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Office-Related Illness and Injury

Changes have occurred in the American workplace as a result of the new office technology and automation of office equipment. As with all new technology, these changes bring with it a set of health and safety concerns. In addition to obvious hazards such as slippery floors or an open file drawer, a modern office may also contain hazards that can include: poor lighting, noise, poorly designed furniture, and equipment or machines that emit gases and vapors when not properly maintained. Even the nature of office work itself has produced numerous stress-related symptoms and musculoskeletal strains. For example, long hours at a poorly designed computer workstation can cause pains in the neck and back, shoulders, lower extremities, arms, wrists, hands, eyestrain, and a general feeling of tension and irritability. The leading types of disabling accidents that occur within the office are falls, strains and over exertions, falling objects, striking against objects, and being caught in or between objects.

Falls

Falls are the most common office accident, accounting for the greatest number of disabling injuries. The disabling injury rate of falls among office workers is 2 to 2.5 times higher than the rate for non-office employees. A fall occurs when you lose your balance and footing. One of the most common causes of office falls is tripping over an open desk or file drawer. Bending while seated in an unstable chair and tripping over electrical cords or wires are other common hazards. Office falls are frequently caused by using a chair or stack of boxes in place of a ladder and by slipping on wet floors. Loose carpeting, objects stored in halls or walkways, and inadequate lighting are other hazards that invite accidental falls. Fortunately, all of these fall hazards are preventable. The following items can help stop a fall before it happens.

- Be sure the pathway is clear.
- Close drawers completely after every use.
- Avoid excessive bending, twisting, and leaning backward while seated.
- Secure electrical cords and wires away from walkways.
- Always use a stepladder for overhead reaching. Chairs or boxes should never be used as ladders.
- Clean up spills immediately.
- Pick up objects left on the floor.

- Report loose carpeting or damaged flooring.
- Never carry anything that obscures your vision.
- Wear stable shoes with non-slip soles.

If you find yourself heading for a fall, remember - roll, don't reach. By letting your body crumple and roll, you are more likely to absorb the impact and momentum of a fall without injury. Reaching an arm or leg out to break your fall may result in a broken limb instead.

Strains and Overexertion

Although a typical office job may not involve lifting large or especially heavy objects, it's important to follow the principles of safe lifting. Even small, light loads (i.e., stacks of files, boxes of computer paper, books) can cause injury to your back, neck, or shoulders if you use your body incorrectly when you lift them. Backs are especially vulnerable; most back injuries result from improper lifting. Before you pick up a carton or load, ask yourself these questions:

- Is this too heavy for me to lift and carry alone?
- How high do I have to lift it?
- How far do I have to carry it?
- Am I trying to impress anyone by lifting this?

If you feel that the lift is beyond your ability, contact your supervisor or ask another employee to assist you.

Safe Lifting Steps

- Take a balanced stance, feet placed shoulder-width apart. When lifting something from the floor, squat close to the load.
- Keep your back in its neutral position. Tuck in your chin so your head and neck continue the neutral back line.
- Grip the object with your whole hand, rather than only with your fingers. Draw the object close to you, holding your elbows close to your body to keep the load and your body weight centered.
- Lift by straightening your legs. Let your leg muscles, not your back muscles, do the work. Tighten your stomach muscles to help support your back. Maintain your neutral back position as you lift.
- Never twist when lifting. When you must turn with a load, turn your whole body, feet first.
- Never carry a load that blocks your vision.
- To set something down, use the same body mechanics designed for lifting.

Lifting from A Seated Position
Bending from a seated position and coming back up places tremendous strain on your back. Also, your chair could be unstable and slip out from under you. Instead,

stand and move your chair out of the way. Squat and stand whenever you have to retrieve something from the floor.

Ergonomic Solutions to Backbreaking Tasks

If you are doing a lot of twisting while lifting, try to rearrange the space to avoid this. People who have to twist under a load are more likely to suffer back injury. The following are some solutions to avoid possible back injuries:

- Rotate through tasks so that periods of standing alternate with moving or sitting.
- Ask for stools or footrests for stationary jobs.
- Store materials at waist level whenever possible instead of on the floor.
- Make shelves shallower (12-18") so one does not have to reach forward to lift the object. Break up the loads so the weight is less and is balanced.
- If you must carry a heavy object some distance, consider storing it closer, request a table to rest it on, or try to use a hand truck or cart to transport it.

Struck By or Striking Objects

Striking against objects is another cause of office injuries. Incidents of this type include:

- Bumping into doors, desks, file cabinets, and open drawers.
- Bumping into other people while walking.
- Striking open file drawers while bending down or straightening up.
- Striking against sharp objects such as office machines, spindle files, staples, and pins.

Pay attention to where you are walking at all times, properly store materials in your work area and never carry objects that prevent you from seeing ahead of you.

Objects striking employees occur as a result of:

- Office supplies sliding from shelves or cabinet tops.
- Overbalanced file cabinets in which two or more drawers were opened at the same time or in which the file drawer was pulled out too far.
- Machines, such as keyboards or phones that fall on feet.
- Doors that were opened suddenly from the other side.

Proper material storage and use of storage devices can avoid these accidents.

Caught In or Between Objects

The last category of leading disabling incidents occurs as a result of office workers who get their fingers or articles of clothing caught in or between objects. Office workers

may be injured as a result of:

- Fingers caught in a drawer, door, or window.
- Fingers, hair, nametags or articles of clothing or jewelry caught in office machines.
- Fingers caught under the knife-edge of a paper cutter.

While working on office equipment, concentrate on what you are doing.

Material Storage

Office materials that are improperly stored can lead to objects falling on workers, poor visibility, and can create a fire hazard. A good housekeeping program will reduce or eliminate hazards associated with improper storage of materials. Examples of improper storage include - disorganized piling, piling materials too high, and obstructing doors, aisles, fire exits and fire-fighting equipment. The following are good storage practices:

- Boxes, papers, and other materials should not be stored on top of lockers or file cabinets because they can cause sliding problems.
- Boxes and cartons should all be of uniform size in any pile or stack.
- Always stack material in such a way that it will not fall over.
- Store heavy objects on lower shelves and in a way that you don't have to reach across something else to retrieve them..
- Try to store materials inside cabinets, files, and lockers.
- Office equipment such as typewriters, index files, lights or calculators should not be placed on the edges of a desk, filing cabinet, or table.
- Aisles, corners, and passageways must remain unobstructed. There should be no stacking of materials in these areas.
- Storage areas should be designated and used only for that purpose.
- Store heavy materials so you do not have to reach across something to retrieve them.

Fire equipment, extinguishers, fire door exits, and sprinkler heads should remain unobstructed. Materials should be at least 18 inches away from sprinkler heads.

Workstation Ergonomics

Ergonomics means fitting the workplace to the workers by modifying or redesigning the job, workstation, tool or environment. Workstation design can have a big impact on office workers' health and well-being. There are a multitude of discomforts that can result from ergonomi-

cally incorrect computer workstation setups. The most common complaints relate to the neck, shoulders, and back. Others concern the arms and hands and occasionally the eyes. For example, poor chairs and/or bad postures can cause lower back strain; or a chair that is too high can cause circulation loss in legs and feet.

Certain common characteristics of video display terminal (VDT) jobs have been identified and associated with increased risk of musculoskeletal problems. These include:

- design of the workstation;
- nature of the task;
- repetitiveness of the job;
- degree of postural constraint;
- work pace;
- work/rest schedules; and
- personal attributes of individual workers

The key to comfort is in maintaining the body in a relaxed, neutral position. The ideal work position is to have the arms hanging relaxed from the shoulders. If a keyboard is used, arms should be bent at right angles at the elbow, with the hands held in a straight line with forearms and elbows close to the body. The head should be in line with the body and slightly forward.

Arranging Your Workstation to Fit You

- Adjust the height of the chair's seat so that the thighs are horizontal while the feet are flat on the floor.
- Adjust the seat pan depth so that your back is supported by the chair backrest while the back of the knee is comfortable relative to the front of the seat.
- Adjust the backrest vertically so that it supports/fits the curvature of your lower back.
- With the arms at your sides and the elbow joints at approximately 90 degrees, adjust the height/position of the chair armrests to support the forearms.
- Adjust the height of the keyboard such that the fingers rest on the keyboard home row when the arms are to the side, elbows at 90 degrees, and the wrists straight.
- Place the mouse, trackball, or special keypads, next to the keyboard tray. Keep the wrists in a neutral position with the arms close to the body.
- Adjust the height of the monitor so that the top of the screen is at eye level. If bifocals/trifocals are used, place the monitor at a height that allows easy viewing without tipping the head back.
- Place reference documents on a document holder close to the screen and at the same distance from the eye.

- A footrest may be necessary if the operator cannot rest his/her feet comfortably on the floor.

Applying Good Work Practices

The way a task is performed and the workstation environment in which it is performed can influence the risk of injury and general productivity. Good techniques can make a job easy and safe. The following are examples of good work practices:

- adjust the drapes or blinds to avoid eye strain;
- move the monitor away from sources of glare or direct light;
- tip the monitor slightly downward;
- use diffusers on overhead lighting;
- place an anti-glare filter on the screen;
- clean the monitor screen on a regular basis;
- avoid cradling the telephone between the head and shoulder;
- hold the phone with your hand, use the speaker phone, or a headset;
- keep frequently used items like the telephone, reference materials, and pens/pencils within easy reach;
- position the monitor directly in front of the user;
- move between different postures regularly;
- apply task lighting to meet your needs;
- use the minimum force necessary to strike the keyboard/ten-key keys;
- use the minimum force necessary to activate the hole punch and stapler;
- vary your tasks to avoid a long period of one activity;
- take mini-breaks to rest the eyes and muscles. A break does not have to be a stop of work duties. However, it should be a different style of physical activity such as changing from keyboarding to using the telephone or filing.
- neutralize distracting noise by using ear plugs, playing soft music, or turning on a fan; and
- maintain a comfortable workplace temperature by using layers of clothing or a fan.

Indoor Air Quality and Ventilation

Indoor air quality (IAQ) is an increasingly important issue in the work environment. The study of indoor air quality and pollutant levels within office environments is a complex problem. The complexity of studying and measuring the quality of office environments arises from various factors including:

- Office building floor plans are frequently changing to accommodate more employees and reorganization.

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- Office buildings frequently undergo renovations such as installation of new carpet, modular office partitions and free-standing offices, and painting.
 - Many of the health symptoms appearing are vague and common both to the office and home environment.
 - Guidelines or standards for permissible personal exposure limits to pollutants within office buildings are very limited.

Many times odors are associated with chemical contaminants from inside or outside the office space, or from the building fabric. This is particularly noticeable following building renovation or installation of new carpeting. Paint, adhesives, sealants, office furniture, carpeting, and vinyl wall coverings are sources of a variety of irritant compounds. In most cases, these chemical contaminants can be measured at levels above ambient (normal background) but far below any existing occupational evaluation criteria.

The National Institute for Occupational Safety and Health (NIOSH) has conducted hundreds of building studies which indicate that the most likely sources of this problem are: poor ventilation, poor thermal conditions, too high or low humidity, emissions from office machines and other building contaminants.

Overview of Ventilation Design

Air enters office buildings or spaces through both mechanical ventilation systems as well as naturally through leaks around windows, doors, etc. Newer, larger buildings, which are highly energy efficient due to sealed windows and heavy insulation primarily, depend on mechanical ventilation. Older, small, and low occupancy office buildings can be adequately ventilated through natural sources which include air leakage through opened windows and doors, as well as through cracks in the windows and walls, and other openings.

In a modern office building, the heating ventilation and air conditioning system (HVAC) is designed to keep occupants comfortable and healthy by controlling the amount of outside air that is added to the building atmosphere, filtering both incoming and recirculated air to remove particulates and controlling the temperature. The HVAC system includes all heating, cooling, and ventilation equipment serving a building: furnaces or boilers, chillers, cooling towers, air handling units, exhaust fans, ductwork, filters, steam (or heating wa-

ter) piping. A ventilation system consists of a blower to move the air, ductwork to deliver air to the room, and vents to distribute the air. A good ventilation design will distribute air uniformly to each area and especially areas with office machines. An effectively designed area will not have the supply and exhaust vent too close together because fresh air may be removed before it is adequately distributed throughout the area. Exhaust fans are often located a significant distance away from supply vents. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) has established a general guideline of 20 cubic feet of outside air per minute/per person for an office environment. This is a sufficient amount of air to dilute building contaminants and maintain a healthy environment. Indoor air quality complaints increase significantly in offices that are not supplied sufficient outside air.

Environmental Parameters

A ventilation system should provide for a comfortable environment with respect to humidity and temperature. The overall goal of climate control is to provide an environment that is not too cold, hot, dry or humid, and that is free from drafts and odors. Humidity refers to the amount of moisture in the air. Extremes in humidification levels can influence how comfortable you may be. When the air is too humid, it makes people feel uncomfortable (wet, clammy) and can promote mold growth. On the other hand, low humidity conditions (which typically occur in the winter months) dry out the nasal and respiratory passages. Low humidity may be associated with an increased susceptibility to upper respiratory infections. Static electricity problems (affecting hair and clothes, particularly synthetic fibers) are good indicators of an office with low relative humidity. Excessively high or low temperatures in an office area can also lead to symptoms in building occupants and can reduce productivity. High temperatures have been associated with fatigue, irritability, headache and a decrease in performance, coordination and alertness. A number of factors interact to determine whether people are comfortable with the temperature of the indoor air. The activity level, age, and physiology of each person affect the thermal comfort requirements of that individual. Extreme heat, which is unlikely to be found in an office environment, can result in heat rash, exhaustion, and fainting. Workers who may be less alert or fatigued from a high temperature environment may be more prone to accidents. Likewise, if the environment

The ASHRAE has published guidelines for maintaining comfortable and productive work environments. According to ASHRAE, these temperature ranges represent the environmental conditions which 80% of the building occupants consider comfortable. ASHRAE recommends the following temperature and humidity ranges for office work:

Relative Humidity	Winter Temperature Range	Summer Temperature Range
30%	68.5 - 76.0 F	74.0 - 80.0 F
40%	68.5 - 75.5 F	73.5 - 79.5 F
50%	68.5 - 74.5 F	73.0 - 79.0 F
60%	68.0 - 74.0 F	72.5 - 78.0 F

Note: Relative humidity above 50% is not recommended because it can promote mold growth.

is too cold, flexibility, dexterity, and judgment may be impaired and therefore accidents may increase.

Indoor Air Pollution

An inadequately ventilated office environment or a poorly designed ventilation system can lead to the build up of a variety of indoor air pollutants. Air pollutants can originate within the building or be drawn in from outdoors. Examples of sources that originate outside a building include: (1) pollen, dust and fungal spores; (2) general vehicle exhaust; (3) odors from dumpsters; and (4) reentered exhaust from the building itself or from neighboring buildings. Examples of sources that originate from within the building include: (1) building components and furnishings; (2) smoking; (3) maintenance or remodeling activities (painting, etc.); (4) housekeeping activities; (5) unsanitary conditions (standing water from clogged drains or dry traps) and water damage; and (6) emissions from office equipment or special use areas (print shops, laboratories, or food preparation areas).

Controls to Prevent Indoor Air Pollution

The following recommendations and guidelines are use-

ful in preventing indoor air quality problems:

- HVAC systems should receive periodic cleaning and filters should be changed on a regular basis on all ventilation systems.
- The ventilation system should introduce an adequate supply of fresh outside air into the office and capture and vent air pollutant sources to the outside.
- Office machinery should be operated in well-ventilated areas. Photocopiers should be placed away from workers' desks. Workers should vary work tasks to avoid using machines excessively.
- Office equipment should be cleaned/maintained according to the manufacturer's recommendations. Properly maintained equipment will not generate unhealthy levels of pollutants.
- Special attention should be given to operations that may generate air contaminants (such as painting, pesticide spraying, and heavy cleaning). Provisions for adequate ventilation must be made during these operations or other procedures, such as performing

work off-hours or removing employees from the immediate area.

Evaluation

An Industrial Hygienist can conduct an indoor air quality survey to determine if a possible relationship between any adverse health symptoms and indoor air quality exist. This survey will consist of an evaluation of potential sources of pollutants, a measurement program that involves selecting appropriate instrumentation and designing the monitoring effort and interpreting the data gathered. In many situations, the cause of the inadequate indoor air quality can be recognized and certain mitigation measures suggested and/or implemented.

Lighting

Lighting is one of the most important factors affecting personal comfort on the job. The best lighting system is one in which the light level is geared to the task, where brightness ratios are controlled (no intensely bright or dark areas in the field of vision) and where ceilings, walls, and floors are carefully chosen to minimize glare. Glare is defined as a harsh, uncomfortable bright light that shines directly in the eyes. Glare may be either direct, coming from lights or sunshine, or indirect, coming from a reflected surface.

Different tasks require different levels of lighting. Areas in which intricate work is performed, for example, require greater illumination than warehouses. Lighting needs vary from time to time and person to person as well. One approach is to use adjustable task lighting that can provide needed illumination without increasing general lighting.

Vision problems are one of the leading sources of complaints among office workers. Poor office lighting can cause eye strain and irritation, fatigue, double vision, watering, reddening of the eyelids, and a decrease in the power of focus and visual acuity. Headaches as well as neck and back pains may occur as a result of workers straining to see small or detailed items. Poor lighting in the workplace is also associated with an increase in accidents. Direct and reflected glare and shadows as well as delayed eye adaptation when moving from bright surroundings into dark ones (or vice versa) may prevent an employee from seeing tripping and other similar hazards. There are a number of measures that can be used to prevent and control poor lighting conditions in the work environment:

- Regular maintenance of the lighting system should be carried out to clean or replace old bulbs and faulty lamp circuits.

- The Illuminating Engineering Society recommends a light-colored matte finish on walls, ceilings, and floors to reduce glare.
- Whenever possible, office workers should not face windows, unshielded lamps, or other sources of glare.
- Adjustable shades should be used if workers face a window.
- Diffused light will help reduce shadows. Indirect lighting and task lighting are recommended, especially when work spaces are separated by dividers.
- Task lamps are very effective in supplementing general office lighting for those who require or prefer additional lighting. Some task lamps permit several light levels.

Noise

Noise can be defined very simply as unwanted sound. Office workers are subjected to many noise sources including video display terminals, high-speed printers, telephones, fax machines, and human voices. Noise at high levels can produce tension and stress as well as damage to hearing. For noise levels in offices, the most common effects are interference with speech communication, annoyance, and distraction from mental activities. The annoying effect of noise can decrease performance or increase errors in some task situations. If the tasks require a great deal of mental concentration, noise can be detrimental to performance.

Government standards have set limits for exposure to noise to prevent hearing loss in employees. The level of noise one can safely be exposed to is dependent on the intensity of the noise as well as the duration of exposure. In an office setting the Occupational Safety and Health Administration (OSHA) noise standards are rarely approached or exceeded. However, problems could arise in areas with a high concentration of noisy machines, such as high-speed printers or copy machines.

When employees are subjected to sound levels exceeding OSHA standards, feasible administrative or engineering controls must be utilized. If such controls fail to reduce sound levels, personal protective equipment must be provided and used to reduce sound levels.

For many of the annoying sounds in the office environment, the following measures are useful for reducing the level of noise or its effects:

- Select the quietest equipment if possible. When there is a choice between two or more products, sound levels should be included as a consideration for purchase and use.
- Provide for proper maintenance of equipment, such

as lubrication and tightening of loose parts that can cause noise.

- Locate loud equipment in areas where its effects are less detrimental. For example, place impact printers away from areas where people must use the phone.
- Use barrier walls or dividers to isolate noise sources. Buffers or acoustically-treated materials can absorb noise that might otherwise travel further. Rubber pads to insulate vibrating equipment can also help to reduce noise.
- Enclose equipment, such as printers, with acoustical covers or housings.
- Schedule noisy tasks at times when it will have less of an effect on the other tasks in the office.

Office Electrical Safety

Electricity is essential to the operations of a modern automated office as a source of power. Electrical equipment used in an office is potentially hazardous and can cause serious shock and burn injuries if improperly used or maintained. Electrical accidents usually occur as a result of faulty or defective equipment, unsafe installation, or misuse of equipment on the part of office workers.

Types of electrical hazards found in an office environment include the following:

Ungrounded Equipment

Grounding is a method of protecting employees from electric shock. By grounding an electrical system, a low-resistance path to earth through a ground connection is intentionally created. When properly done, this path offers sufficiently low resistance and has sufficient current-carrying capacity to prevent the build-up of hazardous voltages. Most large, stationary machines must be grounded. Cord and plug connected equipment must be grounded if it is located in hazardous or wet locations, if operated at more than 150 volts to ground, or if it is of a certain type of equipment (such as refrigerators and air conditioners). Smaller office equipment, such as typewriters and coffee pots, would generally not fall into these categories and therefore would not have to be grounded. However much of the newer office equipment is manufactured with grounded plugs (three prong plugs) as a precaution. In such cases, the equipment should be used in accordance with the manufacturer's instructions. In any case, never remove the third (grounding) prong from any three-prong piece of equipment.

Overloaded Outlets

Insufficient or overloading of electrical outlets must be avoided. A sufficient number of outlets will eliminate the

need for extension cords. Overloading electrical circuits and extension cords can result in a fire. Floor mounted outlets should be carefully placed to prevent tripping hazards.

Unsafe/Non-Approved Equipment

Poorly maintained or unsafe, poor quality, non-approved (by national testing laboratory) coffee makers, radios, lamps, etc. (often provided by or used by employees) should not be used. Such appliances can develop electrical shorts creating fire and/or shock hazards. Equipment and cords should be inspected regularly, and a qualified individual should make repairs.

Defective, Frayed or Improperly Installed Cords for Electrically-Operated Office Equipment

When the outer jacket of a cord is damaged, the cord may no longer be water-resistant. The insulation can absorb moisture, which may then result in a short circuit or excessive current leakage to ground. If wires are exposed, they may cause a shock to a worker who contacts them. These cords should be replaced. Electric cords should be examined on a routine basis for fraying and exposed wiring.

Improper Placement of Cords

A cord should not be pulled or dragged over nails, hooks, or other sharp objects that may cause cuts in the insulation. In addition, cords should never be placed on radiators, steam pipes, or through holes in walls or windows. Particular attention should be placed on connections behind furniture, since files and bookcases may be pushed tightly against electric outlets, severely bending the cord at the plug.

Electrical Cords Across Walkways and Work Areas

An adequate number of outlet sockets should be provided. Extension cords should only be used in situations where fixed wiring is not feasible. However, if it is necessary to use an extension cord, never run it across walkways or aisles due to the potential tripping hazard. If you must run a cord across a walkway, either tape it down or purchase a cord runner.

Live Parts Unguarded

Wall receptacles should be designed and installed so that no current-carrying parts will be exposed, and outlet plates should be kept tight to eliminate the possibility of shock.

Pulling of Plugs to Shut Off Power

Switches to turn on and off equipment should be provided, either in the equipment or in the cords, so that it

is not necessary to pull the plugs to shut off the power. To remove a plug from an outlet, take a firm grip on the plug and pull it out. Never pull a plug out by the cord.

Working on “Live Equipment”

Disconnect electrical machines before cleaning, adjusting, or applying flammable solutions. If a guard is removed to clean or repair parts, replace it before testing the equipment and returning the machine to service.

Electrical Panel Doors

If an electrical malfunction should occur, the panel door, and anything else in front of the door will become very hot. Electrical panel doors should always be kept closed, to prevent “electrical flashover” in the event of an electrical malfunction.

Office Fire Prevention Strategies

The best time to think about fire safety is before a fire starts. Learn the location of fire escape routes and how to activate the fire alarm. Participate in practice fire drills on a regular basis. Become familiar with stairway exits—elevators will not function during a fire, or may expose passengers to heat, gas and smoke.

- Heat-producing equipment - copiers, coffee makers and hot plates - are often overlooked as a potential fire hazard. Keep them away from anything that might burn.
- Electrical appliances can be fire hazards. Be sure to turn off all appliances at the end of the day. Use only grounded appliances plugged into grounded (three prong plug) outlets.
- If electrical equipment malfunctions or gives off a strange odor, disconnect it and call the appropriate maintenance personnel. Promptly disconnect and replace cracked, frayed, or broken electrical cords.
- Keep extension cords clear of doorways and other areas where they can be stepped on or chafed and never plug one extension cord into another.
- Do not allow combustible material (boxes, paper, etc.) to build up in inappropriate storage locations (near sources of ignition).

Through a program of scheduled inspections, unsafe conditions can be recognized and corrected before they lead to serious injuries. Take a few moments each day to walk through the work area. Look for items previously pointed out, such as objects protruding into walkways, file cabinets that are weighted toward the top or frayed electrical cords. Advise personnel in the area of the hazards and set about correcting them.

Emergency Preparedness

One result of the recent trend toward open office envi-

ronments is that smoke from office fires is not contained or isolated as effectively as in less open designs. Open office designs allow smoke to spread quickly and the incorporation of many synthetic and other combustible material in office fixtures (such as furniture, rugs, drapes, plastic wastebaskets, and vinyl covered walls) often makes “smoky” fires. In addition to being smoky, many synthetic materials can emit toxic materials during a fire. For example, cyanide can be emitted from urethane, which is commonly used in upholstery stuffing. Most burning materials can emit carbon monoxide. Inhalation of these toxic materials can severely hamper an office worker’s chances of getting out of a fire in time. This makes it imperative for office workers to recognize the signal to evacuate their work area and know how to exit in an expedient manner.

The local emergency action plan will address potential emergencies that can be expected in the work area. For emergency evacuation, use floor plans or workplace maps that clearly show the emergency escape routes. Safe refuge areas should be included in the plan. All employees must understand what actions they are to take in the work area and where to assemble in a safe zone. All new employees should discuss how they should respond to emergencies with their supervisors shortly after starting work and whenever their responsibilities under the plan change. This orientation should include:

- Identifying the individuals responsible for various aspects of the plan (chain of command) so that in an emergency confusion will be minimized and employees will have no doubt about who has authority for making decisions.
- Identifying the method of communication that will be used to alert employees that an evacuation or some other action is required as well as how employees can report emergencies (such as manual pull stations, public address systems, or telephones).
- Identifying the evacuation routes from the building and locations where employees will gather.

General guidance for fires and related emergencies includes:

If you discover a fire or see/smell smoke, immediately follow these procedures:

- Notify the local Fire Department
- Activate the building alarm (fire pull station). If not available or operational, verbally notify people in the building.
- Isolate the area by closing windows and doors and evacuate the building, if you can do so safely.

- Shut down equipment in the immediate area, if possible.
- If possible and if you have received appropriate training, use a portable fire extinguisher to:
 - assist oneself to evacuate;
 - assist another to evacuate; and
 - control a small fire.
- Do not collect personal or official items; leave the area of the fire immediately and walk, do not run to the exit and designated gathering area.
- Provide the fire/police teams with the details of the problem upon their arrival. Special hazard information is essential for the safety of the emergency responders. Do not allow workers' to re-enter the building until directed to do so. Follow any special procedures established for the specific area/company.
- If the fire alarms are ringing, evacuate the building and stay out until notified to return.
- Move to the designated meeting location or upwind from the building staying clear of streets, driveways,

sidewalks, and other access ways to the building.

- If you are a supervisor, try to account for your employees, keep them together and report any missing persons to the emergency personnel at the scene.

If an individual is overexposed to smoke or chemical vapors, remove the person to an uncontaminated area and treat for shock. Do not enter the area if you suspect that a life threatening condition still exists (such as heavy smoke or toxic gases). If CPR certified, follow standard CPR protocols. Get medical attention promptly.

If your or another person's clothing catches fire, extinguish the burning clothing by using the drop-and-roll technique, wrap victim in a fire blanket or douse victim with cold water (use an emergency shower if it is immediately available). Carefully remove contaminated clothing; however, avoid further damage to the burned area. Cover injured person to prevent shock. Get medical attention promptly.

Remember to practice safety. Don't learn it by accident.

Information provided by the Centers for Disease Control and the Texas Department of Insurance (TDI), Division of Workers' Compensation (DWC) and is considered factual at the time of publication.