RISK MANAGEMENT
SAFETY AND
LOSS CONTROL

Risky Business

SAFETY & LOSS CONTROL NEWS — OCTOBER 2021

VOL 6, NO 10

THIS MONTH'S SAFETY EMPHASIS IS

ERGONOMICS/ OFFICE WORKER ERGONOMICS

INSIDE:

Don't Overlook the Ergo!

Ergonomics is the study of human interaction with tasks, tools, and the environment to improve quality, productivity, and maximize worker safety, health, comfort, and well-being. It tailors the work environment to the individual rather than the individual to the work environment. The goal of ergonomics is to prevent soft tissue injuries and work-related musculoskeletal disorders caused by sudden or sustained exposure to risk factors such as force, vibration, repetitive motion, and awkward posture. By adjusting to individual needs and positioning the body to minimize stress and strain, employees can increase their task and workplace comfortability, which can increase productivity and decrease risks of injury. Whether working from home, at the office, or at a job site, ergonomics is an important safety tool that should never be overlooked.

~Kayvan Vafa

A Step in the Wright Direction

by Norman Wright

About 4:00 a.m., March 28, 1979, in the non-nuclear section of Three Mile Island, Unit 2 (TMI-2), a commercial nuclear power plant near Middletown, Pennsylvania, experienced a valve failure, preventing the main feed pump from supplying water to the steam generators. This caused the plant's turbine-generator and reactor to automatically shut down as part of the TMI-2's safety plan. The events that followed, however, were not part of the plan.

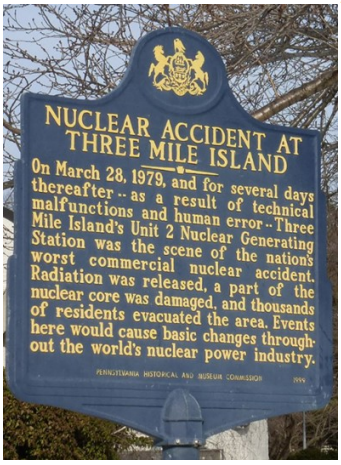
Three Mile Island

The pilot-operated relief valve on top of the pressurizer opened to stabilize pressure. Because of a faulty solenoid, the valve remained open after pressure was stabilized. As a result, cooling water was escaping in the form of steam from the pressurizer. The faulty solenoid sent a signal to the control room that it was closed.

(SEE WRIGHT PAGE 2)

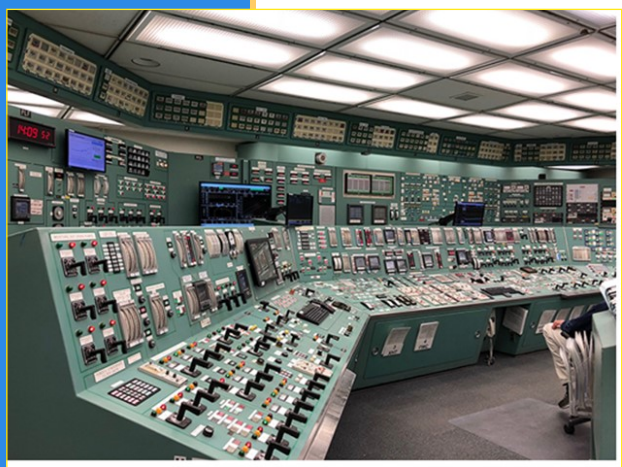
Ergonomics is the Natural Way to Work

Wright Direction *continued...*



Because of the false signal from the solenoid, operators did not recognize that steam was pouring out of the open valve for eight minutes. Events cascaded from there. Alarms rang and warning lights flashed, but operators could not identify the sources of the problems because of the faulty design of the control room. It had been designed without consideration of human factors:

- Controls were located far from instrument displays of their system;
- Cumbersome and inconsistent instruments often looked identical and were placed side-by-side, but controlled widely differing functions;
- Instrument readings were difficult to read due to poor lighting or glare or actually hidden from the operators (many key indicators were located on the back wall of the control room, away from operators' attention, and many of these indicators were faulty or misleading);
- Contradictory systems of lights, levers or knobs:
- One lever in an up position opened a valve while pulling another lever down accomplished the same function in another system;
- One knob turned clockwise to open a system while an identical knob turned counter-clockwise to open another system;
- Turning off one audio alarm turned off all audio alarms, not alerting operators to new problems in other systems as they arose.

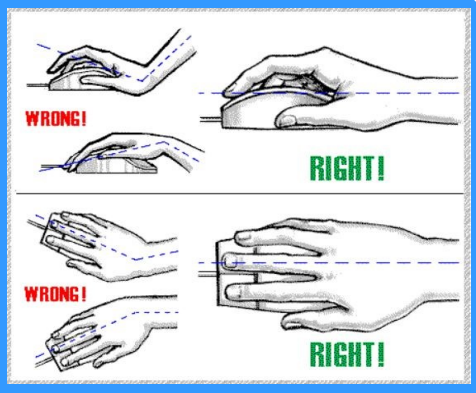

TMI-2 Control Room

At the height of the incident, over 1,600 lights were blinking. Operators failed to realize that the plant was experiencing a loss of coolant. Unaware that the valve was open and unable to tell if the core was covered with cooling water, operators took a series of steps to uncover the core. With the pressure valve open, the pressure dropped so low that the coolant pumps shut off and the core overheated before the situation was understood and control regained, eight minutes after the initial alarm.

Just 89 days after commercial operations started at the location, TMI-2 became the worst commercial nuclear accident to that time, causing the evacuation of thousands of residents.

(SEE WRIGHT DIRECTION PAGE 4)

Mindful Mousing



Almost every employee that uses a computer also uses a mouse to input and manipulate data. Follow basic practices to help prevent injury:

⇒ **Move the Mouse Freely:** Make mouse movements with the elbow as the pivot point, not the wrist. Anything that impairs free movement of the forearm/hand and mouse may increase injury risk.

⇒ **Mouse from the Elbow:** Don't skate or flick the mouse with your wrist or 'plant your wrist and mouse.' Make controlled mouse movements using your elbow as the pivot point and keep your wrist straight and neutral.

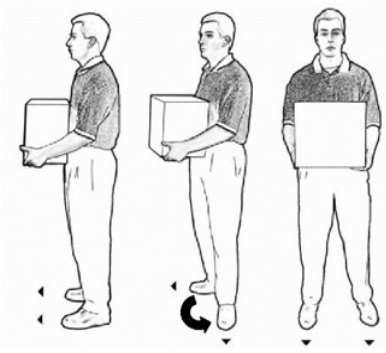
⇒ **Avoid Restricting Arm Movement:** Softly padded wrist rests or soft chair arm rests can cause the forearm to become "locked" into position leading to the user planting their arm and flicking the wrist instead of moving the whole arm or forearm.

⇒ **Avoid Wrist Rests: A wrist wrest is aptly named—it should be used only to rest.** Using a wrist rest as a work surface doubles the pressure inside the carpal tunnel, because the floor of the tunnel is a more flexible ligament that transmits external pressure changes directly into the carpal tunnel (the roof of the tunnel is bone so the pressure doesn't get transmitted on through the hand).

Point Your Toe and Go!

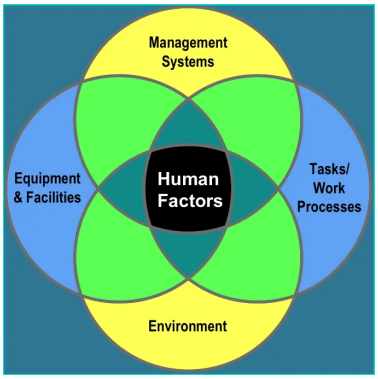
Improper lifting techniques are a large cause of back injuries. Workers attempting to lift more than they can safely and repeated lifting and carrying activities can lead to these injuries. To help prevent these injuries from occurring, employees must be trained appropriately on lifting techniques and apply them to any applicable task they may be performing. Before performing any lift, employees should take a moment to think about the task, the object, and where the item will be carried.

When lifting an object, it is critical that you avoid twisting your body, which can greatly increase chances of back injuries. One method to avoid twisting when lifting or carrying objects is the pivot technique, also known as 'point your toe and go.' This method is summarized below:



1. Lift the load using a proper technique
2. Hold the load very close to your body and at waist level
3. Turn the leading foot 90 degrees toward the direction you want to turn
4. Bring the lagging foot next to the leading foot (if additional pivoting is required, pivot feet another 90 degrees)
5. Keep your back and body straight while turning
6. Do not twist your body during the lift or while carrying the load

Wright Direction *continued...*



Human factors engineering (HFE) is the discipline that attempts to identify and resolve these issues. HFE considers human strengths and weaknesses in the design of interactive systems that involve people, tools and technology, and the work environment to ensure safety, effectiveness, and ease of use. It examines work activity in terms of all its tasks. It then assesses the physical demands, skill demands, mental workload, team dynamics, work environment (e.g., lighting, noise, temperature, space, or other distractions), and device design required to complete the task successfully. HFE focuses on how systems work with real and fallible human beings at the controls and attempts to design a system that will optimize safety and minimize the risk of error in complex environments. HFE is not a "one size fits all" approach to efficiency and safety.

The terms *human-factors engineering* and *human engineering* were used interchangeably in North America. However, in recent years a term used in Europe and Japan has become more common worldwide to describe HFE. That term is *ergonomics*, a word formed from the Greek words, *ergon*, meaning "work," and *nomos*, meaning "natural law." In other words, the "*natural way to work*."

In the County, when you hear the word 'ergonomics,' you generally think office ergonomics or, more specifically, the human-computer interface. HFE is more prevalent than you may have imagined in your daily life. Vehicles are designed with HFE to ensure comfort, ease of operation, readable displays, and safety. The grips of hand tools are designed to fit in the hand comfortably while keeping the wrist in a neutral position, preventing unnatural movement. Even the handle on your coffee pot has been angled and designed for comfort and proper grasp to avoid unwanted stress when lifting a full pot. Don't get me wrong, not everything you use or do may have been designed for the *natural way to work*.

Review this list of ergonomic risks. Look for these characteristics in your workplace and talk with your supervisor about an ergonomic evaluation for any of these conditions:

(SEE WRIGHT DIRECTION PAGE 8)

Important Safety Training for 2021

Most in-person training classes are still suspended, but there are plenty of safety training classes available online at Vector Solutions and the County's Intranet! We are also excited to present a new offering of classes via ZOOM meetings and hybrid combinations of online/skills demonstrations. Consider these safety and compliance classes:

General Coronavirus Training in Vector Solutions:

- **CCC COVID-19 Safety Training Tailgate - August 2021**
- **COVID-19 - Reporting Positive Results to Public Health**
- **Tailgate - CCC Emergency Evacuation Procedures during COVID-19**
- **Courses - Coronavirus 101 - What You Need to Know (Newest Version)**
- **Courses - Coronavirus 102 - Preparing Your Household**
- **Courses - Coronavirus 103 - Managing Stress and Anxiety**
- **Courses - Coronavirus 104 - Transitioning to a Remote Workforce**
- **Courses - Coronavirus 105 - Cleaning and Disinfecting Your Workplace**

COVID-19 Training webinars at COVID-19 Resources on the County Intranet:

- **COVID-19 Training: AB 685 & Cal/OSHA Emergency Regulations**
- **COVID-19 Prevention Program - 03-23-2021**
- **COVID-19 Vaccination Webinar 02-02-2021**

General Safety Training:

- **CCC Injury and Illness Prevention Program (IIPP) Training**
- **CCC Wildfire Smoke Safety for Employees (Annual requirement)**
- **CCC Driver Safety Training**
- **CCC Office Ergonomics Awareness Training**
- **CCC Emergency Evacuation Procedures - All County**
- **CCC HSD 2021 Workplace Violence Prevention**
- **TAILGATE - Workplace violence**
- **TAILGATE - Shelter in Place Procedures - Violence**

Hybrid CPR Classes Available Now!

Check Vector Solutions for Dates and Instructions

Log into the Vector Solutions website at www.targetsolutions.com/ccc for the full list of ONLINE, ZOOM, and HYBRID classes available now!

Driver Ergonomics

Have you ever felt pain in your knees, lower back, or shoulders after exiting your vehicle? As we spend more time driving due to longer commutes and increased traffic, addressing driver comfort has become increasingly important. Improving the ergonomics in your vehicle can reduce aches and pains and reduce the chances of repetitive motion injuries (also called repetitive driving injuries) and cumulative trauma injuries.

Vehicle Seats vs. Office Chairs

Many people may not be aware of the differences between sitting in an office chair and sitting in a vehicle seat. Despite being in a seated position, they are different in various ways. By understanding these differences, appropriate precautions and chair adjustments can be implemented to improve driver comfort. Some key differences include the following:

When driving, hands and arms are higher to operate the steering wheel	When driving, legs and knees are more extended than when sitting at a desk	When driving, one foot may be flat and the other at an angle to operate the pedals
For vehicles with manual transmissions, both legs and your shoulders are used more frequently	When driving, the body experiences vibrations	When driving, your body moves sideways when turning

Aches and Pains

If you've experienced aches or pains in areas such as your knees, lower back, neck, shoulders, feet or legs while driving or after exiting a vehicle, you understand the importance of driver comfort. When driving, it is challenging to change body positions due to the requirements for reaching the steering wheel, pedals, and other functions of the vehicle to effectively operate it. These aches and pains can be attributed to some of the following factors:

⇒ Poor posture due to personal habits or from an improperly adjusted or fitted seat

⇒ Low frequency, whole-body vibrations in moving cars and trucks can contribute to effects on the lower back

⇒ The shape of the vehicle seat itself may put pressure on selected parts of the legs, back, and buttocks. This contact can lead to pain or discomfort at pressure points and may affect blood flow to the legs and feet

Static Posture

Since drivers are required to sit in virtually static positions for extended periods of time, this greatly increases the likelihood of aches and pains. If you must drive for an extended duration, consider pulling over at a safe location and taking a few minutes to get out and stretch your muscles. This may add a few minutes of time to your travel, but stretching your back, neck, arms, and legs can increase blood flow and help alleviate aches and pains caused by sitting in a static position for extended periods of time

Driver Ergonomics *continued...*

Entering and Exiting Vehicles

When entering and exiting a vehicle, it is important to pay attention to your body position. This is especially important if you perform this task multiple times a day or have back problems. Improperly entering or exiting can put unnecessary strain and twisting of the back, which can cause injury. Here are the proper techniques for entering and exiting a vehicle:

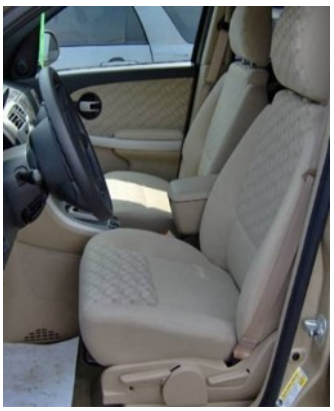
When Entering a Vehicle

Open the door and stand with your back to the seat and legs close to the side of the vehicle. For larger vehicles, begin by standing on the running board. Place your hands on the door and doorframe to keep your movements slow and controlled. Slowly lower your body into the vehicle. Tuck your head into the vehicle. Keep your knees close to each other, brace your abdomen and pivot your entire body without twisting or bending at the waist. Grasp the steering wheel with your right hand to help you pivot.

When Exiting a Vehicle

Before exiting, create adequate space by pushing your vehicle seat back and moving the steering wheel up and out of the way. First scoot slightly to the door side edge of your seat, then keep your knees together and pivot with the methods as when entering. When your feet are shoulder width apart and firmly on the ground or running board, grasp the door and doorframe, lean forward. Be sure not to bend your back as you tighten your abdominal muscles. Slowly thrust your hips forward to stand up.

Proper Seat Adjustment



A properly adjusted seat minimizes excessive movement, allows blood flow through the legs, decreases driver fatigue, and increases road visibility. This is especially important for company vehicles, which multiple employees may frequently use. Before driving any vehicle, take time to ensure the seat is properly adjusted. The following tips can help you properly adjust your seat:

⇒ Move the seat close enough so your feet and arms don't overreach for the pedals or steering wheel while driving

⇒ Adjust the height of the seat so you can comfortably reach the pedals and see over the steering wheel

⇒ Ideally, the seat should raise high enough for your knees to be bent close to 90-110 degrees with your feet flat on the floor in front of the seat

⇒ Adjust the lumbar support, if present. If it does not provide adequate support, purchase a lumbar roll

Wright Direction *continued...*

Schedule an ergonomic evaluation through your supervisor for any of these postures or activities.

- Frequent bending or twisting of the back or neck
- Heavy, awkward or repetitive lifting, pushing or pulling
- Tasks requiring lifting either below the knees or above the shoulder
- Arms lifted above shoulder height, elbows away from the body
- Work surfaces that require elevation of the shoulders or stooping of the back for long periods
- Using any part of the body, especially your hand, as a hammer or mallet
- Repetitive or prolonged grasping and holding of objects, gripping with the wrist or elbow in an awkward position, or repetitive bending or twisting of the wrists or elbows
- Static postures - spending long periods without movement of a particular body part. (Sitting, standing, bending, crouching, etc.)
- Whole-body or hand-arm exposure to uncontrolled vibration
- Contact stress, where force is concentrated on a small area of the body
- Inadequate or excessive light or glare

Twelve days before the incident at TMI-2, Columbia Pictures released the motion picture *China Syndrome*, starring Jane Fonda, Jack Lemmon, and Michael Douglas. The film tells the story about a nuclear power plant that lost coolant to the core, resulting in a core meltdown scenario named for the fanciful idea that nothing would stop the meltdown from tunneling its way to the other side of the earth [China]. TMI-2 reactor core overheated but did not meltdown. Still, ticket sales soared after the March 28 event, netting the movie $51.7 million. Patrons sat in a static position for 122 minutes in poorly designed theater seats of the '70s to watch the not-so-fictional events on the big screen.

Computer Monitors: Comfort and Clarity

Many workers may not be aware that their computer monitor can cause potential strains, sprains, headaches and fatigue. With increased amounts of time spent on computers, it is important to know the correct way to setup your computer workstation, including the monitor, to help avoid injury. One of the most effective ways to reduce injuries and fatigue from the use of monitors is to properly position the monitor so you are comfortable and can see clearly.

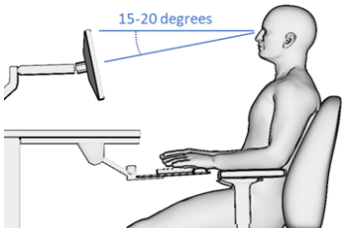
Proper Monitor Distance

Adjusting your monitor for proper placement and distance is an effective way to avoid ergonomic injury. Monitors which are too far can cause workers to lean forward and strain to see. This can cause eye strain/fatigue and lead to awkward back and torso positions. Monitors that are too close can force the eyes to work harder to focus and may lead to awkward postures (e.g., tilting your head backward or pushing the chair back from the screen, causing workers to type with outstretched arms.

Tips on Proper Monitor Placement

The ideal monitor distance allows you to sit against the back of the chair and read the monitor screen from a comfortable distance, without experiencing eye fatigue, blurred vision or headaches. This is usually farther than an arm's reach away when you are sitting back in the chair. Adjusting text size can also help reduce eye strain.

Monitor Viewing Angles



Proper viewing angle is important in reducing the likelihood of potential ergonomic injuries, strains, and headaches. A monitor that is too high or low can result in awkward head, neck, shoulder, and back postures. Monitors that are too high may require workers to tilt their head and neck back. Tips on adjusting monitors for the proper viewing angle include the following:

- Adjust your chair height so that your legs are evenly supported, your feet are on the ground or on a footrest, and you have adequate space for your thighs under the desk
- Place the monitor directly in front of you to avoid neck twisting
- The top of the monitor should be at or slightly below eye level with the center of the monitor located 15 to 20 degrees below horizontal eye level, unless wearing bifocal lenses (if wearing bifocals, the monitor should be placed slightly below eye level)
- The entire visual area of the monitor should be located so the downward viewing angle is not greater than 60 degrees
- If the monitor stand is not adjustable, add or remove items on which the monitor may be placed to adjust the height and viewing angle

PROTECT YOURSELF, PROTECT YOUR FAMILY & FRIENDS


Keep 6 Feet Apart


Cover Your Face


Wash Your Hands


Stay Home if Sick

Tips to Slow the Spread of COVID-19

AT HOME:

- ❑ Limit activities away from home
- ❑ Clean "high-touch" surfaces often
- ❑ Do not share personal items (food, dishes, utensils, cups, towels or bedding)
- ❑ Open doors & windows to increase airflow
- ❑ Move beds at least 6 feet apart

AT WORK:

- ❑ Stagger shifts & break times
- ❑ Work and take breaks outside when possible
- ❑ Keep 6 feet apart in work & break areas
- ❑ Do not share work spaces, tools or equipment
- ❑ Clean "high-touch" surfaces often
- ❑ Open doors & windows to increase airflow

WITH FAMILY & FRIENDS:

- ❑ Wave hello instead of hugging or kissing
- ❑ Meet outside & limit group size
- ❑ Do not serve buffet-style
- ❑ Do not share items (food, drinks, dishes, cups, utensils, playing cards, etc.)
- ❑ Do not sing, chant, or shout
- ❑ Clean "high-touch" surfaces often

TRAVELING WITH OTHERS:

- ❑ Limit the number of passengers when possible
- ❑ Avoid touching surfaces
- ❑ Increase airflow — open windows or set the air ventilation to non-recirculation mode
- ❑ Wash or sanitize hands when you get to your destination

IF YOU FEEL SICK:

- ❑ Stay home for at least 10 days
- ❑ Schedule a no-cost test: call (844) 421-0804 or visit cchealth.org/coronavirus
- ❑ Avoid public areas & public transportation
- ❑ If you feel worse, call your doctor or the free county advice nurse at (877) 661-6230
- ❑ Use a separate bedroom & bathroom, if you can
- ❑ Cover coughs & sneezes & throw tissues away quickly
- ❑ Do not share personal items (food, dishes, utensils, cups, towels or bedding)
- ❑ Clean "high-touch" surfaces often

THIS IS NOT EASY.
If you need help, call 211 or visit cccc.myresourcedirectory.com to be connected to more than 1,600 services & programs.

2021 Great Shakeout Drill

This year's state-wide earthquake drill, ***The Great Shakeout***, is scheduled for

October 21, 2021 at 10:21 am

All Californians are encouraged to take part in the drill at school, home, and businesses. On this date and time, millions of Californians will practice **Duck, Cover, and Hold On**. They will assess their work and living areas to determine how "earthquake ready" their spaces are.

6.6 million participated in 2020. Be a part of the largest safety drill in history in 2021!

The Drill Scenario Is Simple:

1. **STOP**, wherever you are, at 10:21 a.m. on 10/21/21.
   - Look around your work area. Decide where you can "duck, cover, and hold on" in an earthquake.
   - Ask coworkers, clients, etc. to do the same.
   - You may use the loudspeaker to remind all staff about the drill.
2. **DUCK** – ***DUCK OR DROP*** down on the floor immediately, wherever you are.
3. **COVER** - Take ***COVER*** under a sturdy desk, table or other furniture. If that is not possible, seek cover against an interior wall and protect your head and neck with your arms. Do not run to a doorway or another room.
4. **HOLD ON**- If you take cover under a sturdy piece of furniture, ***HOLD*** on to it and be prepared to move with it. If you are covering your head and neck, HOLD ON.
   - Be prepared for aftershocks. Stay protected for a few seconds.
5. **AFTER THE DRILL, INSPECT YOUR WORK AREA:**
   - Remove heavy items that could fall from upper shelves and cause injury.
   - Look for items that are stacked too high or without enough bracing.
   - Brace or strap furniture together in stable groups or to the walls, etc.
   - Check shelving units and bookshelves with unstable contents or bracing to the wall.
   - Report any safety concerns to your Supervisor, Building Warden, or Safety Coordinator.
6. GET **TRAINING** ON EARTHQUAKE SAFETY
   - Great Shakeout website and resources: http://www.shakeout.org/california/
   - Review the Risk Management Earthquake Tailgate Training Topic
   - Review the Earthquake Safety Actions handout
7. GET **INFORMATION** ON EARTHQUAKE SAFETY
   - Get information on California Emergency Preparedness at https://www.cdph.ca.gov/Programs/EPO/Pages/Program-Landing1.aspx
   - Get information on Contra Costa County preparedness from the Sheriff's Office of Emergency Services https://www.cocosheriff.org/disaster-preparedness/emergency-services-division and check out the preparedness guide at https://www.cocosheriff.org/home/showpublisheddocument/92/637177182801100000.
   - Register at the County's Community Warning System and your home County to get emergency alerts: https://www.cocosheriff.org/disaster-preparedness/community-warning-system.
8. PREPARE AT **HOME**
   - Check www.shakeout.org for interactive earthquake games, videos and activities.
   - Use the 7 Steps to Safety from "Staying Safe Where the Earth Shakes" at http://earthquakecountry.org/sevensteps/.
   - See the website http://www.ready.gov/ for a list of emergency supplies and making an emergency plan.

We hope you can participate in this important Annual Earthquake Drill.

Not *If*, But *When* - Be Prepared!

RISK MANAGEMENT
SAFETY AND
LOSS CONTROL

Dedicated to preventing injuries and illnesses.
CONTACT US!

2530 Arnold Drive, Suite 140, Martinez
925-335-1400
Safety Newsletter E-mail:
Norman.Wright@riskm.cccounty.us

Safety and Loss Control Intranet Site:
https://www.insidecontracosta.org/469/Safety-and-Loss-Control

Although earthquakes can occur anywhere in the Country, the Bay Area is considered a 'high-risk' area by the United States Geological Survey (USGS). Faults in the areas such as the San Andreas and Hayward Faults, are classified as highly-active by the USGS. Many Bay Area residents have either experienced an earthquake or know that it is an active area for these events. Earthquakes can strike any time with no warning, so living in a high-risk area increases the importance of being prepared for these natural disasters. Understanding the risks and taking the necessary precautions to be properly prepared can help minimize the chances of injury when these natural disasters occur. It isn't a matter of *if*, it's a matter of *when*; will you be prepared when the next earthquake strikes?

Have a Plan

Since earthquakes cannot be predicted, it is important to be prepared and have an emergency plan before they occur. Having a plan for your family and understanding your building's emergency procedures can help minimize their impacts and ensure you react appropriately. Planning can also help minimize the chances of injury and ensure a means of communication is in place to account for missing persons. Additional tips on earthquake preparedness include the following:

- Train family members how to isolate gas valves and secure your home after a quake
- Establish a meeting place where your family or co-workers should meet
- Ask about earthquake plans developed by your children's school or day care
- Keep emergency supplies in your car and at the office
- Establish a communication plan and include a contact outside of the state to check in after an earthquake

Back to Basics

If an earthquake strikes while you are indoors, you should follow three basic steps to help protect yourself from falling materials that can cause serious injury or death. These steps are as follows:

1) **DROP:** Drop or duck down on the floor immediately
2) **COVER:** Take cover under a sturdy desk, table or furniture. If this is not possible, seek cover against an interior wall and protect your head and neck with your arms. Do not run to a doorway or another room.
3) **HOLD ON:** If you take cover under a sturdy piece of furniture, hold on to it and be prepared to move with it. Be prepared for aftershocks!

Earthquake Preparedness Resources			
www.redcross.org	www.fema.gov	https://www.osha.gov	https://www.cdc.gov