Administration (OSHA) addresses fall protection standards in 29 CFR 1926 – Subpart M. The fall protection requirements for ladders are covered in Subpart X. These regulations specify protection levels and equipment that need to be in place to protect workers from needless injuries and even death.

Within this regulation, OSHA has identified the need to protect employees exposed to falls greater than 6 feet from the walking or working surface. Standard protection requirements include the use of a guardrail system, a safety net system, or a Personal Fall Arrest System (PFAS).

A sometimes overlooked situation on the job site is where an individual is required to work from elevated positions above the installed railings, such as when ladders are used to access fire sprinkler systems, electrical systems, HVAC systems or other overhead installations. This situation is common near floor openings such as elevator shafts, stairwells and unfinished sides of the building being erected. The railings provide fall protection while working on the floor level. Once the ladder is ascended, the protection on the open side is no longer afforded.



In instances such as these, the fall hazard must be eliminated. This can be done by installing a substantial cover or a safety net over the hole or by requiring employees to wear a Personal Fall Arrest System (PFAS).

Don't kid yourself.....fall protection requirements apply !

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

BACK INJURIES IN CONSTRUCTION

Page 2

For more information about fall protection in construction, visit the OSHA Website at WWW.OSHA.GOV



LIFTS AND LOADS

LIFTING BY TWO PERSONS

Lifters should be of similar height to distribute the load evenly. Before starting, they should plan their lifting strategy and decide who will take charge.



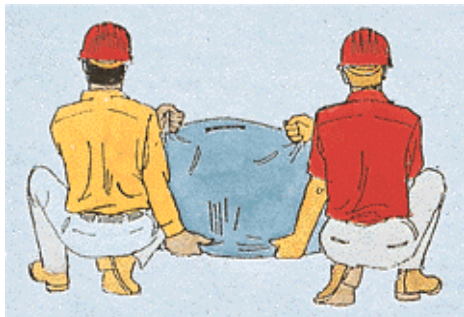
LONG LOAD

For a long load, the lifter who takes charge must see that each person carries the load on the same side and that the person in front has a clear view ahead.

- Lift load from ground to waist height.
- Lift load from waist to shoulder height.
- When carrying long, flexible loads such as rebar, walk out of step to avoid excessive bounce.

SACKS

- Grasp bottom corner with one hand, upper corner with other.



- Lift, using your legs to do the work and maintaining the curve in your back.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



TOOLBOX TALKS

AMERICAN FIRE SPRINKLER ASSOCIATION • CNA COMMERCIAL INSURANCE

UP AND DOWN STAIRS



- Care must be taken when two people carry a load up or down stairs. Improper carrying can subject the spine to excessive forces that may lead to injury.
- It is essential to maintain the correct pelvic tilt. Use your stomach muscles to help support and protect your back.
- If possible, the tallest and/or strongest person should be at the bottom, where the load is heaviest.

LIFTING WITH SUPPORT



- Supporting yourself by placing one hand on a secure object or on your thigh can reduce stress on your spine and knees.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



Hard Hats

The average safety hard hat weighs about 14 ounces. The average man's head weighs 14 pounds. So there's an ounce of safety for every pound of head - provided the head protection is properly worn and maintained.

The brain is the control center of the body. The slightest damage to any part of the brain will cause malfunction of some area of the body. The skull, under normal circumstances, protects the brain. But when a possibility of injury from falling or flying objects exists, additional protection is required.

Hard hats not only reduce the chances of serious injury resulting from falling objects, but protect you when you bump your head on things - like machinery, ductwork, ceiling tie wires and forms. Non-conductive hard hats protect you from electrical shock and burns. Never wear metal hard hats around electrical work.

HOW TO CARE FOR HARD HATS



The better care you take of your hard hat, the better care it will take of you. Here are some suggestions:

1. Properly adjust suspension systems to maintain clearance between your head and the shell of the hat.
2. Don't cut holes for ventilation. Don't heat and bend.
3. Don't substitute a "bump cap." They aren't strong enough.
4. Don't paint your hard hat.
5. Don't put anything under it except your head; this includes cigarettes or notebooks.
6. Don't wear it backwards.

SOME COMMON COMPLAINTS AND THE REAL TRUTH

We sometimes hear the following complaints about hard hats. But is there any real basis for them?

"It's too heavy." Hard hats are only a few ounces heavier than a cloth cap, but the extra protection you get is worth the extra weight.

"It's too hot." Measurements taken in hot weather show that the temperature under a hard hat is often cooler than it is outside.

"It gives me a headache." A thump on the head from something which has fallen two floors will give you a worse one. There is, however, no medical reason why a properly adjusted hard hat should cause a headache. Don't alter the suspension system or the hard hat, because you won't get the designed protection.

"It won't stay on." You're right, it won't in a high wind. A chin strap will solve this problem. Otherwise, you will find that a hard hat stays put no matter how much

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



TOOLBOX TALKS

AMERICAN FIRE SPRINKLER ASSOCIATION • **CNA** COMMERCIAL INSURANCE

stooping or bending you have to do-if it's fitted properly.

"It's noisy." That's your imagination. In fact, tests show that properly worn hard hats will shield your ears from noise to some extent.

NO HELP UNLESS YOU WEAR IT

The hard hat is a useful piece of safety equipment. But like any other protective device, it must be properly adjusted and worn and kept in good condition to give you maximum protection.

Don't be a hard head - get in the hard hat habit.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Improving Security at Your Construction Site

Make Job Site Security a Joint Venture

Ideally, responsibility for initiation and funding of a good vandalism and theft prevention program should be shared by the general contractor and subcontractors, since each has exposure to substantial loss.

The subcontractor is normally not in a position to stipulate what security safe-guards are necessary for the protection of his equipment unless an agreement has been made with the general contractor.

A good program can be developed in the early stages of the construction project which will involve both in sharing the cost and responsibility.

Get Help From Law Enforcement

Well before you break ground or move in your equipment, you should meet with officials of the appropriate law enforcement agency.

You may want to give them the details of your construction project, type of construction, work schedule, project starting time and the expected date of completion. Names and phone numbers of key personnel and contact information during non-working hours are also essential.

Keep the police posted on such things as delivery of critical material and unusual job site activities that might require their special attention. Tell the police how your equipment is specially marked for identification.

Ask the local law enforcement agency to conduct a crime prevention survey of your site. If you are going

to use security personnel, it is sometimes good public relations to hire off-duty law enforcement personnel.

Speak Out on Theft!

“Everybody is doing it. The company doesn’t seem to mind.”

That’s likely to be the rationale for theft, even among usually honest employees, when an employer doesn’t clearly state opposition to theft and act to prevent it. You may assume employees know you oppose theft, but they may believe you don’t care if you don’t take specific anti-theft steps. Consider the following:

- Conduct meetings and give handout materials to let employees know you expect honesty on the job site.
- Explain your policy on the “gray areas” taking scrap lumber or cut-off pipes, personal use of company **vehicles** or “borrowing” tools for overnight or weekend use.
- Ask employees to report theft to management via a phone number that they can use after hours and on weekends.

Many would-be thieves will be deterred by the knowledge that someone can turn them in anonymously. But before acting on anonymous tips, discuss the case with your lawyer.

Encourage Security Suggestions From Your Employees

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Improving Security at Your Construction Site

Page 2

Employees can play a vital part in reducing losses of small tools and materials by constant surveillance of your job site. In preventing vandalism and theft, they can work with you as well as work for you.

Many small day-to-day losses must be paid from profits. Don't be afraid to let your workers know that they could be fired if they are caught stealing. Most labor contracts contain a clause listing dishonesty as one of the just causes for which you may fire an employee.

Prosecute those who steal to let other employees know that you mean business.

Involve Neighbors in Watching Your Job Site

Neighbors and their children can become efficient watchdogs of your project during evening hours and on weekends if you solicit their help in a friendly way.

Contact neighbors in the immediate area around your job site. Don't overemphasize your concern about stopping crimes. Stress the ways you are promoting safety so their children won't be tempted to play in the area and get hurt.

While they may be sympathetic to your security problems, your neighbors are also interested in your efforts to ensure their safety.

Suggestions for Safeguarding Your Job Site

Organize Your Storage Area

A well-organized storage area on the job site should include the following:

- An efficient receiving area that confines material to a specific area.

- A security fence, at least eight feet in height, enclosing the entire storage area.
- Lighting after daylight hours. Watchmen should also be considered.
- Locked enclosures for storing small high-value items.

Mark Equipment

One of the first things thieves do after they steal equipment is to remove the plate on which the manufacturer has listed the model and serial number. Even if you are absolutely certain the machine belongs to you, positive proof is a legal requirement to reclaim it. Keep written records of all vehicle identification numbers on equipment, and keep a color photo of each unit. Maintain an accurate inventory.

Use a hardened steel punch or etching tool to duplicate the serial numbers in at least two places, one obvious and one hidden. Record the locations and the numbers. Post warning notices on machines advising that all VINs have been recorded. If your equipment is stolen and recovered in another town or state, police can trace ownership back to you and you can make positive identification.

- Consider painting equipment a different color to aid in identification.
- Mark the tops of cabs or ROPS to aid in aerial identification.
- Immobilize equipment by removing the rotor or lowering the blade or bucket. Remove the battery and electric starting system, particularly when equipment is not used daily.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Improving Security at Your Construction Site

Page 3

- Install anti-theft devices such as fuel cutoffs, hydraulic bypasses, track locks, hydraulic arm locks etc.

A good inventory control, with a “check in and out” system for tools issued to employees could save your project from excessive losses. Not all thefts are from the outside. Permanently mark company tools and keep a record to whom they are issued. Lock gang boxes and supply sheds at all times.

Prevent arguments over who owns a tool or piece of equipment by making available inexpensive die stamps or etching tools to employees so they can mark their own identification on personal property.

Use Fences to Control Losses and Prevent Accidents

Pay special attention to the fences on your job site. They can be purchased or, in some areas, leased as needed. Fencing around the entire site or around storage areas and trailers will help control entrances and exits from the area.

Fencing focuses all access through one or two points, making control easier. Limit the number of gates and keep them guarded or locked when not in use.

Remember, a fence without strands of barbed wire can be easily scaled by thieves and vandals with minimal risk. On highway construction, fencing may be practical only around job site trailers, storage sheds or compounds for equipment and supplies. Equipment that cannot be fenced should be disabled at night and on weekends. Removing keys is not enough. Switch-jumping is as easy on equipment as it is on automobiles. From a liability and safety standpoint, all hazardous materials (poisons, solvents, flammables and explosives) should always be fenced.

Although some protective fencing, such as that used on a downtown construction site, is made of plywood, it is wise to consider the use of an occasional section of chain-link fencing. This not only provides a better opportunity for surveillance at off-duty hours by security patrols and police, but also offers a view of your construction project to the general public.

Fenced-in areas should be “flushed” at the close of the workday to make sure no unauthorized vehicles remain to be used later for removing tools, equipment or supplies.

Post signs warning outsiders of security guards, watch dogs and alarms. Use signs and decals on equipment to offer rewards for information leading to the arrest of thieves or vandals.

All construction property, whether it is fenced or not, should have adequate signs with lettering large enough to be read at a distance. These should be posted at gates and on all sides of the job site. Signs which give warning or information about any marking of equipment with identification numbers will deter thieves and discourage vandalism.

Secure Tools and Equipment

Make sure storage sheds or fenced areas are used to properly secure all tools and equipment. Keep cabs on all vehicles locked and remove ignition keys when not in use. Use metal shields on equipment windows where practical, and lock oil and gas tank caps. Disable machines with hidden ignition cutout switches. Most losses are directly traced to carelessness by employees.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

Improving Security at Your Construction Site

Page 4

Release Keys to Supervisory Personnel

Controlling keys is an essential element of limiting access to designated areas. Key issuance must always be based on actual continuing need and not on convenience. Limit the number of persons to whom responsibility of “key control” is given.

Keep an up-to-date log listing the type of key issued, to whom, on what date and for what purposes. Keep all un-issued keys under lock, and keep extra keys to a minimum.

Change your locks periodically. Considering the potential losses involved, this simple act is well worth the time and money. Extra-security locks, such as those having changeable combinations, may be the answer.

To prevent unauthorized duplication, “plug” keys with a rivet through the bow as a means of preventing alignment needed for machined duplication.

Monitor the Receipt of Deliveries

A standard procedure for checking material on and off the job site should be established and followed.

One person should be assigned to maintain a tight inventory control of all materials and tools delivered, signing for each delivery only after carefully checking the invoice for shortages.

Critical material should not be stored on the job site any longer than necessary. Whenever possible, the

delivery of high-value material or items known to be in critical demand should be timed on an “as needed” basis in conformance with your construction scheduling.

Spot-check materials and equipment frequently, and do not allow empty cartons to accumulate, since they may be used to take supplies off the project. Supervise all trash removal so that valuable tools or materials cannot be hidden in containers and removed from the job site.

Make Lighting Work For You

Lighting as a crime deterrent is a priority in any plans to combat theft and vandalism. Adequate night lighting is also recognized as a significant deterrent to acts of “casual” or “impulse” crime.

Prior to job start-up, temporary lighting should be in place and plans should be made to expand its coverage as the job progresses. Consider renting lighting systems if company-owned systems are not available.

Regardless of the fixtures used, the office trailer, material storage yard and equipment storage area should be illuminated. Critical areas should be visible from the most heavily traveled road bordering the site. A good lighting system can also be spotted during the daytime by would-be thieves who might be casing the area.

The small cost of overnight lighting is smart business since it tells law enforcement agencies that you want to help them protect your property and cut down crime in the area.

Floodlight the perimeter of areas where vehicles and equipment are stored. Direct lights so they do not blind security guards, police or the general public, and use enough lights to eliminate dark spots or shadows.

Report Theft and Vandalism Promptly

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.



Improving Security at Your Construction Site

Page 5

No matter how small the loss from theft or vandalism, report all incidents to law enforcement officials. The information you supply to them promptly may save your job from a repeat visit or discourage the vandals or thieves from striking other construction projects.

Accurate information will accelerate the possible recovery of your equipment or apprehension of vandals. Make sure your company has an effective incident report form and a complete record of model and serial numbers of all equipment assigned to your project. Also, keep in mind that accurate and timely notification of loss must be made to CNA Insurance Companies' Claims Department.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CNA CONSTRUCTION



Crime Proof Your Jobsite - Audit

Crime Proofing Your Job Site

The most effective crime prevention activities are often the simplest and least expensive. Here are some steps to help reduce theft:

- Follow your company's rules in dealing with employees who steal. Dealing consistently with employee theft will discourage further theft.
- Use an on-time delivery system. Arrange for deliveries when you need the materials, not before. Don't let valuable items sit on your site to tempt thieves.
- Mark all equipment with an identification number and your company name and logo. Urge employees to mark their own tools. Without identification, police cannot prove a tool is stolen and cannot prosecute suspects.
- Advise subcontractors of your schedules. Don't allow them to make deliveries after working hours.
- Don't allow employees to park on the job site or next to a fence where tools can be handed to accomplices. A clear zone should be maintained adjacent to all fencing.
- Use proper locks on tool boxes and trailers. Limit the number of people who have keys, and change

locks frequently. Don't use stock padlocks with a widely duplicated key series.

Police Give Advice on Construction Theft

Law enforcement officials have identified the following common characteristics in construction equipment theft.

- A buyer for the stolen equipment and/or material is usually identified before a theft is perpetrated. Therefore, the thief sets out to steal a specific piece of equipment or materials that have immediate cash value.
- Thieves will case a job site three or four times, at different hours of the day, before the theft is carried out. This allows them time to determine the contractor's routine and to identify the security measures at the job.
- Most thefts occur in the evenings (usually within 30-45 minutes after work is ended for the day) and on weekends.
- Many thieves will not attempt an equipment or material theft if they cannot enter the job site, load the goods and be completely clear of the location within five to ten minutes.

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CONTRACTOR'S EQUIPMENT SELF-AUDIT

	Yes	No
I. Equipment Identification		
<ul style="list-style-type: none">• Is a current equipment inventory list maintained?• Does this inventory list provide:<ul style="list-style-type: none">- date of purchase?- serial and model numbers?- location of identifying numbers on equipment?		
II. Job Site Protection		
<ul style="list-style-type: none">• Is there a need for a watchman service?• Are operator cabs locked when not in use?• Are operator cab windows protected against breakage?• Are operating control panels covered/secured?• Are fuel and oil caps locked?• Are ignition locks provided and used?• Are batteries or rotors removed when equipment is left unattended for long periods of time?• Is equipment corralled overnight?• Have you notified local law enforcement of your job site location and requested to increase patrol?• Have the operators been instructed to look for signs of tampering or vandalism?		
III. Key Control		
<ul style="list-style-type: none">• Has a competent person been assigned the responsibility of controlling key security?• Are keys removed from equipment daily?• Have you identified a secure place for keys to be stored during non-use periods?• Are all keys accounted for daily?		
IV. Yard Security		
<ul style="list-style-type: none">• Have you provided fencing for high-valued equipment?• Are gates locked and checked each night?• Is adequate yard lighting provided?• Have you posted signs to discourage vandalism and theft?		

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

CONTRACTOR'S EQUIPMENT SELF-AUDIT continued

	Yes	No
V. General		
• Have you explained your company's policy on borrowing tools for overnight/weekend use?		
• Have you explained your company's policy on taking scrap lumber, copper, piping and wiring home?		
• Have you solicited help in a friendly way from nearby neighbors to watch your job during non-working hours?		
VI. Comments: All "no" responses require explanation		

The information and suggestions contained in this bulletin have been developed from sources believed to be reliable. However, AFSA and CNA accept no legal responsibility for the correctness or completeness of this material or its application to specific factual situations. This information is for informational purposes and should not be considered legal advice.

