

# Safety Leader's Discussion Guide



Falls

Burn injuries

Preventing back injuries

Fatigue and fitness for duty

Fire extinguishers

Safe forklift operation

Hearing: A sense to be guarded

Hot work procedures

Office safety

Terrorism and security

Hand safety

The value of near-miss reporting

2004





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**Dear Safety Leader:**

**Reducing workplace accidents is a win-win situation.**

The employee wins because he or she goes home safely each day ... which means the employee's family also wins.

The employer wins because accidents affect morale, decrease productivity and increase the employers' workers' compensation costs. Healthier workers mean a healthier bottom line.

One way to help keep your workforce healthy is by using this *Safety Leader's Discussion Guide*. Developed in cooperation with the Society of Ohio Safety Engineers, this guide covers a variety of safety meeting topics that give your employees the information they need to work safely. The articles are written in a style that encourages class participation and interaction. Lists of additional resources also are included with each topic.

Regular safety meetings help get your employees involved in the safety-management process and familiarize them with injury- and illness-prevention practices. Employee awareness and involvement will improve your company's safety performance; and when workers go home each day to their families with their health intact, we all win.

Sincerely,



James Conrad

Administrator/CEO  
Ohio Bureau of Workers'  
Compensation



Dave Spencer

Superintendent  
BWC's Division of  
Safety & Hygiene

**P.S.: Plan now to attend the Ohio Safety Congress & Expo, March 23 to 25 in Cincinnati.**

**Using the Safety Leaders' Discussion Guide is easy.**

- 1** Prior to the meeting, review the preparatory notes at the beginning of the chapter to familiarize yourself with the topic.
- 2** Supplement your presentation with safety examples found in your specific workplace.
- 3** For more information on the topic, contact BWC or refer to the list of additional resources included with each chapter.
- 4** Let us know what you think of the guide, by e-mailing the address listed at the end of each chapter:

[Safety@ohiobwc.com](mailto:Safety@ohiobwc.com)



# January

## Falls By Joseph Hammond

Ask the audience to cite sources of falls on the same level. Encourage them to list the types of incidents that they've witnessed or experienced.

Next, try to list causes for the falls. Answers may include conditions such as:

- Poor lighting;
- Slippery surfaces, wet, oily, icy;
- Hoses, cords, trash, cluttered aisles;
- Granular or powdered material;
- Footwear;
- Uneven surfaces (such as cracks or holes).

Survey the workplace to determine areas that could result in a fall. Look for areas that are poorly lit, contain slippery surfaces and objects such as hoses, cords and trash. Determine steps to take to control and eliminate these potential causes for falls.

Tell the group that former Ohio State University football coach Woody Hayes, not a fan of a passing game, once stated that three things can result from a pass and two of them are bad.

Much the same can be said of the results from a fall; however, almost all the consequences are bad!

Athletes of most sports, as well as workers in all types of occupations, make an effort to maintain an upright stance. We tend not to accomplish our goals when we take an unplanned spill. More importantly, injuries ranging from a bruised back side to a career-ending disability or even death, may occur. Those of us here would miss your contribution to our organization and the devastation for your family would be immeasurable.

So let's discuss this concern which has happened to us all at some point in our lives.

Divide falls into those that take place on the same level or onto a lower level.

Ask for some examples of how falls to a lower level might occur. Answers might include:

- Reaching too far on a ladder;
- Standing on a ladder sliding out from its base;
- Falling from a stairway;
- Falling from a platform or scaffold;
- Falling through floor and roof openings;
- Falling from trucks and trailers;
- Losing your balance while standing on a box or chair;
- Jumping down vs. three-point system. 'Three points' means that both feet and at least one hand, or both hands and at least one foot, are in contact with the ladder, stairway or platform to prevent falling while descending or ascending. (See resource #6 on the next page).

Tell the group that we need to recognize that everyone at our facility can be injured because of a fall. That includes the entire employee population, customers, suppliers, vendors and contractors. Control and elimination of causes for falls should be everyone's mission.

Make every effort to remove objects that can lead to someone's fall whether it involves cleaning up a spill or picking up an item that has been inadvertently dropped.

Ask the group if they understand the difference between fall prevention and fall protection.

Fall-prevention equipment prevents the fall from occurring. Examples include handrails on a stairway, guard railing on a platform and covers over floor holes. Fall prevention also consists of removing hazards that contribute to falls, such as objects placed in aisles or uneven floors.

Fall protection is personal protective equipment which, once a fall takes place, should keep the wearer from striking a lower level. It includes a harness, lanyard and anchor point. Belts are not acceptable except when used as a positioning device or restraint.

For those who need to work on elevated surfaces:

- Use standard guard railing for any work done above 4 feet;
- Maintain and repair bases and railings of portable stairways, ladders and scaffolds;
- Only use scissors lifts with fall-prevention equipment, such as a full body harness and a lanyard connected to a manufacturer's approved anchorage point;
- For other lifts, such as boom lifts, a restraint system is still recommended; but if working above a certain height, fall protection is required;

- Firmly attach lift truck safety cages to the mast, have a solid floor and standard guard railing. Do not perform work outside the railing without using a restraint;
- Order pickers should use the manufacturer's provided equipment and remain within the platform provided. Any deviation will violate company policy.

Conclude by summarizing that maintaining our strong effort on good housekeeping will help prevent slips, trips and falls.

Make sure you realize that you are in control, and that you have a responsibility for preventing falls.

Falls can be prevented with your active participation and involvement. Please take a moment to correct those hazards that you observe. Don't leave it for someone else. Point out those situations that may need supervisory action. Simply put, "Do what's right!"

Finally, let's agree that for the next week, we'll specifically look at our respective work areas and procedures to identify opportunities for improving fall prevention and protection. Come prepared to share your activities when we reconvene.

Examples include:

- Relocated an extension cord so it didn't cross aisle;
- Submitted a work order for lighting a stairwell;
- Removed a pallet from a walkway.

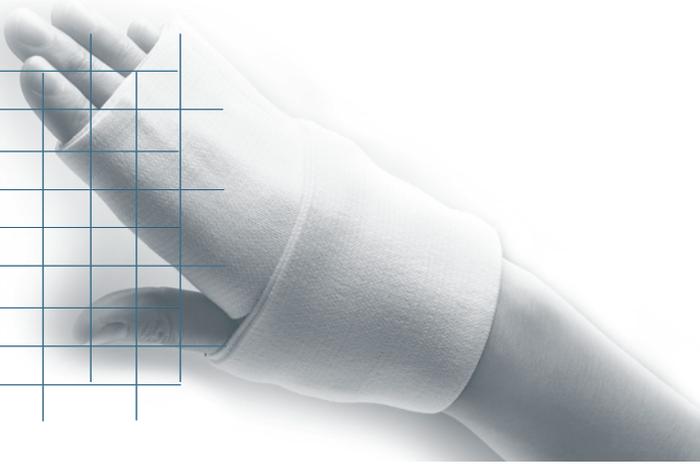
## Reference section

References — Ohio Administrative Code 4121:1-5-02, Occupational safety standard 29CFR1910 Subparts D & E.

1. The OSHA Web site provides a wealth of information on fall prevention and protection. See the following:
  - <http://www.osha.gov/SLTC/walkingworkingsurfaces/index.html>;
  - <http://www.osha.gov/SLTC/fallprotection/index.html>;
  - <http://www.osha.gov/SLTC/cranehoistsafety/index.html>;
  - <http://www.osha.gov/SLTC/scaffolding/index.html>.
2. NIOSH has a Web page on falls from elevation. Log on to: <http://www.cdc.gov/niosh/injury/traumafall.html>.
3. The Canadian Centre for Occupational Health & Safety has a number of resources on fall prevention on its Web site. See the following:
  - [http://www.ccohs.ca/oshanswers/safety\\_haz/falls.html](http://www.ccohs.ca/oshanswers/safety_haz/falls.html);
  - [http://www.ccohs.ca/oshanswers/safety\\_haz/ladders/](http://www.ccohs.ca/oshanswers/safety_haz/ladders/);
  - [http://www.ccohs.ca/oshanswers/safety\\_haz/platforms/](http://www.ccohs.ca/oshanswers/safety_haz/platforms/).
4. BWC's Division of Safety & Hygiene video library has a number of videotapes which address fall prevention. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our Web site, **ohiobwc.com**.
5. Ellis, J. Nigel, *Introduction to Fall Protection*, 3<sup>rd</sup> ed., ASSE, 2001.
6. For an explanation of the three-point system, log on to <http://www.eig.com/smos/smo97064.html>.

**Joseph Hammond** is a certified professional environmental auditor and occupational safety and health technologist. After a 27-year career with BWC, Hammond now provides safety training and consulting services to clients throughout Ohio. He is an authorized OSHA 10- and 30-hour course trainer, and makes frequent public presentations to both general industry and construction groups.

**We always strive to improve the *Safety Leader's Discussion Guide*. Your feedback can help. Please e-mail your comments to [Safety@ohiobwc.com](mailto:Safety@ohiobwc.com).**



## Burn injuries By John N. Waller

Review your company's incident reports for the last couple of years to determine if any burn incidents were reported. If burns have occurred, obtain a copy of the incident report to review with employees. Review the incident, maintaining the individual employee's privacy.

Introduce the topic of burn injuries to the group. One of the most painful injuries you can experience is a burn. Share that burns injured more than 35,000 workers in the United States last year. The Federal Bureau of Labor Statistics published the following occupationally related burn statistics for 2002:

- 24,298 thermal burns, resulting in an average of four lost days of work;
- 1,575 electrical burns, resulting in an average of 10 lost days of work;
- 9,395 chemical burns, resulting in an average of two lost days of work.

Ask participants for examples of burn hazards in their workplace.

Ask what are some common types of burns and their causes. Share the following:

- Thermal burns are caused by exposure to heat sources, such as flame, hot liquids or hot objects. Thermal burns continue to burn until the heat source is removed, and the skin is cooled;
- Chemical burns occur when the skin comes in contact with strong acids, alkalis and other corrosive materials. Chemicals continue to burn until the chemical is removed through flushing or is neutralized;
- Electrical burns occur when an electric current enters the body. As the current travels through the body, it follows the path of least resistance, traveling through nerve bundles and blood vessels. You will normally see an entry wound and an exit wound. However, the most serious damage may occur along the path of the current. Electricity may also cause the heart to develop a fatal arrhythmia (irregular beat); damage to the eye from the electrical arc; and thermal burns if the victim's clothing ignites.
- Mechanical burns are caused by friction, such as from ropes, carpet or sports activities;
- Radiation burns are caused by ultraviolet and ionizing rays.

Ask what processes do we have in place at this facility to protect against fire hazards, are they adequate, and have they been tested.

## Classifying burns

Ask how burn injuries are classified. Explain the following:

- Partial thickness (also known as first and second degree) burns do not extend completely through the dermis. Because new skin can grow from the remaining dermis, partial thickness burns usually heal well and are easier to care for;
- Full thickness (also known as third degree) burns extend completely through the dermis. The dermis is destroyed, and no skin can grow back. These types of burns usually cause deep scarring and require skin grafting.

The definitions first, second and third degree are still in use, but medical professionals also refer to burns as partial thickness and full thickness. It is important to be able to determine the classification of a burn to determine the correct level of emergency care that may be needed.

## Treatment of burn injuries

Ask can you describe a first-degree burn and the treatment for it. Share that first-degree (partial thickness) burns involve only the outermost layer of skin. The area appears red, with slight swelling and is painful. The skin remains intact, with no open sores.

Immediately immerse the burned area in cool water. Do not put anything on the burned area, such as ice, butter or lotions. After cleansing the area, apply a mild antibiotic and a clean bandage. Keep the area clean and dry to avoid infection. Seek additional medical treatment if the burn is not healing.

Ask can you describe a second-degree burn and the treatment for it. Explain that second-degree (partial thickness) burns

involve the outermost layers of skin. The area is very painful to touch. The skin will be moist and have a mottled pink or red appearance. It will blanch on pressure, and blisters usually form.

Some second degree burns can be self-treated, but should be seen by a physician if:

- More than 1 percent of your skin surface is involved (more than the size of the patient's palm);
- Face, neck, genital area, hands or feet are involved;
- The patient is a child or senior citizen. These patients usually have more severe reactions to burns and different healing processes;
- The patient has a pre-existing physical or mental condition. Patients with respiratory illnesses, heart disorders, and diabetes or kidney disease are in greater jeopardy than healthy people.

Ask can you describe a third-degree burn and its treatment. Point out that third-degree (full thickness) burns are white, brown, black or charred. The burned area may feel painless or numb. These types of burns require immediate professional medical attention. Immediately call 911 or your local emergency number. If possible, remove the victim to a safe area. Extinguish flames by rolling the victim. Do not remove embedded clothing or any other embedded material from the burn. If the person is not breathing, perform CPR if possible. Cover the burn victim with cool wet cloth.

Conclude by pointing out that any electrical, steam or inhalation burn, such as smoke, chemical, or extremely hot air or vapors must be evaluated by a medical professional right away. These types of burns can have unusual complications despite mild symptoms at first.

## Reference section

1. For more information about burns, including an interactive tutorial, access MEDLINEplus: <http://www.nlm.nih.gov/medlineplus/burns.html>.
2. For more information about fire prevention and fire safety, visit OSHA's Web site at <http://www.osha.gov/SLTC/firesafety/index.html>.
3. BWC's Division of Safety & Hygiene video library has a number of videotapes on burns, first aid and fire prevention. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our Web site, [ohiobwc.com](http://www.ohiobwc.com).
4. The Ohio Fire Academy has a film library. View their catalog online at <http://www.com.state.oh.us/ODOC/sfm/pub/2001FilmCat.pdf>, or call (614) 752-7203.

**John N. Waller** is regional health and safety manager for PSC Container Services Group. He oversees occupational health and safety at 24 facilities.

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# March

## Preventing back injuries

By Ted Ingalls

Research historical back-injury information at the organization and bring a summary with you to the discussion. Obtain a flip chart or dry-erase board and markers. Note 1: Statistics indicate that up to 80 percent of the population will suffer a back injury during their lifetime. If that is so, the great majority of us should be concerned about how to prevent or limit our potential for back injury. Note 2: Back injuries arise from exposure to a variety of risk factors that are present in all areas of our lives.

Introduce the topic of back injuries to the group. Then, ask how many people have experienced a back injury or back pain. Note the people who raise their hand, so you can bring them into the discussion for personal testimony at key moments later in the discussion.

Ask what you think causes back injuries or contributes to back injuries. Possible answers include lifting, twisting, sports, falling down, repeatedly moving material, chopping logs. Encourage participation in brainstorming ideas.

Share these examples of off-the-job environmental risk factors that increase back injury potential. Note for the group how every day activities, in addition to the work-related examples the group previously identified, can contribute to back injuries. Examples include:

- Storing pots and pans near the floor, necessitating repeated bending for access;
- Struggling to lift groceries from the trunk of the car, while leaning over the bumper and into the trunk;
- Repeatedly lifting and carrying children;
- Carrying logs for the fire;
- Changing flat tires on our personal vehicles;
- Playing basketball, bowling and softball.

Conclude by stating, our backs constantly experience wear and tear resulting in deterioration over time. Life is just not very back friendly. Consequently, preventing back injuries in all areas of our lives is very important.

Tell the group that you would like to identify specific risk factors that increase the potential risk of back injury. Indicate the importance of knowing the risk factors by saying the reason we all need to know these risk factors is so we can avoid or minimize the potential of a back injury or further injury.

Write these risk factors on a white board or flip chart for all to refer to during the discussion:

- (1) Overexertion
- (2) Repetitive motion
- (3) Pulling rather than pushing
- (4) Twisting
- (5) Awkward postures

Point out that the risk of back injury is magnified many times when several risk factors are combined in a single effort. For example, repetitively lifting a heavy weight while twisting the back presents simultaneous multiple risk factors and must be avoided.

Ask what to do about the risk factors. Note that the best prevention for back injury is to remove the risk factors, so they cannot contribute to the possibility of a back injury. Risk factor removal means modifying how the task is accomplished. Examples include: use pad handles, so you do not put pressure on the palm of the hand; use a cart to assist with carrying a load; place needed items within 15 to 18 inches of a person's reach; or adjust the position of the part, rather than having the person assume an awkward position.

The objective of this part of the discussion is to identify how the back can be injured from overuse and by not eliminating back injury risk factors.

Ask what tissues or parts of the back can be injured in a back injury. Record the group's answers on a flip chart or dry erase board. After the discussion, help clarify the issues by sharing the following information with the group:

- **Muscles** — Muscle strains are soft-tissue injuries caused by over-exertion of the muscle tissue. Muscles that have been overused or stressed may react by contracting or going into spasm. With ice, rest and light stretching, muscles can recover in a relatively short time;
- **Tendons** — Tendons are like cables connecting our muscles to bone. They slide through sheaths to make their movement easier. However, repeated flexion or extension of an elbow, neck or shoulder can cause tendon inflammation. When that happens, pain and swelling develop and this is called tendonitis. Rest, ice and anti-inflammatory drugs are customarily prescribed;
- **Spine** — Damage to the spine often involves the intervertebral discs. These are the cushioning spacers located between each vertebra. When the discs are damaged, the resulting pain and trauma is serious. Should injury to a disc occur, the disc may bulge or herniate and put pressure on a nerve root. This causes great pain in the legs or back and difficulty with the simplest of movements — even sitting. This is the most serious type of back injury.

Focus this part of the discussion on what each person can do to prevent back injury. Refer to the list of risk factors you previously wrote and ask the group what we can do as individuals to prevent injury to ourselves or to help others prevent injury. Write the group's ideas on a white board or flip chart.

The group should identify numerous ideas. Write them all down. If they overlook some ideas, see if you can ask additional questions that will encourage the creation of more ideas.

### Group actions

Urge group members to:

- (1) Go back to their work areas and first identify the risk factors associated with their job functions;
- (2) Propose process improvements to the supervisor and the safety committee that will eliminate or reduce the back-injury risk factors, and help prevent back injury.

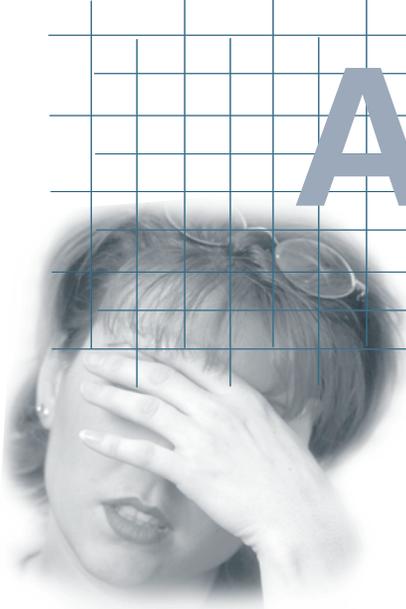
Conclude the discussion by saying all the risk factor education in the world will do no good, unless changes and improvements are incorporated into how you do your job or the efforts you undertake at home. Doing the same thing repeatedly may result in back injury.

## Reference section

1. You can obtain your organization's claims data from BWC. Visit the Employers section of our Web site, [ohiobwc.com](http://ohiobwc.com), or phone an employer services specialist at your local customer service office.
2. For more information about backs and back injuries, log on to the following Web sites:
  - MEDLINEplus: <http://www.nlm.nih.gov/medlineplus/backinjuries.html>;
  - MEDLINEplus: <http://www.nlm.nih.gov/medlineplus/backpain.html> (includes an online tutorial on back pain);
  - National Institute of Neurological Disorders and Stroke: [http://www.ninds.nih.gov/health\\_and\\_medical/pubs/back\\_pain.htm](http://www.ninds.nih.gov/health_and_medical/pubs/back_pain.htm);
  - American Academy of Orthopaedic Surgeons: <http://orthoinfo.aaos.org/>;
  - Free-Training.com: <http://www.free-training.com/osha/Soshamenu.htm>.
3. NIOSH and OSHA have extensive information on musculoskeletal injuries and ergonomics. Visit their Web sites at:
  - NIOSH: <http://www.cdc.gov/niosh/topics/ergonomics/>;
  - OSHA: <http://www.osha-slc.gov/SLTC/ergonomics/index.html>.
4. Minimize the risk of recurrent occupational back injuries. Use these lifting guidelines to assess an injured worker's readiness to return to work found at <http://www.ohiobwc.com/employer/programs/safety/Ergoliftguide.asp>.
5. BWC's Division of Safety & Hygiene video library has a number of videotapes on ergonomics and preventing back injuries. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our web site, [ohiobwc.com](http://ohiobwc.com).

**Theodore S. (Ted) Ingalls**, a certified hazardous materials manager, is president of Performance Management Consultants, Dublin, Ohio. The firm provides training and development in safety management and leadership, develops safety problem-solving teams, and helps organizations implement behavior-oriented safety systems and processes. It also conducts safety culture assessments, individual evaluations and technical safety training.

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# April

## Fatigue and fitness for duty

By Amy Stewart

Be sure to review your company's injury logs and past injury reports for incidents involving fatigue. If fatigue has caused accidents, obtain a copy of the incident report to review with employees. Review the incident, maintaining the individual employee's privacy.

Ask the group how many of them are tired today. Then ask if they were allowed a nap today, how and where they would arrange it. Also, ask how many of them got eight hours of sleep last night before coming to work.

Tell the group that fatigue is a contributing factor in losses, though tracking and measurement is not a common practice. Ask how many are in agreement that fitness for duty has something to do with fatigue, and what other factors determine whether or not you are fit for duty.

Share with the group that the transportation industry has increased awareness of fatigue and fitness for duty in the last five years. Railroads have had hours of service limitations since 1907, and other modes of transit limit the hours of work. We challenge you to look at a more global picture of reducing risk with alternative strategies.

### Small group discussion

If the group is not large enough for small group breakouts, discuss the following three concepts as a large group. If the group is too large, give two groups the same set of questions.

Ask group one how much sleep do they get at one time, and if they nap, how long they nap. Inquire about how often they get sleepy at work, and how often might they fall

asleep while driving per week, month or year. Ask how their lack of sleep affects their work quality. See if the group knows the recommendation of the sleep experts for the amount of sleep nightly for adults?

Summarize answers to each question, and choose a spokesperson for the group.

Ask group two to define fatigue, and what causes fatigue. List types of fatigue and symptoms; and list the ways to overcome each type, labeling them healthy or unhealthy. Define fitness for duty, and imagine situations where a person may be unfit to work, affecting the safety of that employee or others.

Summarize your discussion and answers to share with the large group.

Ask group three if they can imagine or recall the consequences of fatigue, and what they suggest for solutions to a nationwide problem of sleep deprivation. Give examples in your workplace for the provision or acknowledgement of power naps; and nutrition, health or wellness to reduce the fatigue factor. If you would like, role play a situation where fitness for duty is a factor.

### Large group discussion

With a spokesperson from each group, summarize what was discussed and how the rest might learn from the discussions. Clarify answers, based on current fatigue studies.

Survey the answers of group one. Then, share the results of an Australian study that showed:

- After 17 hours of sustained wakefulness, hand-eye coordination decreased to a level equivalent to performance of a blood alcohol concentration (BAC) of .05 percent;
- After 24 hours, abilities decreased to an equivalent of .10 percent BAC, which exceeds the legal limit for driving while intoxicated.

In addition, sleep experts recommend eight hours of nightly sleep for adults, though the National Sleep Foundation annual polls find that the average adult sleeps less than seven hours a night during the work week. In terms of sleepiness in the workplace, 40 percent of the American work force report that sleepiness on the job reduces the quality of their work, and one in five reports making occasional errors due to sleepiness.

Share group two's answers. Then, let the group know that fatigue is a loss of alertness, but not always caused by lack of sleep. Undiagnosed obstructive sleep apnea, other health problems, prescription pain-relieving medications, recent cocaine use, long working hours, split shifts/work schedule, environment, lack of exercise, poor nutrition and drug issues all affect human alertness.

Share with the group that a fitness for duty (FFD) medical evaluation can be performed to determine if an employee is mentally or physically capable of performing essential functions of a job without risk of injury to the worker or co-workers. Specific situations that usually warrant consideration for an FFD exam in a more global sense are:

- Potential for workplace violence;
- Impaired concentration;
- Paranoid thinking;
- Abusive behavior to co-workers or customers;
- Anticipated return from an extended medical leave.

Presently, there is no objective test to measure a person's level of alertness. For now, we must rely on our own judgment, which could be skewed by the fatigue factor. There may be duties you can list for which an employee needs to be fit: agility, lifting, inspecting, bending/stooping, perceptual skills, judgment or coordination.

Discuss group three's answers. Then, share these consequences: Lost productivity, absenteeism, turnover, morale and increased wear and tear on equipment are affected by employee fatigue. Ask the group what is in their workplace to promote health and wellness. Inquire how they combat fatigue and how they might make adjustments in their lifestyle to manage fatigue.

## Reference section

1. For more information about fatigue, see the following:
  - Williamson AM, Feyer AM., "Moderate sleep deprivation produces impairments in cognitive and motor performance equivalent to legally prescribed levels of alcohol intoxication," *Occupational and Environmental Medicine* 2000 Oct; 57(10): 649-55. You can request a copy of this article from BWC's Division of Safety & Hygiene libraries by calling **1-800-OHIOBWC** or sending an e-mail to [library@bwc.state.oh.us](mailto:library@bwc.state.oh.us);
  - <http://www.scripps.edu/news/press/091197.html>.
2. For more information about sleep and sleep disorders, log on to the following Web site:
  - MEDLINEplus: <http://www.nlm.nih.gov/medlineplus/sleepdisorders.html> (includes an online tutorial);
  - National Sleep Foundation: <http://www.sleepfoundation.org/>;
  - National Center on Sleep Disorders Research: <http://www.nhlbisupport.com/sleep/patpub/patpub-a.htm>.
3. For more information about shift work, visit the following Web site:
  - Mayo Clinic: <http://www.mayoclinic.com/invoke.cfm?id=HQ01388>;
  - <http://www.cdc.gov/niosh/pdfs/97-145.pdf>.
4. For more information about wellness, access the following Web site:
  - President's Council on Physical Fitness and Health: <http://www.fitness.gov/>.

**Amy Stewart** is a certified safety professional and a transportation research scientist at Battelle Memorial Institute in Columbus. She has been published in the American Traffic Safety Association's *Journal of Traffic Safety*; and has written several transportation safety training manuals and videos. In 1997 Stewart was named Safety Professional of the Year by the All-Ohio Chapter of the American Society of Safety Engineers.

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# May

## Fire extinguishers By Andrew M. Pawuk

Fire extinguishers come in many sizes and configurations. Review the type(s) available at your location and be familiar with their operation. It is helpful to have an extinguisher during your presentation to demonstrate its use.

Ask what purpose do fire extinguishers have in the workplace. Fire extinguishers are required to provide a second line of defense if a fire were to occur. Always call for help first. Fire extinguishers can control a small fire and prevent a fire from spreading when it is used properly and during the early stages of the fire.

Explain which extinguisher is best to use on a fire. There are many types of fire extinguishers available for use in the workplace and in your home. They are required in industrial and commercial locations. The type of hazard present and the size of the area protected can determine their location. Fire extinguishers are classified according to the types of fires that they are designed to protect against.

- Class A — Normal combustibles, such as wood, paper, cloth, rubber and many plastics.
- Class B — Flammable liquids, combustible liquids, petroleum greases, tars, oils, oil-based paints, solvents, lacquers, alcohols and flammable gases.
- Class C — Fires that involved energized electrical equipment.
- Class D — Fire in combustible metals.
- Class K — Fires in cooking appliances that involve combustible cooking media, such as vegetable or animal oils and fats.

Ask where the fire extinguishers are located in your work area. Fire extinguishers are to be in designated, easily identifiable locations. Know the locations of the fire extinguishers in your work area before they are needed.

Ask how a person knows what fire extinguisher to use. Fire extinguishers are located based on the types of hazard present and area of coverage. Each extinguisher is marked on the front of its shell with the fire classification. It may be a picture symbol or a letter-shaped marking.

Share with the group who may use a fire extinguisher. Any person who is trained in its operation can use a fire extinguisher. It is important that the unit is used quickly and correctly, so it is imperative that the user be familiar with how the unit works. Instructions for use are on the label.

Explain how you activate a fire extinguisher. There are many methods to activate various fire extinguishers. Most common are a lock pin or a ring pin that needs to be withdrawn. Other commonly used devices are clips, cams, levers or hose or nozzle restrainers. Tamper seals are commonly used to secure these devices. These tamper seals normally will break when the restraining device is removed.

- If the fire extinguisher is large, place the unit on the floor or other suitable surface.
- Place one hand on top of the cylinder.
- Grasp the locking device (lock pin or ring pin).
- Twist the pin to break the tamper seal.
- Pull the pin out.

Share with the group how to use a fire extinguisher now ready to discharge. Pick up the fire extinguisher (if it is a hand-held unit) and hold onto the nozzle. If a carbon dioxide fire extinguisher is used, hold the nozzle by the handle or raise the nozzle and aim. It is suggested that a quick test of the extinguisher be done at this point to ensure proper operation.

Advance toward the fire and apply the extinguishing agent at the base of the flames from a distance. The effective range of a hand-held fire extinguisher will vary by type of extinguisher. Many hand-held units have an effective range between 3 feet and 10 feet. Some liquid extinguishers have a 20- to 30-foot range.

Use a sweeping motion from side to side when attacking the fire.

To stop the flow of the agent, release the handle.

Ask what to do if you cannot put out the fire. The fire may be too advanced for you to put out. If so:

- Remove yourself and others if possible from the area;
- Activate the fire alarm system, or dial your emergency number.

Conclude by saying be familiar with fire extinguishers in your work area. Know how they operate and where they are located. During an emergency situation your knowledge of fire extinguisher operation may save your job, your home or your life.

Do you have a fire extinguisher in your home?

## Reference section

For more information about fire extinguishers, see the following:

1. National Fire Protection Association, "NFPA 10 — Standard for Portable Fire Extinguishers."
2. For more information about fire extinguishers, visit the following Web sites:
  - National Fire Protection Association: <http://www.nfpa.org/>;
  - Oklahoma State University: <http://www.pp.okstate.edu/ehs/MODULES/Exting/Intro.htm>;
  - Sausalito Fire Department: <http://www.ci.sausalito.ca.us/sfd/prevention/fe-workplace.htm>;
  - HowStuffWorks: <http://howstuffworks.lycoszone.com/fire-extinguisher3.htm>.
3. For more information about fire prevention and fire safety, log on to OSHA's Web site: <http://www.osha.gov/SLTC/firesafety/index.html>.
4. BWC's Division of Safety & Hygiene video library has a number of videotapes on fire extinguishers and fire prevention. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOWBC** (ask for the video library), or visit our Web site, **ohiobwc.com**.
5. The Ohio Fire Academy has a film library. View their catalog online at <http://www.com.state.oh.us/ODOC/sfm/pub/2001FilmCat.pdf>, or call (614) 752-7203.

**Andrew M. Pawuk** has contributed to the *Safety Leader's Discussion Guide* for 11 years. He is the safety and security manager at Lucas Metropolitan Housing Authority in Toledo. Pawuk previously served 18 years as safety director for major hospitals in Toledo and Columbus; as a safety and health specialist for Columbia Gas of Ohio; and as a private consultant.

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# June



## Safe forklift operation

By Arne Larson

Survey the workplace to determine what types of forklifts are used in your facility. This information may be useful later to answer specific questions during this presentation. Cover the following points that describe a forklift and explain why it is different from other vehicles.

Explain that forklifts are used by many organizations to move and lift materials in a safe, efficient manner. The Occupational Safety and Health Administration (OSHA) regulation 1910.178 requires that all forklift operators be properly trained before operating a forklift. Refresher training is required at least every three years. However, individuals may need additional training to maintain forklift driving skills and operations knowledge.

Share these examples of how forklifts differ from other vehicles.

- Steer with rear wheels
  - Forklifts can turn sharply.
- Watch out for rear-end swing clearance.
- Designed for one person
  - There is no extra seat for passengers.
  - Riders not allowed.
- Smaller but usually heavier
  - The building or truck floor must be capable of bearing the weight of the forklift, the operator and the load.
- Lifts and carries heavy loads
  - The manufacturer's rated capacity is on the attached data plate.
  - Never exceed the stated lifting capacity.
- Changing center of gravity
  - As the load gets heavier and higher or tilted forward, the vehicle's center of gravity changes. The forklift can tip over if the center of gravity gets outside of the stability triangle.
- Daily inspection required
  - OSHA requires a daily inspection of critical components before use.

Ask employees to provide other features of how forklifts differ from other vehicles. Use a flip chart to list employees' suggestions. Discuss the stability triangle and how the center of gravity changes when lifting a load (most good forklift safety videos explain this). Dropping a load or tipping over a forklift can seriously injure operators or bystanders.

Ask attendees to list other important do's and don'ts of forklift driving. Discuss any specific hazards unique to your forklift operations. Review the recommended guidelines below and talk about why they are important.

Share these safe operating guidelines.

- Document the daily inspection of horn, lights, brakes, tires, hydraulics, lift controls, steering, fuel system and any other important components.
- Shut off the engine, set the parking brake and lower the forks to the floor when leaving a forklift unattended.
- Fasten the seatbelt (if the forklift has one).
- Follow the 'rules of the road' — obey all traffic signs and markings.
- Carry the load low, with the forks tilted back slightly.
- Drive slowly and carefully — watch out for pedestrians and other vehicles.
- Prevent others from passing or working under a raised load.
- Turn and drive in reverse if a load obstructs forward view.
- Do not allow passengers on a forklift.
- Use only approved personnel platforms to elevate another worker.
- Keep the load pointed uphill when going up or down an incline.
- Observe the lifting capacity marked on the data plate.

Conclude by reviewing the safety tips below, and ask the group if they can think of any others specific to their workplace.

- Yield to pedestrians in shared work areas.
  - Some facilities mark forklift traffic lanes and pedestrian walkways.
- Sound the horn when entering blind intersections or doorways.
  - Forklift drivers should warn others of their approach.
- Use dome or convex mirrors, where available, for better visibility at intersections and blind corners.
- Ensure adequate ventilation — avoid carbon monoxide (CO) buildup.
  - Gas- and propane-powered forklifts emit CO in the exhaust.
  - Use CO monitors to check the area (the average concentration should be less than 25 parts per million).
- Maintain back-up alarms — never disable any safety device.
  - Drivers must always look in the direction of travel.
- Prohibit stunt driving and horseplay with any vehicle.
  - Prevent forklift accidents by driving safely at all times.
- Secure the load and drive slowly to prevent falling loads.
  - Watch out for unstable loads, especially when turning corners.
- Refuel forklifts in a safe place away from flammables and combustibles.
  - Do not permit smoking, sparks or open flames near refueling sites.
  - Use a ground strap if filling with gasoline from a can.

## Reference section

1. For more information about powered industrial trucks, log on to the following Web sites:
  - OSHA: <http://www.osha.gov/SLTC/poweredinustrialtrucks/index.html>;
  - OSHA: [http://www.osha.gov/Training/PIT/pit\\_menu.htm](http://www.osha.gov/Training/PIT/pit_menu.htm);
  - OR-OSHA (Oregon): <http://www.cbs.state.or.us/external/osha/pdf/pubs/forklift.pdf>;
  - Canadian Centre for Occupational Health & Safety: [http://www.ccohs.ca/oshanswers/safety\\_haz/forklift/](http://www.ccohs.ca/oshanswers/safety_haz/forklift/);
  - Free-Training.com: <http://www.free-training.com/osha/Soshamenu.htm>.
2. Reference: American Society of Mechanical Engineers, "Safety Standard for Low Lift and High Lift Trucks," ASME B56.1, American National Standards Institute.
3. BWC's Division of Safety & Hygiene video library has a number of videotapes on forklift safety. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or log on to our Web site, [\\_ohiobwc.com](http://www.ohiobwc.com).

**Arne Larson** is a safety specialist with the Lubrizol Corporation's research and testing facility in Wickliffe, Ohio. He has 15 years of experience in safety and industrial hygiene.

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## **Hearing: A Sense to Be Guarded**

By Daniel E. Gleghorn, CSP

Bring information on operations which might cause noise-induced (or sensory) hearing loss injuries at your facility. Injury/accident investigations will give you information for your presentation. The job safety analysis should also give you information concerning the noise level of particular equipment or processes and types of hearing loss injuries. Consider bringing a chalkboard or flip chart to write the questions and answers.

Introduce the topic of hearing by telling the group that noise-induced (sensory) hearing loss is a permanent type of injury. It can affect you not only at work but in all aspects of your life. Losing your hearing is a gradual process and permanent. It is less noticeable than other types of workplace injuries. The proper wearing of hearing protection where noise levels are high can lessen or eliminate hearing loss. In hearing conservation the main objective is to preserve our hearing by the elimination or reduction of noise.

Tell the group that they can find OSHA's permissible exposure limit (PEL) for noise in 29 CFR 1910.95.

1. The permissible exposure limit is 90 decibels (dBA) averaged over eight hours. Hearing protection is required when noise exceeds the PEL.
2. OSHA's action level is 85 dBA averaged over eight hours. Hearing conservation training is required with annual audiograms and hearing protection must be made available.

Explain the physiology of hearing.

1. Sound is collected in the outer ear and funneled to the eardrum.
2. When sound waves hit the eardrum, it vibrates and sends sound to the middle ear.
3. The middle ear amplifies the vibrations and sends them to the inner ear. The vibrations stimulate hair cells in the inner ear and create an electrical impulse.
4. This impulse travels to the brain along the auditory nerve, causing the sensation of sound.

Ask what types of equipment or jobs might cause hearing loss. Examples include:

- Circular saws;
- Chain saws;
- Firing guns;
- Air-powered ejection equipment;
- Air-operated equipment without mufflers;
- Metal stamping;
- Machining operations.

Ask if they know what noise level will be produced by a particular piece of equipment or a particular operation.

If you know what the noise level is for the pieces of equipment or process, give the class that level. If you do not know, tell the class you will check the level and let them know.

Tell them the types of hearing protection available.

- Ear muffs
- Ear plugs
- Ear canal caps

Ask how we can tell how much protection these devices provide.

There is a single number (required by law) on each hearing protector called the noise reduction rating (NRR). The higher the NRR number, the more effective the protection.

Explain the most common methods for determining how much noise a worker experiences when he or she is wearing hearing protection. Using an integrating sound level meter or noise dosimeter set to the A-weighting network:

- (A) Obtain the employee's A-weighted (time-weighted average or TWA) (noise exposure);
- (B) Subtract 7 dB from the hearing protector's NRR, and subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

Example: If the employee's TWA is 95 dBA and the NRR on the hearing protector is 25 dB:

- OSHA-allowed reduction — 25 dB - 7 dB = 18 dB;
- Noise employee experiences — 95 dBA - 18dB = 77 dBA.

Each exposure and each protector must be calculated separately.

Demonstrate how to put on and wear different types of hearing protectors. Share the two types of hearing loss — conductive and sensory. Several medical disorders cause conductive hearing loss.

1. Middle ear infections
2. Perforation of the eardrum
3. Fixation of the ossicular chain (the bones in the middle ear freeze or quit working)
4. Otosclerosis (a growth of spongy bone in the inner ear)

These disorders can be treated medically or surgically.

Conclude by pointing out that sensory hearing loss is caused by damage to, or a malfunction of, the inner ear, auditory nerve, or the brain. This makes it more difficult to understand speech. This type of hearing loss is generally caused by excessive noise from equipment or processes. Prevention is the cure.

## Reference section

1. For estimates of work-related noise levels, see this chart on NIOSH's Web site: <http://www.cdc.gov/niosh/01-104.html>.
2. For more information about workplace noise see: *The Noise Manual*, edited by Berger, Elliott H., et al., 5<sup>th</sup> ed., AIHA Press, 2000.
3. For more information about workplace noise and hearing conservation, visit the following Web sites:
  - OSHA: <http://www.osha.gov/SLTC/noisehearingconservation/index.html>;
  - NIOSH: <http://www.cdc.gov/niosh/topics/noise/>;
  - Aero Company: <http://www.aero.com/html/industrial/tech01.asp>;
  - OR-OSHA (Oregon): <http://www.cbs.state.or.us/external/osha/pdf/pubs/3349.pdf>.
4. For an interactive tutorial on hearing loss, log on to MEDLINEplus at: <http://www.nlm.nih.gov/medlineplus/tutorials/hearingloss.html>.
5. BWC's Division of Safety & Hygiene video library has a number of videotapes on noise and hearing conservation. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our Web site, [ohiobwc.com](http://ohiobwc.com).

**Daniel S. Gleghorn**, a certified safety professional, has 34 years of experience in occupational safety and health. He is executive vice-president of American Safety & Health Management Consultants Inc.; and previously managed industrial health and safety issues for various subsidiaries of the Goodyear Tire & Rubber Co. Gleghorn was named All-Ohio Safety Professional of the Year for 1990; received similar honors from the Summit County Safety Council (1988) and the Akron Council of Engineering and Scientific Societies (1995).

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# August

## Hot Work Procedures By Mark Mullins

Review your facility's hot work permitting procedures and process. Bring copies as handouts. Identify any incidents or near hits (miss) incidents that occurred as a result of performing hot work. Make this meeting a discussion rather than a lecture, soliciting input from the employees.

For more information on hot work requirements, see the OSHA Code of Federal Regulations 29 1910.252 titled Welding, Cutting and Brazing and Code of Federal Regulations 29 1926.35, titled Fire Prevention.

Introduce the topic by pointing out that every year, fires occur throughout industry which could have been prevented had employees used a hot work permitting process. This includes effective hot work procedures, training, communications among employees, inspections and periodically auditing the process to ensure compliance and safety.

Explain that hot work is any work using an open flame or other sources of heat that could ignite materials in the work area.

Ask what operations involve open flame or other sources of ignition.

- Welding
- Brazing
- Propane soldering
- Grinding that could generate a spark
- Burning
- Oxyacetylene cutting
- Use of powder-actuated tools, portable electric tools and any other open flame or spark-producing equipment

Ask whether they can think of any incidents or near hit incidents at this facility that involved hot work. Have the employees give examples and/or review past incidents.

Ask what operations and locations in our facility should require a hot work permit. Have the employees name the potential areas.

Ask what questions should be considered before beginning hot work. Possible questions may include:

- Does everyone understand the scope of the work?
- Have all the affected employees been notified?
- Have security, emergency response personnel and affected workers in the area been notified?
- Has the permit been filled out?
- Has the area been inspected before hot work is to start?
- Are all flammables/combustibles removed from the area?
- Has the area been evaluated to ensure that no flammable vapors are present?
- Is a fire extinguisher available?
- Are immovable fire hazards covered with a tarp or other non-combustible covering?
- Have employees been told to immediately stop hot work if conditions change, odors become present, etc., until the area is re-inspected?

The questions below should serve as a means to determine if your employees have a thorough understanding of your hot work permit process.

Ask who is responsible for inspecting the area prior to hot work.

The area supervisor is responsible.

Ask how long hot work permits are valid. Permits usually are valid only for the length of the working shift; but never more than 24 hours.

Ask what a fire watch is.

A fire watch is an employee familiar with the work to be done, who watches whenever welding, cutting or other hot work is performed.

- A fire watch may not do any other job that would distract from his or her primary responsibility.

Ask what does the person serving as fire watch need to know.

The fire watch needs to know:

- How to summon help;
- How to report emergencies;
- The facility's emergency evacuation procedures;
- How to use a fire extinguisher.

Ask once hot work is complete, what should be done before leaving the area. Inspect the area within 30 minutes to verify there are no smoldering fires.

## Reference section

1. For more information about hot work, log on to the following Web sites:
  - NIOSH: <http://www.cdc.gov/niosh/elcosh/docs/d0500/d000502/d000502.pdf>;
  - Canadian Centre for Occupational Health & Safety: [http://www.ccohs.ca/oshanswers/safety\\_haz/welding/hotwork.html](http://www.ccohs.ca/oshanswers/safety_haz/welding/hotwork.html).
2. For more information about hot work see: National Fire Protection Association, "NFPA 51B — Standard for Fire Prevention During Welding, Cutting, and Other Hot Work."
3. For information about hot work in ship repair, visit OSHA's Web site at: [http://www.osha.gov/SLTC/etools/shipyard/shiprepair/hotwork/hotwork\\_operations.html](http://www.osha.gov/SLTC/etools/shipyard/shiprepair/hotwork/hotwork_operations.html).
4. BWC's Division of Safety & Hygiene video library has a number of videotapes on hot work, welding and cutting, and fire prevention. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our Web site, **ohiobwc.com**.

**Mark J. Mullins, CSP, CHMM**, is the health and safety supervisor for the Lubrizol Corporation, Painesville, Ohio. He has been with the corporation for 33 years, with 20 years of experience in occupational health and safety. Mullins is past president of the Society of Ohio Safety Engineers and is currently vice-president of the Northern Ohio chapter of the American Society of Safety Engineers. He is also on the board of the Greater Cleveland Safety Council.

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# September

## Office safety

By Andrew M. Pawuk

Distribute the office check list prior to the meeting, and allow the employees an opportunity to review their office areas. Utilize the check list to stimulate discussion by the employees.

Introduce the topic of office safety by telling the group when we think of workplace injuries, we often overlook the hazards to which the office worker is exposed. Just like any other employee, the office worker faces workplace hazards that can cause injury. It is necessary to prevent injuries from occurring and plan for emergencies.

Ask what types of injuries are common to office workers. Examples include:

- Falls;
- Strains and overexertion;
- Falling objects;
- Striking or being struck by objects;
- Being caught in, on or between objects.

Ask what you can do to prevent falls. Examples include:

- Maintain clear pathways when you walk;
  - Close drawers;
  - Clear and secure wires;
  - Clean spills promptly;
  - Ensure carpets seams are flat and in good condition;
  - Maintain walkways clear of obstructions;
- Utilize chairs and ladders properly;
  - Avoid leaning back;
  - Use for designed purpose only.

Share with the group how to prevent strains and overexertion injuries.

- If at all possible, use a mechanical device to lift and/or move large or cumbersome objects. Mechanical devices include carts and two-wheeled dollies. If a mechanical device is not available, seek assistance.
- Like any task that requires lifting, it is necessary to plan the lift in advance. Know how you will lift the object, where it will be placed and how you will get there. Confirm that there is a place for the object at your planned destination.
  - Use a good stance to perform the lift.
  - Keep your back straight.
  - Grasp the item with your entire hand.
  - Maintain the object as close to your body as possible.
  - Lift with your arms and legs, not your back.
  - Keep your body straight — no twisting.
  - Lower the object with your legs and arms.

Ask what you could accidentally strike against or be struck by in the office. Examples include:

- Office furniture, such as desks, file cabinets and open drawers;
- Other people;
- Open drawers while bending down or straightening up;
- Office machines.

Tell the group how they could be struck by objects.

- Items sliding from shelves;
- Doors opening suddenly;
- File cabinets tipping;
- Dropping items.

Provide the following examples of an employee being caught in or between objects.

- Fingers caught in drawer, window or door
- Fingers caught in office equipment
- Fingers caught in paper cutters

Ask how good housekeeping practices can prevent injuries.

- They will reduce or eliminate tripping hazards, fire hazards, blocked aisles and exits, and falling objects.
- Proper storage of materials includes:
  - Not storing large heavy items on top of cabinets;
  - Proper stacking of materials;
  - Maintaining clear access to electrical cabinets, fire extinguishers and exits.

- There should be no storage within 18-inch vertical clearance of sprinkler heads.

Explain how to avoid these hazards by using the following examples:

- Be aware of your surroundings;
- Secure/close drawers and equipment;
- Maintain a clear vision path while carrying items.

Ask what electrical hazards in the office could pose a risk to you. Examples include:

- Damaged plugs and outlets, cords with frayed or cracked insulation;
- Overloaded outlets or circuits;
- Cords placed across walkways or through doors, windows or walls;
- Using extension cords in place of fixed wiring to supply electrical power on a permanent basis.

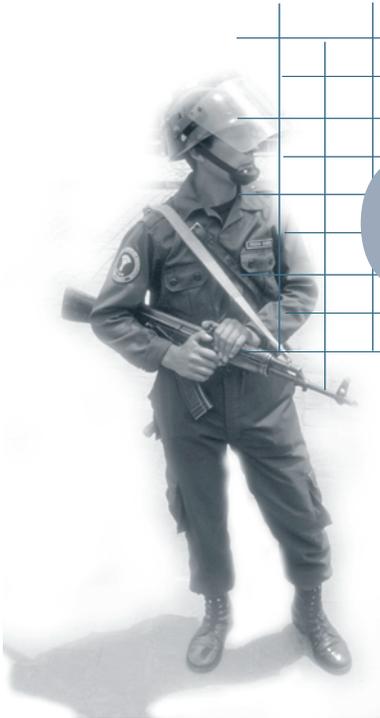
Conclude by pointing out that part of office safety is to know what to do during emergency situations. Each person should know the emergency procedures associated with the work environment, and those that pertain to medical, fire, tornado and other emergency events.

## Reference section

1. For more information on office safety, visit the following Web sites:
  - Oklahoma State University: <http://www.pp.okstate.edu/ehs/links/office.htm>;
  - Centers for Disease Control & Prevention: <http://www.cdc.gov/od/ohs/manual/ofcsfty.htm>.
2. For additional office safety check lists, access the following:
  - Canadian Centre for Occupational Health & Safety: [http://www.ccohs.ca/oshanswers/hsprograms/list\\_off.html](http://www.ccohs.ca/oshanswers/hsprograms/list_off.html);
  - U.S. Dept. of Commerce: <http://www.osec.doc.gov/forms/pdf/cd573final.pdf>.
3. If you are relocating an office, visit this Web site to obtain information on how to do it safely:
  - Canadian Centre for Occupational Health & Safety: [http://www.ccohs.ca/oshanswers/hsprograms/office\\_relocation.html](http://www.ccohs.ca/oshanswers/hsprograms/office_relocation.html).
4. BWC's Division of Safety & Hygiene video library has a number of videotapes on office safety. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our Web site, [ohiobwc.com](http://ohiobwc.com).

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# October

## Terrorism and security By Tim Govenor

Review and share the security measures in your work environment. Review any past thefts or security incidences in your workplace. Identify materials, equipment and vehicles that terrorists could use.

Share with the group that terrorism is the unlawful use of force or violence against persons or property. These actions intimidate or coerce a government or civilian population in the furtherance of political or social objectives. Terrorists will use radioactive, chemical, biological and explosive materials in the most effective way to induce fear and insecurity in civilian and military personnel. They use their own people as weapons. They are willing to die for their cause.

The Sept. 11, 2001, attack on the World Trade Center was the most significant act of terrorism in modern history. However, it is not an isolated event.

Ask what other terrorist acts they can recall in the past decade.

Examples include:

- World Trade Center parking garage bombing;
- Suicide bombers in the Middle East;
- Sarin attack in Japanese subway;
- Oklahoma City federal building bombing;
- U.S. embassies bombed in Africa;
- Military barracks bombed in Lebanon;
- Anthrax letters;
- Unabomber mail bombs;
- Irish Republican Army bombings.

These events should shake us out of our complacency, as attacks are taking place in our homeland, even as close as our mailbox. While some events are out of our control, each of us can contribute to security in small but sometimes significant ways.

Ask how we can increase our security. Let us begin with what comes to mind when you think of security. Examples include:

- Safety, protected, defended, guarded;
- Freedom from fear;
- Proactive;
- Physical barriers, locks;
- Surveillance, observation and cameras;
- Human oversight, guards;
- Metal detectors, radiation meters and explosives detectors;

Think about your workplace. Ask are there chemical, biological, radioactive or explosive materials in storage or in use that a terrorist could use as a weapon.

Example: Toxic gases in cylinders, vials of biological agents, explosives or materials such as fertilizer for use in explosives, could be stolen..

Ask what machinery or equipment could be used or sabotaged to produce a catastrophe.

Example: Large chemical or gas storage facilities may pose a significant risk to surrounding communities if bombed or mechanically breached.

Ask what vehicles could be used as weapons if hijacked or stolen.

Example: Terrorists have used rental trucks and airplanes. Bulldozers, tanker trucks and trains might also be used. You could be forced to use company or personal vehicles.

Looking at these possibilities, discuss how they can be made less accessible and/or more secure. Ask in our workplace, what would pose the greatest risk.

Examples: Security may be increased by physical barriers and surveillance. Fencing, locked access gates or doors, motion detectors and alarms, lighting, walls, smart keys on equipment are a few ideas. Security may also be increased through personnel processing. Background checks, photo identification cards, keypunch combination door locks.

Ask as an individual, what can you do to help increase security from terrorists. Open for discussion, summarize with the following.

Share the action items below.

- Be aware and observant of unusual activities or personnel.
- Maintain and use security systems in your workplace.
- If you recognize a weakness in security, pass it on to administrators or risk managers.
- Take responsibility to report unusual activities or personnel to managers or authorities.
- Be aware of activities in your neighborhoods.
- Report unusual activities to police.
- Have the courage to act.

As with the truck driver who alertly identified the vehicle used by the snipers in the Washington, D.C. area, your information may uncover terrorist activities or cells.

Conclude by saying keep these thoughts in mind:

“Honest, reliable, and conscientious workers represent the foundation of an effective security program”— Centers for Disease Control and Prevention, *Morbidity and Mortality Weekly Report*, Vol. 51, No. RR-19

“Eternal vigilance is the price of freedom!” — Thomas Jefferson

## Reference section

Business at Risk: How to Assess, Mitigate and Respond to Terrorist Threats, by Kevin Quinley and Donald Schmidt, National Underwriter Co., Cincinnati. (To purchase this book, call (800) 543-0874.)

Domestic Preparedness Helpline 1-(800)-368-6498 (for police and fire departments).

Highway Watch program through the Ohio State Highway Patrol (for truck drivers):

<http://www.state.oh.us/ohiostatepatrol/HighwayWatch.htm>

U.S. Transportation Security Administration: <http://www.tsa.gov/>.

1. Additional resources include the following Web sites:
  - U.S. Dept. of Homeland Security: <http://www.whitehouse.gov/homeland/index.html>;
  - Center for Terrorism Preparedness: <http://seem.findlay.edu/terrorism/>;
  - Contingency Planners of Ohio: <http://www.cpo.org/>.
2. For more on emergency preparedness, log on to the following:
  - OSHA: <http://www.osha-slc.gov/SLTC/emergencypreparedness/index.html>;
  - NIOSH, <http://www.cdc.gov/niosh/topics/prepared/>.
3. For more information about terrorism, visit the following:
  - Eduseek: <http://www.eduseek.com/navigate.php?ID=1556>.
4. BWC's Division of Safety & Hygiene video library has a number of videotapes on emergency preparedness. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our Web site, **ohiobwc.com**.

**Tim Governor** is a certified industrial hygienist and certified safety professional employed by The Ohio State University, where he is semi-retired and serves as the university's chemical hygiene officer. He has served as president of the local chapters of the American Society of Safety Engineers, American Industrial Hygiene Association and Society of Ohio Safety Engineers.

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## Hand safety By Warren Brown

Be sure to review your company's injury logs and past injury reports for incidents involving the hands.

Introduce the topic of hand safety by pointing out that the hands are the most frequently injured part of the body. Nearly 500,000 hand injuries happen each year, and almost one in four on-the-job incidents involve the hands. Skilled tradesmen account for about a third of those injuries. Malfunctioning machinery, uncommon work tasks, increased work pace and distractions are commonly listed as factors in hand injuries. Planning ahead, paying more attention to your hands and keeping them out of harm's way, and using appropriate personal protective equipment can help prevent most injuries.

Ask has anyone in the group ever had an actual injury or close-call incident with their hands, and what was the cause.

Major sources of hand injuries include:

- A. Mechanical hazards, such as getting caught in pinch points or being struck by an object;
- B. Electricity and heat sources resulting in thermal burns and possible nerve damage;
- C. Chemicals or other irritants leading to burns, abrasions, skin irritation and dermatitis.

Ask what activities or conditions can result in hand injuries.

Examples include:

- A. Inadequate or missing machine guarding;
- B. Using the incorrect tool or using tools incorrectly;
- C. Inadequate training for the task being performed;
- D. Failure to wear appropriate protection;
- E. Exposure to solvents and cleaning agents;
- F. Improper ergonomic practices.

Share with the group actions that can prevent hand injuries.

Examples include:

- A. Be aware of hand placement;
- B. Maintain machine guarding;
- C. Use the correct tool properly;
- D. Remove hand jewelry;
- E. Implement your facility's lockout/tagout procedure;
- F. Keep your work area clean and free from debris;
- G. Use protective equipment designated by your organization, such as gloves and barrier creams;
- H. Report any signs or symptoms, or repetitive hand and arm discomfort.

Discuss the types of gloves that may be used as hand protection.

- A. Cotton gloves
- B. Leather gloves
- C. Cut-resistant gloves
- D. Chemical-resistant gloves

Tell the group that gloves can provide protection from a variety of hazards when properly selected and used. If gloves are not properly matched to the potential hazards of a task, they can increase the risk of injury. Ergonomically, gloves require more gripping effort and can lead to repetitive trauma injuries. Understanding the types of gloves, and their appropriate uses, is important to a good hand-protection program.

Conclude by saying protecting your hands is a continuous job. To guard against hand injuries, become aware of the potential dangers, know and follow the safe work habits appropriate for the task at hand, and utilize the proper personal protective equipment. Assume it could happen and take appropriate action to prevent an injury. Use your head to protect your hands.

## Reference section

1. For more information about personal protective equipment and hand safety, visit the following Web site:
  - Free-Training.com: <http://www.free-training.com/osha/Soshamenu.htm>.
2. For more information about selecting gloves for use with chemicals, access the Canadian Centre for Occupational Health & Safety's Web site at: <http://www.ccohs.ca/oshanswers/prevention/ppe/gloves.html>.
3. BWC's Division of Safety & Hygiene libraries have more information about hand safety and gloves. Contact them by calling **1-800-OHIOBWC**, or **ohiobwc.com**.
4. BWC's Division of Safety & Hygiene video library has a number of videotapes on the prevention of hand injuries and the use of personal protective equipment. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit **ohiobwc.com**.

**Warren Brown**, a certified safety professional, is supervisor of safety and security for DMAX Ltd., Fairborn, Ohio. In 1988, he was named a General Motors Corp. Safety Fellow, the company's highest safety honor. Brown also received Safety Professional of the Year recognition for 1987 from the American Society of Safety Engineers' All-Ohio Chapter, and for ASSE Region VII for 1988-89. He is president of the Ohio chapter of the System Safety Society and serves on the board of directors for the Dayton-Miami Valley Safety Council.

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# December

## The value of near-miss reporting

By Joe Thatcher

The intent of this discussion is to draw awareness to an important method of incident prevention. Have a copy of your company's incident-reporting procedure and an incident-investigation report for this discussion. Encourage employees to participate in the discussion. Avoid assigning blame; this will only discourage near-miss reporting.

Introduce the topic of near-miss reporting to the group. Ask have you ever said that was close!, or I could have been hurt. If the answer is yes, you probably were involved in a near-miss incident. Sometimes these incidents also are called near-hits or close calls, but these seemingly lucky breaks, with no injuries or property damage, often go unreported and soon are forgotten.

What is lost is a free lesson in injury prevention. The few minutes spent reporting and investigating near-miss incidents can help prevent similar incidents, and even severe injuries. That is why many companies require reporting and tracking of near-miss incidents with the same scrutiny as incidents involving an injury. The difference between a near miss and an injury is typically a fraction of an inch or a split second.

Ask why many near-miss incidents go unreported. Many employers and employees may not identify them as a reportable occurrence, but it is more often human nature that keeps these lessons from improving the safety system. People may resist reporting for a number of reasons, including:

- They do not want to be blamed for problems or mistakes;
- They do not want to create more work;
- They do not want to be perceived as a troublemaker or careless.

Supervisors should encourage feedback on near misses by maintaining a positive approach to gathering information and, avoid placing blame on an individual or group.

Ask has anyone witnessed an incident that had the potential to cause injury or property damage, and why did the event not result in an injury.

Whether there is no injury, a small bruise or scratch, or an amputation, the consequences of unsafe acts and conditions are left to chance. A ratio showing a relationship between the number of near-miss incidents and injury incidents reported by researchers shows that for every 15 near-miss incidents, there will be one injury. In other words, there are 15 missed opportunities to prevent an injury.

Ask what corrective actions have been implemented as a result of a near-miss investigation. Cite examples of corrective actions taken as a result of near-miss investigations.

Share with the group that statistics show that an injury will eventually result if near-miss incidents continue to occur. It is only a matter of time before unsafe acts and conditions meet with the right timing and circumstance to become an injury. However, by focusing on identification and analysis of near-miss incidents, injuries become much less likely to occur. The goal is to institute changes to prevent future occurrences.

Ask what behaviors or conditions can cause a near-miss incident. Examples include:

- Failure to maintain or repair equipment;
- Removal of machine guards;
- Failure to keep walkways free of slip, trip or fall hazards;
- Inadequate training or personal protective equipment;
- Not following procedures or poor procedure enforcement.

No matter what the reason, if unsafe acts or conditions are identified and corrected, injuries most likely can be prevented.

Ask what other information would be important to preventing future incidents. Examples include:

- Factors contributing to the incident (include unsafe acts and/or unsafe conditions);
- Corrective actions necessary;
- Responsibility for corrective action and date to be completed.

In general, collect as much information as possible but remember the key point: The information must be effectively communicated throughout the organization to increase its value.

Ask what tools, actions, attitudes or other things would make it easier to report and track your near-miss incidents. Examples include:

- The process assesses no blame;
- Individuals and groups are not used as examples;
- Forms are simple, reporting is easy;
- Forms are readily available;
- Positive recognition for those who report close calls;
- Accountability for corrective actions.

Tell the group they cannot afford to ignore a near miss. The concept is simple: if near-miss incidents are ignored, valuable safety lessons are lost. If the causes of these incidents are not corrected, chances are good that an injury will result. If corrective action is taken on all close calls, injuries may be prevented. Report all near-miss incidents. It is a proposition you cannot afford to ignore.

Conclude by stressing to document all near misses. Incident prevention begins with identification. All near-miss incidents should be immediately documented using your company's incident report form and incident reporting procedures.

## Reference section

1. For more information about accident investigation, visit the following Web sites:
  - OSHA: [http://www.osha.gov/SLTC/etools/safetyhealth/mod4\\_factsheets\\_accinvest.html](http://www.osha.gov/SLTC/etools/safetyhealth/mod4_factsheets_accinvest.html);
  - OSHA: <http://www.osha.gov/SLTC/accidentinvestigation/index.html>;
  - NIOSH: <http://www.cdc.gov/niosh/elcosh/docs/d0200/d000290/d000290.htm>;
  - Canadian Centre for Occupational Health & Safety: <http://www.ccohs.ca/oshanswers/hsprograms/investig.html>.
2. BWC's Division of Safety & Hygiene video library has a number of videotapes on accident investigation and incident reporting. These are available for loan to Ohio employers. Order a catalog by calling **1-800-OHIOBWC** (ask for the video library), or visit our Web site, **ohiobwc.com**.
3. BWC's Division of Safety & Hygiene training center offers training materials on accident analysis at: <http://www.ohiobwc.com/employer/programs/safety/SandHTrain.asp>.

**Joe Thatcher** is a professional engineer and certified safety professional, and a member of the Society of Ohio Safety Engineers.

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