



**Memphis and Shelby County
Emergency Management Agency
P.O. Box 111249
Memphis, TN 38111**

458-1515

www.mscema.org



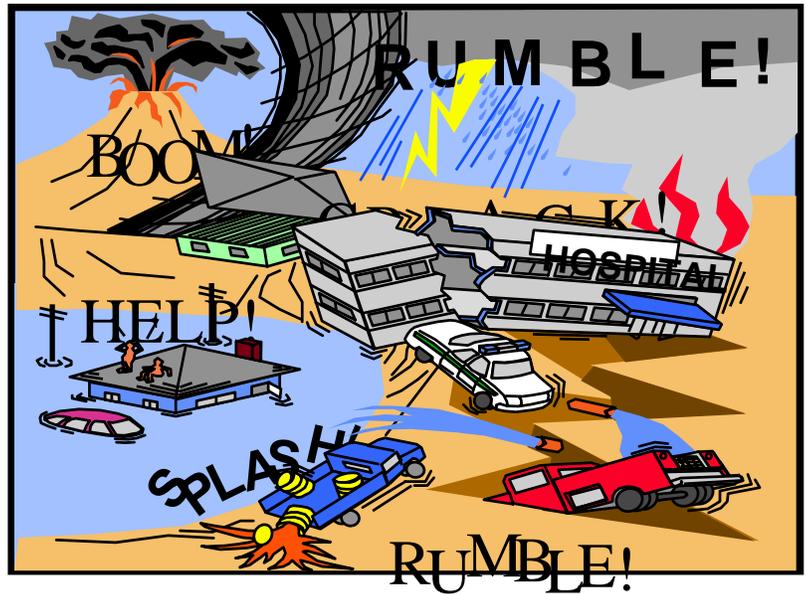
The Memphis and Shelby County Emergency Management Agency
does not discriminate on the basis of race, religion, sex, age, national origin or disability.

Introduction



Potential disasters:

- Fire
- Flood
- Earthquake
- Terrorism
- Hurricane
- Hazardous Material incident



Key elements and disaster truths:

- Relatively unexpected
 - Little or no warning
 - Little opportunity to prepare
- Lives or health are in danger
- Available personnel and emergency services are overwhelmed.
 - Need for disaster workers to fill the void for 72 hours
- Volunteers will WANT and NEED to help.
- Volunteers can save lives if they are properly directed and have some training.
 - CERT-trained people will take a leadership role until the professional emergency services arrive (fire, police, EMS)





Possible services lost in an emergency/disaster:

- Fire Department
- Police Department
- Ambulance Service (EMS)
- General transportation (car, bus, train)
- Telephones (note: pay phones may work for outgoing calls)
- Utilities (electric, gas, and water)
- Sanitation (sewers and garbage collection)
- Little or no food after run on stores
- Little or no hardware supplies after run on stores
- No radio or TV





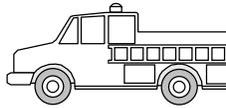
Introduction



What does a CERT do?

- Identify problem areas after a disaster
- Establish CERT teams (organize the volunteers)
- Deploy teams
- Report status to Fire Dept

Fire Dept



Fire department assumes command when they arrive

CERT Team Leader



- Organize teams
- Document activities
- Monitor situation status

Fire Suppression Team



- Small fires
- Shut off utilities

Medical Team



- Triage
- Treatment
- Transport
- Morgue
- Supply

Search and Rescue Team



- Search
- Rescue
- Evacuation

Logistics Team



- Communications
- Staffing
- Equipment
- Supplies
- Food



CERT course sections:

- Disaster Preparedness (classroom)
- Fire Suppression (classroom and outside hands-on)
- Medical – First Aid (classroom and hands-on)
- Medical – Triage (classroom)
- Light Search and Rescue (classroom hands-on)
- Disaster Psychology (classroom)
- Hazardous Materials (classroom)
- Terrorism (classroom)

CERT course objectives:

- Describe the likely hazards that you and your family will face.
- Identify the steps to prepare yourself for dealing with the disaster.
 - Before
 - During
 - After

Memphis and Shelby County Emergency Management Agency:

- Local Emergency Management Agency
- Provide services to all of Shelby County and it's municipalities
- Office is staffed 24 hours a day, 7 days a week
- Our 24 hour emergency number is 458-1515
- Maintain and activate the outdoor warning sirens (tornado sirens)
- Train and educate the public in disaster preparedness
- Write and implement disaster plans for Shelby County
- Perform damage assessment after a disaster
- Respond to daily emergencies to coordinate resources

Chapter 1

Disaster Preparedness



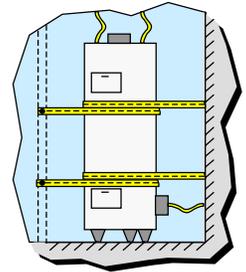
An emergency can occur at any time and place. When it does you may not have much time to react. A highway spill of hazardous materials could mean instant evacuation. A winter storm could confine your family at home. An earthquake, flood, or tornado could isolate you from basic services, such as gas, water, electricity, and telephone services for days. In addition, emergency services such as fire, police, and ambulances may not be available for a period of time.

Your family will cope best by preparing for an emergency before it happens. You and your family should put together an emergency plan so each person will know what to do in the event of an emergency/disaster. You should prepare an emergency/disaster kit in advance. You may not be able to shop for necessary supplies for the health of your family when an emergency occurs. In addition, you should learn about first aid, and be prepared to use it if necessary.

Basic elements of preparedness:

Eliminate Hazards:

- Strap down the water heater.
- Anchor bookcases and heavy appliances.
- Remove heavy objects away from beds, and put on low shelves.
- Move beds away from windows.
- Install smoke detectors and have fire extinguishers handy.
- Ensure exit paths are clear.
- Take photographs of your valuables and each room to help with insurance claims.



Family Training and Drills:

- Each family member should know his responsibilities during an emergency.
- Designate an “out of area” person for everyone to call. In an emergency it may be easier to call outside the area than within the area.
- Post emergency phone numbers for all to see.
- Practice taking cover with your family so everyone will know where to go and what to do in an emergency.
- Practice exiting to make sure the exits are clear.

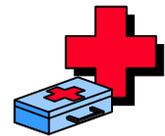




Prepare for the Needs of Children:



- Make sure everyone is aware of the plan to pick up the children from school or daycare.
- Make sure the school has an up-to-date disaster plan and emergency supplies.
- Children are especially vulnerable to psychological trauma. Help them to understand a crisis situation. Afterwards, reassure the children and do not leave them alone. Encourage them to talk about the experience and their feelings.



Know Basic First Aid:

- It may be necessary to provide immediate medical assistance to yourself, a family member, or another person.
- It is very important to have a good first aid kit, and the knowledge to use it.



Prepare for the special Needs Population:

- Elderly, disabled, blind, or other persons may require special plans to cope with an emergency.
- Special assistance may be required to move around or evacuate, and special food or medication may be required.

Prepare for Pets:

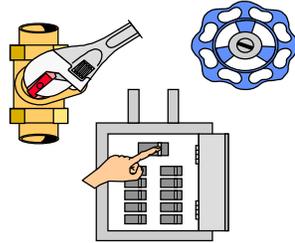
- Consider your pet's needs in your emergency planning.
- Make sure your pet has some identification on it.
- Make sure other needs, such as a leash or carrier, are available.
- Pets are normally not allowed in emergency shelters.





Know how to shut off utilities:

- Know how to shut off water, gas, and electricity coming into your home.

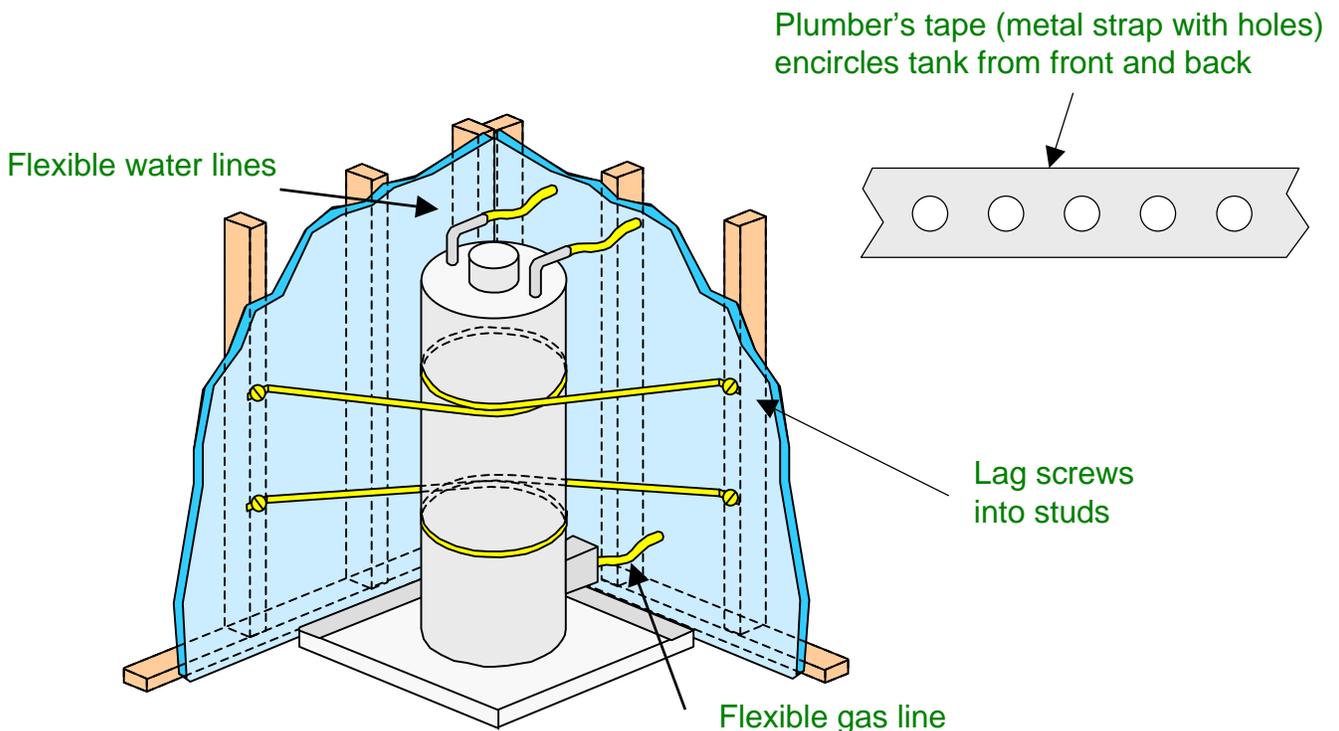


Have a disaster kit handy:

- Keep a disaster kit handy to help you through a disaster.
- Keep this document in your disaster kit.
- Pages 6 through 9 provides greater details on disaster kits.



Strapping down the water heater:



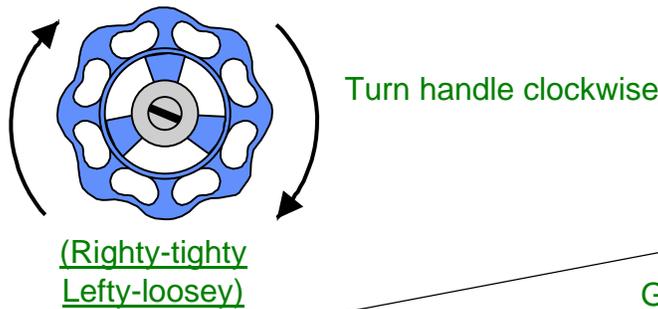


Shutting off Utilities:

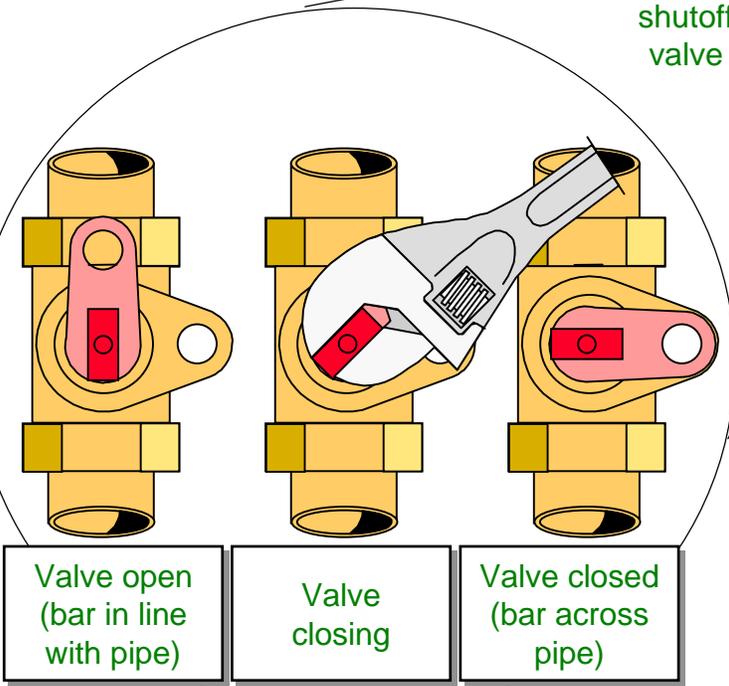
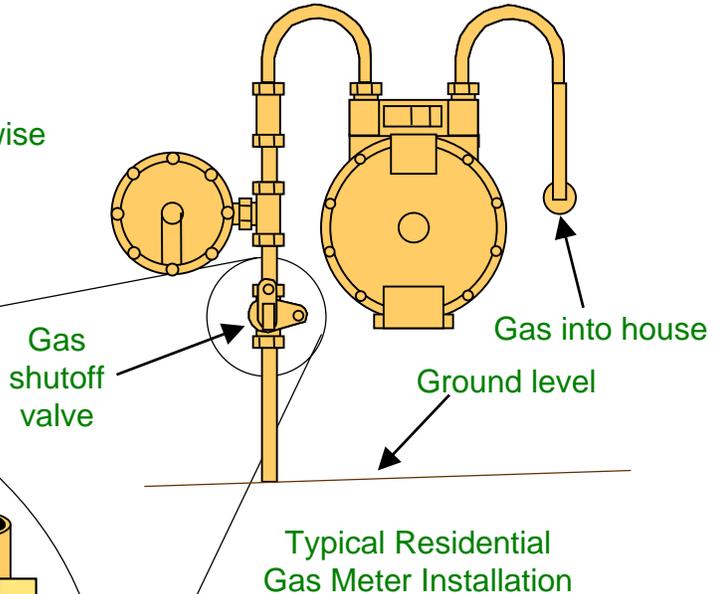
You should know how to shut off water, gas, and electricity coming into your home.

- **Electrical:** Turn off individual breakers or unscrew fuses before turning off main breaker or pulling main disconnect.
- **Water:** Most homes have a manual valve to shut off the water.
- **Gas:** The gas shutoff is usually located outside next to the meter. Note that a wrench, similar to an adjustable wrench, will probably be required to close this valve. Once the gas is shut off, only the utility company should restore it. Do not shut off the gas unless you smell gas in the air. If you have any questions, contact Memphis Light, Gas, and Water or your local utility company.

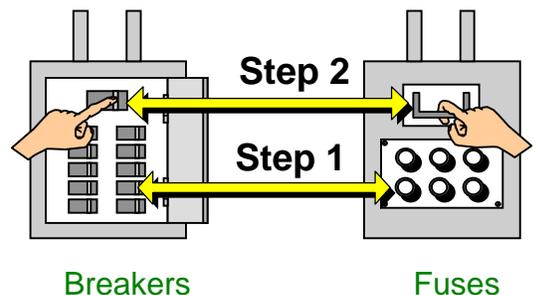
Shutting the main water valve:



Shutting off the gas at the gas shutoff valve:



Shutting off electrical:





The following information may help you in the preparation of your disaster kit. The kit items should be stored in one place where they are easy to get to if you have to evacuate. Most items will fit in a large lidded plastic container or a duffel bag.

First Aid Kit:



A first aid kit is a good place to start your emergency planning. Make sure your kit has supplies for major bleeding and broken bones, not just minor cuts and bruises. The following items should be included:

- | | | |
|---|---------------------------|-------------------------|
| (1) container or Zip-lock bags | (24) cotton balls | (1) Ace bandage |
| (24) 3x3 or 4x4 sterile gauze pads | (24) Q-tips | (24) band-aids |
| (2) roll: stretch gauze 2" or 3" wide | (4) pair: latex gloves | (2) antibiotic ointment |
| (12) sanitary napkins (to control bleeding) | (2) cold pack | (1) needle |
| (2) roll: cloth tape 1" wide | (24) moistened towelettes | (1) tweezers |
| (1) triangular bandage (sling) | (1) bottle: aspirin | (1) scissors |
| (12) butterfly band-aids (close wounds) | (1) first aid manual | (12) safety pins |
| (1) bottle: Hydrogen peroxide | (1) smelling salts | (1) saline solution |



Water:

- Store at least one gallon per person, per day for at least 7 days. Store water in portable containers in case you have to evacuate. Rotate your stock every 3 to 6 months. This will be easier if you write the purchase date on each bottle with a heavy marker. Although plastic juice and milk bottles can be used to store water, it is better to purchase new containers. Do not store drinking water in a container that held a poisonous or hazardous substance.
- Purchase a bottle of water purification tablets from an outdoor/camping store in case you need to purify additional water. Some stores also carry long-storage water in packets.
- Water can be purified by straining through paper towels, paper coffee filters, or several layers of clean cloth into a container to remove sediment or floating matter. Boil water vigorously for at least 5 minutes. Boiling longer is better if you have the heat to spare.
- If water cannot be boiled, after straining, use the water purification tablets in your disaster kit by following instructions on the bottle.

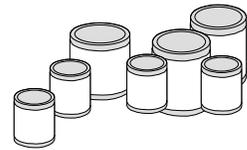


Water:

- Water can be drawn from the pipes by opening a faucet at a high level, to let air in and draw off water from a faucet at a lower level.
- You can also use the water in the toilet tank, but not the bowl !
- Water can be drawn from a water heater using the following method:
 1. Close the water inlet valve near the heater.
 2. Open the relief valve on top of the tank to let air into the lines.
 3. Drain water from the drain valve at the bottom of the tank.

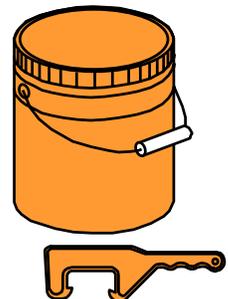
Food for 7 days:

- Ready to eat items (canned meats, fruits, vegetables)
- Other (dried milk, soup)
- High energy foods (peanut butter, jelly, crackers, granola bars, trail mix)
- Specialty foods (infants, children, elderly, people on special diets)
- Comfort/stress items (hard candy, instant coffee, tea bags)
- Manual can opener
- Utensils and plastic storage containers
- Aluminum foil
- Write the date on each item and rotate every 6 months



Sanitation:

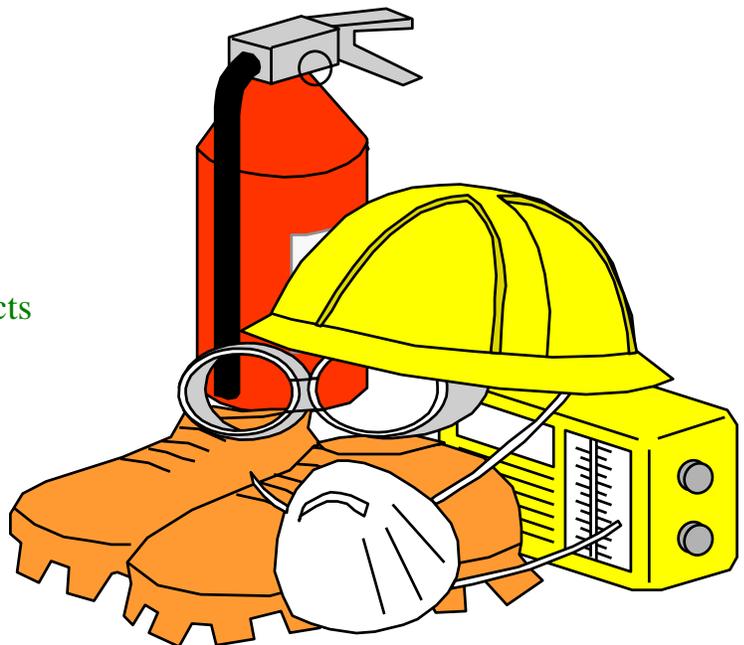
- 5 gal bucket, with lid and lid lifter (can be used as a “potty”)
- Kitchen garbage bags with ties (used to store waste temporarily)
- Toilet paper
- Soap
- Washcloth/towel
- Feminine supplies
- Bleach (helps to decompose human waste)
- Small shovel (to bury waste)
- Pool or spa water can be used to flush toilets, but do not drink it.
- Dead bodies should be wrapped in sheets and stored in a cool place. Notify authorities as soon as possible.
- Dead animals can be buried 3ft to 4ft deep and covered with lime or bleach.





Utility and Specialty Items:

- Baby formula, diapers, ointment
- Tarps (rain protection)
- Heavy black markers (to leave messages)
- Index cards (for messages)
- Small plastic Ziploc bags
- Duct tape for repairs and to seal out the weather
- Leather gloves for each adult
- Heavy cord for repairs
- Gas shutoff wrench (10" adjustable wrench or similar)
- Dust masks for each person
- Whistle for each person, with lanyard to wear around the neck
- Photographs of family members (help to locate people)
- \$5 in change (for phone calls)
- Multi-function knife
- Matches
- Candles
- Portable radio
- Light sticks
- Flashlight, spare batteries
- List of telephone numbers, contacts
- Books, cards, games for children
- Blankets





In the event of a disaster, there is a good chance that you will be at work or driving, so you should also have a disaster kit in your car. If the roads and bridges are heavily damaged, consider that you may have to walk home. Items that you may want to include in your auto disaster kit:

Auto Emergency Kit (store in knapsack):

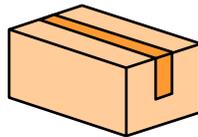
- First aid kit
- Leather gloves
- Small crowbar
- Dust masks
- Blanket
- Tarp (rain protection)
- Heavy black marker, index cards, and Ziploc bags for messages
- Flashlight with extra batteries
- Duct tape
- Photographs of each family member
- Whistle (to signal to rescuers)
- Signal mirror (to signal to rescuers)
- Portable radio with extra batteries
- Clothesline
- Fire extinguisher
- Change for phone
- 2 qt water (rotate frequently)



In addition to the items in your disaster kit, there are other items that you might use regularly that you will need to include if you need to evacuate your home. If possible, keep these items near your disaster kit so they are easily available.

Evacuation items:

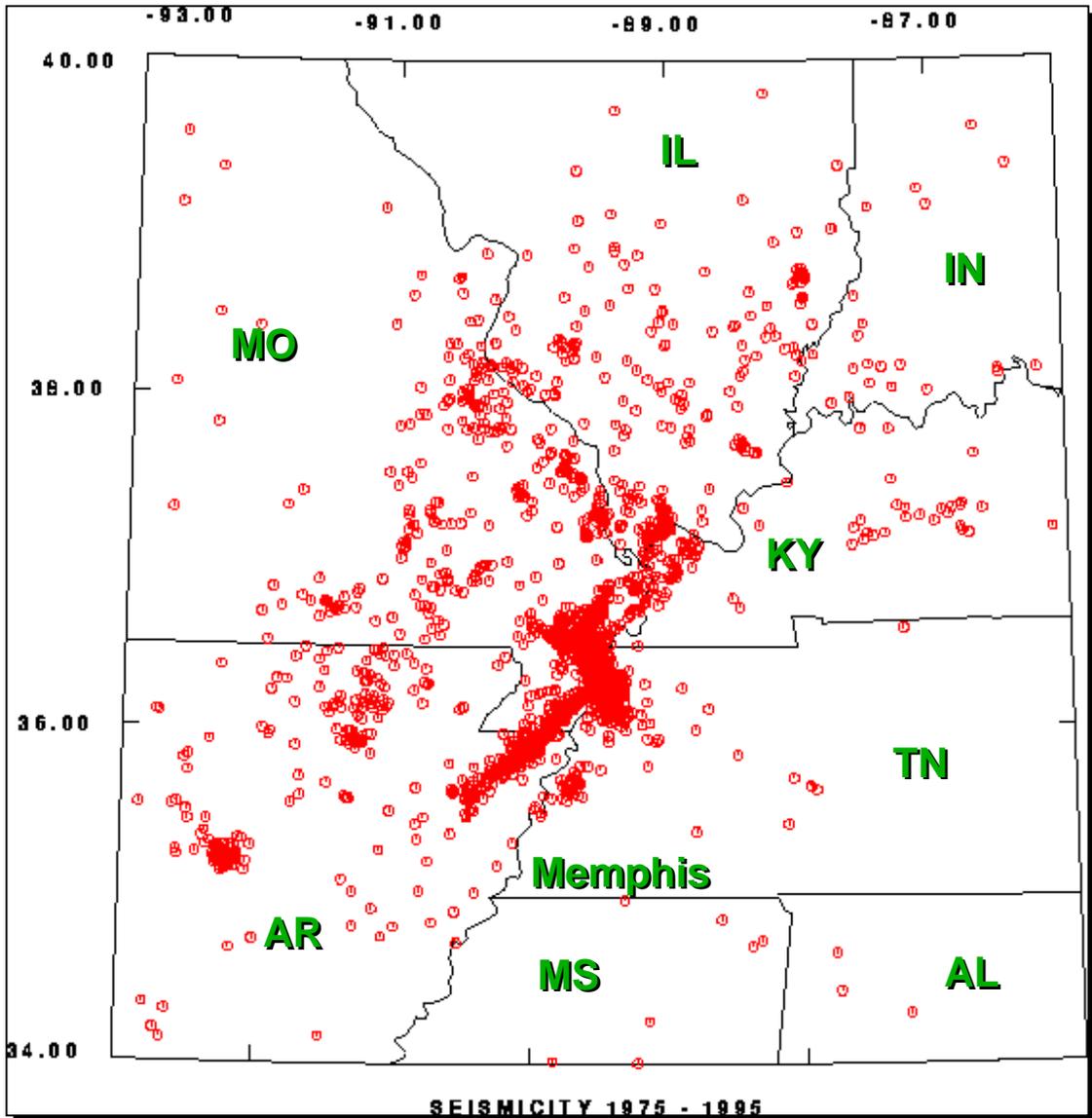
- Clothes
- Jackets, coats
- Raincoats
- Crowbar (to help people trapped under wreckage)
- Important documents (keep in fire-safe box for protection and ease of locating)
- Medications
- Glasses
- Contact lens and solution
- Dentures
- Portable radio with extra batteries
- Flashlight with extra batteries
- Camp stove, small grill, or other outdoor cooking device
- Tent
- Blankets
- Cash





Earthquake threats:

Earthquakes on the New Madrid fault zone:



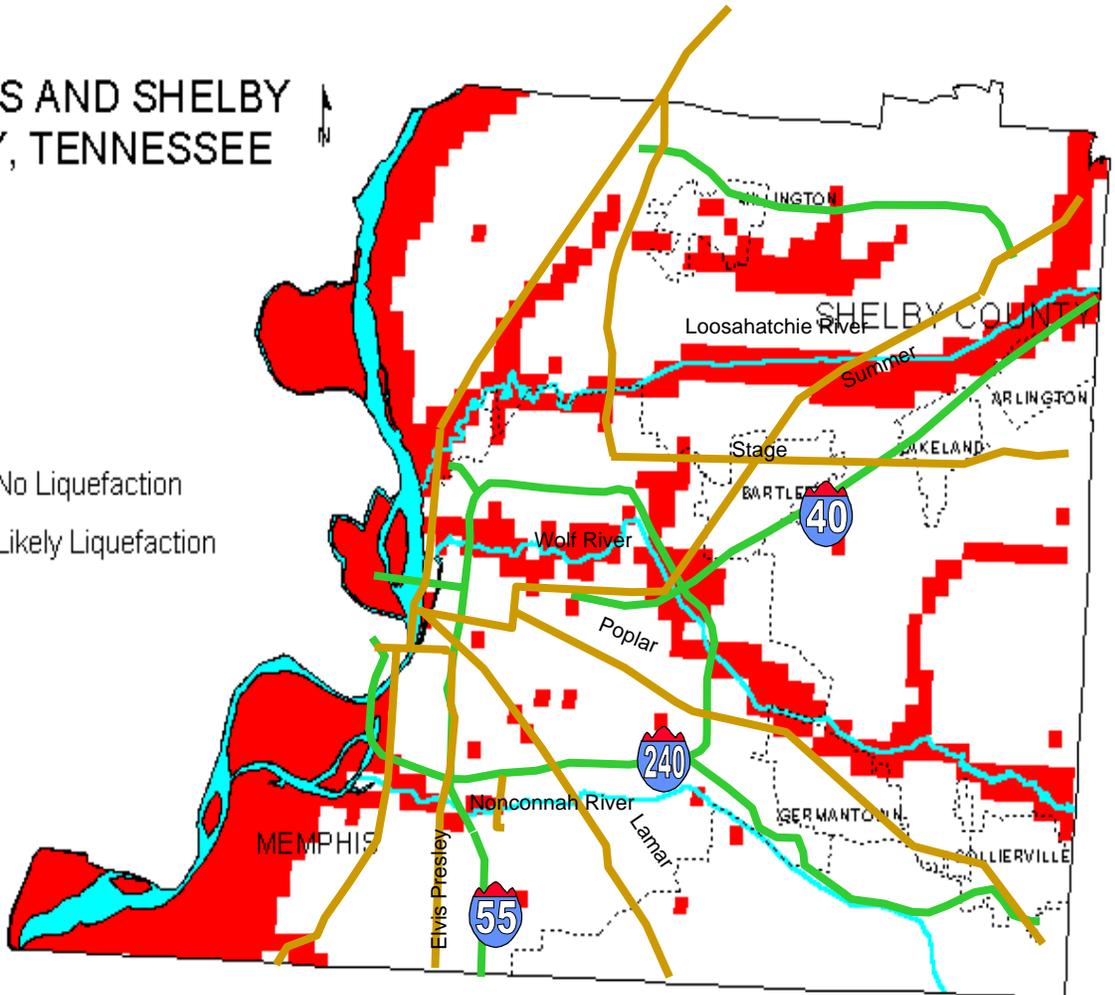


Liquefaction in Shelby County:

MEMPHIS AND SHELBY COUNTY, TENNESSEE

Legend

- Area of No Liquefaction
- Area of Likely Liquefaction



Liquefaction Susceptibility Area in Shelby County



The Richter scale:

The Richter scale measures earthquake magnitude (each whole number is 10 times greater than the preceding). More than 200 earthquakes occur each year on the New Madrid fault. The following chart compares Richter magnitude with the energy released from an equivalent amount of TNT, and shows the frequency of occurrence of the various magnitudes.

	Richter magnitude	TNT equivalent	Frequency
	1.0	30 pounds	Daily
	2.0	1 ton	Daily
	3.0	29 tons	Monthly
4.8 AR, 1990 →	4.0	1,000 tons (small nuclear weapon)	Annually
5.0 Marked Tree, AR, 1976 →	5.0	32,000 tons	Every 10-12 yr
Likely earthquake within next 15 years →	6.0	1,000,000 tons (large nuclear weapon)	Every 70-90 yr
	7.0	32,000,000 tons	Every 250-500 yr
New Madrid earthquakes of 1811-1812 →	8.0+	1,000,000,000+ tons	Every 500-1200 yr



The following guidelines will help you to know what to do in the event of a major earthquake.

At Home, Work, or School:

- Duck into a corner, against a wall, or under a desk or heavy table.
- Cover your face and head.
- Hold on until the shaking stops.
- Move to an inside corner or wall away from windows, cover your face and head.
- Move away from anything glass (windows, cabinets).
- Do not run outside during an earthquake.
- Watch for falling objects (plaster, bricks, light fixtures, ceiling tiles).
- Do not use elevators, you may become stuck between floors.
- Do not be surprised if the fire alarm or sprinkler system comes on.

In a Stadium or Theater:

- Duck below the level of the seat backs.
- Cover your face and head.
- Hold on until the shaking stops.

While driving:

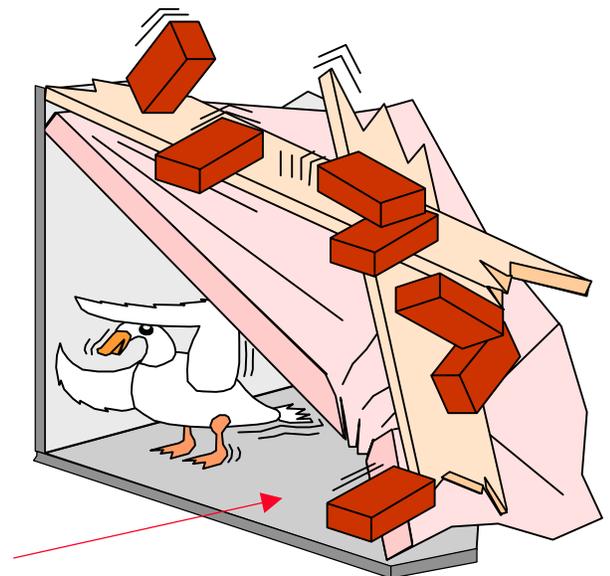
- Pull to the side and stop.
- Don't stop under wires or an overpass.
- Wait in your car for the shaking to stop.

Outside:

- Move away from buildings, trees, wires.

In a Wheelchair:

- Stay where you are unless your surroundings are very hazardous.
- Move to cover if possible.
- Lock wheels.
- Protect your face and head.



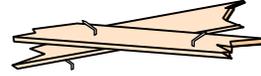
The "triangle of life"



After an earthquake there will be panic. The following are some guidelines for the period just after an earthquake.

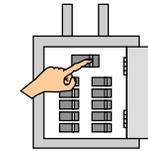
Wear protective gear:

- Hat
- Goggles
- Mask
- Gloves
- Boots



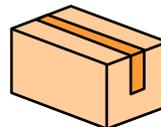
Immediate Actions:

- Evacuate if necessary, meet outside.
- Check for injuries, apply first aid.
- Put out small fires.
- Be careful of broken glass, nails, and other sharp objects. Wear shoes and leather gloves for protection.
- Close the main water shutoff valve to seal off water in the house.
- Shut off electrical if necessary to control fires.
- If you smell gas, open a door or window and leave immediately. Shut the gas valve. Once shut off, only the utility company should restore gas.
- Check your neighbors home for gas leaks, since a gas explosion could affect several houses.
- Use flashlights rather than a flame. Do not turn on lights or create a spark due to the danger of leaking gas.



Follow-up actions:

- Tend to injuries.
- Listen to the radio for instructions.
- Clean up broken glass, spilled chemicals.
- Gather supplies and be prepared to evacuate.
- Open cabinets and closets carefully as the contents may have shifted.
- Be prepared for aftershocks.
- Purify drinking water.
- Practice strict sanitation.





Tornados:

Tornados develop from severe thunderstorms in warm, moist, unstable air along and ahead of cold fronts. The following information should be useful to you in preparing for tornados. The rotating wind may exceed 200 miles per hour as the tornado travels along at 10 to 70 miles per hour. The base of the tornado can be as much as ½ mile wide, and reach 33,000 feet in height.

Tornado preparation:

- Pick a safe place in your home where family members could gather during a tornado.
 - Stay away from windows
 - Underground is safest
 - If there is no basement or storm shelter, consider an interior hallway or room on the lowest floor
 - Put as many walls as possible between you and the outside
- In a high-rise building
 - Go to an interior hallway in the center of the building
- In a mobile home
 - Go to a safe place in a nearby sturdy building
- Know about the warning signals in your area, such as sirens.
- If you can, purchase a weather alert radio, which is tuned to the National Weather Service. These will provide the most up-to-date information.
- Plan to bring a radio, TV, or weather alert with you to keep abreast of latest conditions.
- Check with your children's school or day care to learn of their tornado emergency plans.
- Discuss tornados with your family and practice periodic tornado drills to reduce the fear and let everyone know how to respond.
- Make a list of items to bring with you into your safe room in the event of a tornado.



Tornado watch:

- Means conditions are favorable for a tornado to develop.
- Listen to the radio or TV for the latest information or updated weather advisories.
- Keep your weather alert radio handy if you have one.
- Be aware of changing conditions. Large hail, blowing debris, or the sound of an approaching tornado may alert you. Many people say an approaching tornado sounds like a freight train.

Tornado warning:

- Means that a tornado has been spotted on radar or by observers on the ground.
- If you hear outdoor warning sirens, or hear that a tornado is in your area on the radio or TV, take cover immediately.
- If you are in your home, go to a small room with no windows, like a bathroom or closet. In the bathroom, get in the tub and cover yourself with a mattress or pillows and brace yourself.
- If you are in a high-rise, go to an interior hallway.
- If you are in a mobile home, leave and go to a sturdy building. The chance of death is 20 times greater in a mobile home.
- If you are in your car, leave and seek shelter in a sturdy building. If no building is available, get as low to the ground as you can and cover your head.
- Avoid places with wide-span roofs, such as auditoriums, cafeterias, or shopping malls, as these roofs may collapse in a tornado.
- Avoid windows, doors, chimneys, fireplaces, and outside walls.



Tornado categories:

Category	Windspeed	Damage
F0	Up to 72	Light
F1	73-112	Moderate
F2	113-157	Considerable
F3	158-206	Severe
F4	207-260	Devastating
F5	More than 260	Incredible

F1



F2



F3



F4





Flooding:

Flooding preparation:

- Develop a family disaster plan.
- Learn about your area's flood risk.
- Talk to your insurance agent to see if you are covered for flooding.
- Develop an evacuation plan.
- Discuss floods with your family.
- If you can, purchase a weather alert radio, which is tuned to the National Weather Service. These will provide the most up-to-date information.
- Keep your valuable papers in a safe place. A safe-deposit box at a bank is best.

Flooding general rules:

- If you come upon flood waters, move to higher ground or go another way.
- Do not try to walk or swim in flood waters. You may not be able to tell from the surface how fast the water is flowing, but even six inches of fast-flowing water can knock you off your feet. Also, there may be hidden holes or submerged debris. Many people are swept away while trying to wade through flood waters, resulting in injury or death.
- Do not try to drive through flood waters. Vehicles can be swept away in two feet of flowing water. Most flood fatalities are caused by people attempting to drive through water, or people playing in flood waters.
- Watch out for snakes in flooded areas.
- Stream banks may be unstable.
- Throw away all food that has come into contact with flood waters. Try not to allow your body to come into contact with flood waters due to the high amount of bacteria and germs in the water.



Flood watch:

- Means conditions are favorable for the development of flooding conditions in 12 to 36 hours.
- Listen to the radio or TV for the latest information or updated weather advisories.
- Be aware of changing conditions and be prepared to respond quickly.
- If you are in a flood-prone area:
 - Fill bathtubs, sinks, and plastic bottles with clean water in case the normal water supply becomes contaminated.
 - Move your furniture and valuables to higher floors of your home.
 - If you are instructed by authorities, turn off all utilities to prevent fires.
 - Bring in outdoor furniture and belongings.
 - Be ready to evacuate with your valuable papers and disaster kit if advised to do so by local authorities.
 - Fill your car's gas tank in case evacuation is necessary.

Flood warning:

- Means that a hazardous event is occurring or is imminent in about 30 minutes to an hour.
- Listen to the radio or TV for the latest information or updated weather advisories.
- Be aware of changing conditions and be prepared to respond quickly.
- Be prepared to evacuate on the advice of local authorities.



Winter storms:

Winter storm preparation:

- Ensure your vehicles have been winterized by adding anti-freeze, and having a good battery.
- If you can, purchase a weather alert radio, which is tuned to the National Weather Service. These provide the most up-to-date weather information.

Winter storm advisory:

- Means conditions are favorable for a winter storm to develop.
- Listen to the radio or TV for the latest information or updated weather advisories.
- Keep your weather alert radio handy if you have one.
- Be aware of changing conditions.

Winter storm warning:

- Means that a winter storm is imminent.
- In the event of snow, be careful not to over-exert yourself. Overexertion can cause heart attacks.
- Keep cabinet doors open and water dripping to keep pipes from freezing.
- Wear several layers of clothes, but avoid tight clothing.
- Keep your head covered.
- Hypothermia can result if you do not keep yourself warm.

Hypothermia risk:

- Elderly
- Babies
- People involved in an accident
- People with mental or heart problems



Hypothermia avoidance:

- Wear clothing in layers (wool is best).
- Wear a hat at all times.
- Stay dry.
- Avoid the wind, reduce your exposure.
- Drink plenty of fluids and hot drinks.
- Do not drink alcohol.
- Keep well nourished, especially fruit and nuts.
- Most hypothermia cases develop in air temperatures between 30 and 50 degrees.

Hypothermia warning signs:

- Individual is shivering violently, and suddenly stops.
- Difficulty speaking, walking, performing tasks with hands.
- Confusion, difficulty paying attention.
- Slow, shallow breathing.
- Slow, weak pulse.
- Apparent exhaustion.
- Pale, puffy face.
- Sleepy (to sleep is to die!).

Hypothermia action:

- Keep the victim calm.
- If breathing has stopped or there is no pulse, begin CPR.
- Contact emergency services.
- Remove cold, wet clothing and replace with warm, dry clothing.
- Protect the person with blankets or other covering, especially the head and neck.
- Do not give hot food or drinks, or alcohol.
- Do not put the person in a hot tub or shower.
- Do not rub extremities.



Shelter in place:

One of the basic instructions you may be given during a chemical emergency is to shelter-in-place. This is a precaution aimed to keep you and your family safe while remaining in your home. You could be notified by sirens, local TV and radio, or officials such as police, fire or EMA may go door-to-door.

If you are told to shelter-in-place, complete the following tasks.

- Go inside. Bring in all family members and pets. While gathering your family, you can provide a minimal amount of breathing protection by covering your mouth and nose with a damp cloth. Many chemicals cause damage to breathing passages so it is important to protect yourself.
- Listen to the radio or TV.
- Fill up bathtubs, sinks, and large containers with water and shutoff valve if you can. Water supplies may become contaminated so you should preserve all the water you can.
- Close and lock all doors and windows. Close the window shades, blinds, or curtains to reduce personal injury in the event of explosion.
- Close off nonessential rooms such as storage areas, laundry rooms, and extra bedrooms.
- Turn off all fans, heating, and air conditioning systems, close the fireplace damper.
- Seal the house as much as possible. You can use duct tape or masking tape to seal cracks around doors. You can also use tape and plastic sheeting cut from garbage bags. Try to cover the windows completely with plastic sheets. Wet towels can also be used to seal cracks, especially at the bottom of doors.
- Take your family and pets to a safe room, one that is best sealed from the outside. This should be an above-ground room (not a basement) with the fewest windows and doors. Some chemicals are heavier than air, and may seep into basements, even if the windows are closed.
- Take your radio, TV, and disaster kit with you.
- Stay in the safe room and listen to the radio or TV until your area has been given the all-clear, or you are told to evacuate.

Chapter 2

Fire Suppression



Fire Suppression



CERT Organization:

Fire Department Liaison

CERT Team Leader

- Organize teams
- Documentation
- Situation status

Fire Suppression

- Small fires
- Shut off utilities
- Control Haz-Mat

Search & Rescue

- Search
- Rescue
- Evacuation

Medical

- Triage
- Treatment
- Transport
- Morgue
- Supply

Logistics

- Communications
- Staffing
- Equipment
- Supplies
- Food



Fire Suppression



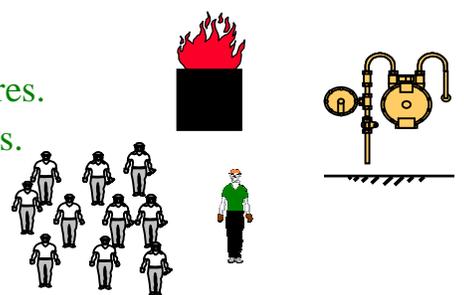
During and immediately after a disaster, the first priorities of professional fire services are life safety and extinguishing MAJOR fires. They may be hampered by impassable roads, inadequate water supply, weather conditions, burning material, and inadequate resources to deal with the number of existing major fires. During this time, CERT fire suppression groups play a very important role in firefighting and fire prevention.

Portable fire extinguishers are an invaluable firefighting tool. They can be used to eliminate small fires that might otherwise grow into larger, more destructive fires and to prevent the loss of life and property.

Potential fuel sources include natural gas and electrical utilities as well as hazardous materials. Understanding hazardous materials and other fire hazards in the home and workplace will help you determine the appropriate course of action to take.

Your role:

- Putting out small fires before they become major fires.
- Preventing additional fires by removing fuel sources.
- Assisting with evacuations where necessary.

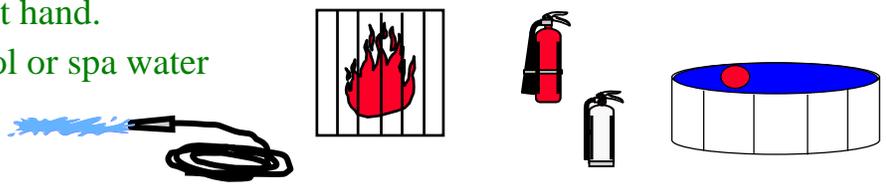


Firefighting resources:

A variety of resources may be available for fire suppression, including:

- Portable fire extinguishers. Portable fire extinguishers are an invaluable tool for putting out small fires. A well prepared home or office should have at least two.
- Confinement. In interior spaces, the ability to confine the fire by closing doors is a valuable tactic. Close doors to rooms and hallways to restrict the spread of smoke and heat while you escape to the outside.
- “Creative” resources. Sometimes it is necessary to make use of other materials and equipment that may be at hand.

- swimming pool or spa water
- dirt or sand
- garden hose



The type of fuel will determine which fire suppression method you should use. As a CERT you should have at least one ABC fire extinguisher in your disaster kit.



Electrical hazards:

When misused or neglected, electricity can cause serious injury or death.

With a little effort, however, most electrical hazards can be eliminated.

Ways to reduce electrical hazards include:

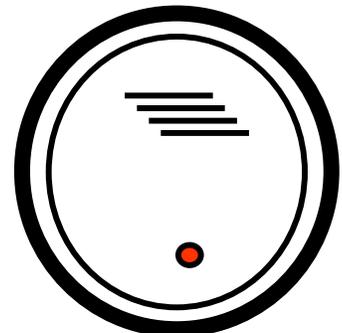
- Avoid the “electrical octopus”
- Do not run cords under carpets
- Replace broken or frayed cords
- Maintain appliances



Smoke detectors and carbon monoxide detectors save lives:

Working smoke detectors are essential in every household. Homes with working smoke detectors typically have a death rate that is 40-50% less than the rate of homes without detectors. It is necessary to practice home fire drills to be certain everyone is familiar with the smoke detector alarm signal.

- Install and maintain them
- Change batteries twice a year
- Smoke detectors should be replaced every ten years



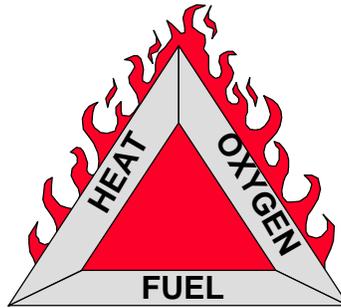


Fire Suppression



Fire triangle:

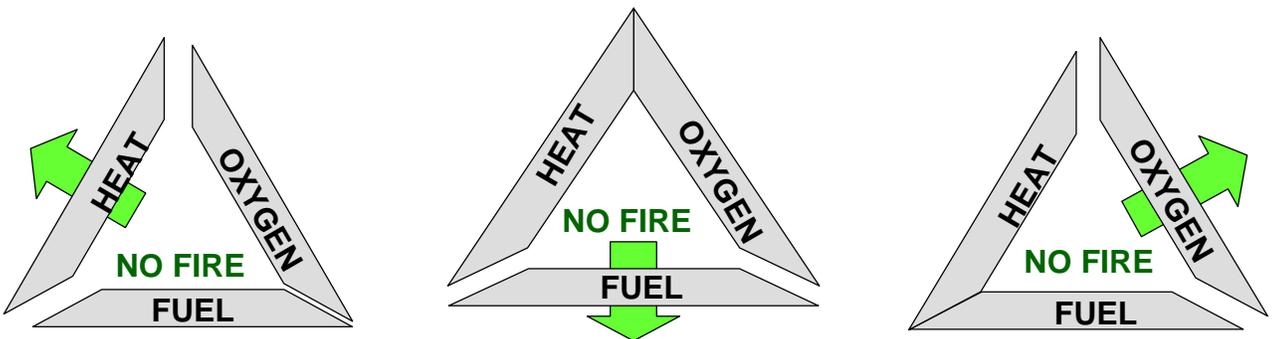
Three elements, in the proper proportions will produce fire. Extinguishment is possible when one of the three elements is missing as shown below.



If any element is removed, there will be no fire

Fire requires three elements to exist:

- **Heat.** The temperature at which a material produces a vapor, and the temperature at which vapors will burn. Vapors will self-ignite if the temperature is hot enough.
- **Fuel.** The fuel for a fire may be solid, liquid, or gas. The type and quantity of the fuel will determine which method should be used to extinguish the fire.
- **Oxygen.** Fires will burn vigorously in any atmosphere of at least 20% oxygen. Without oxygen, fuel could be heated until entirely vaporized, and it would not burn.





Fire Suppression



Classes of fire:



Ordinary Combustibles

Class A:

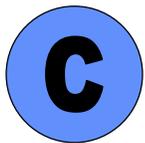
- Ordinary combustibles (paper, wood, rubber, some plastics)



Flammable Liquids

Class B:

- Flammable liquids (gasoline, oil, kitchen grease, paints, solvents)
- Combustible liquids – burning vapor (charcoal lighter fluid, kerosene, diesel fuel)



Electrical Equipment

Class C:

- Live electrical equipment



Combustible Metals

Class D:

- Combustible Metals

Types of fire extinguishers:

There are types of extinguishers that CERT will use:

- Water
- Dry chemical or ABC
- Carbon dioxide or CO2

There is a fourth type of extinguisher that will extinguish Class D fires.

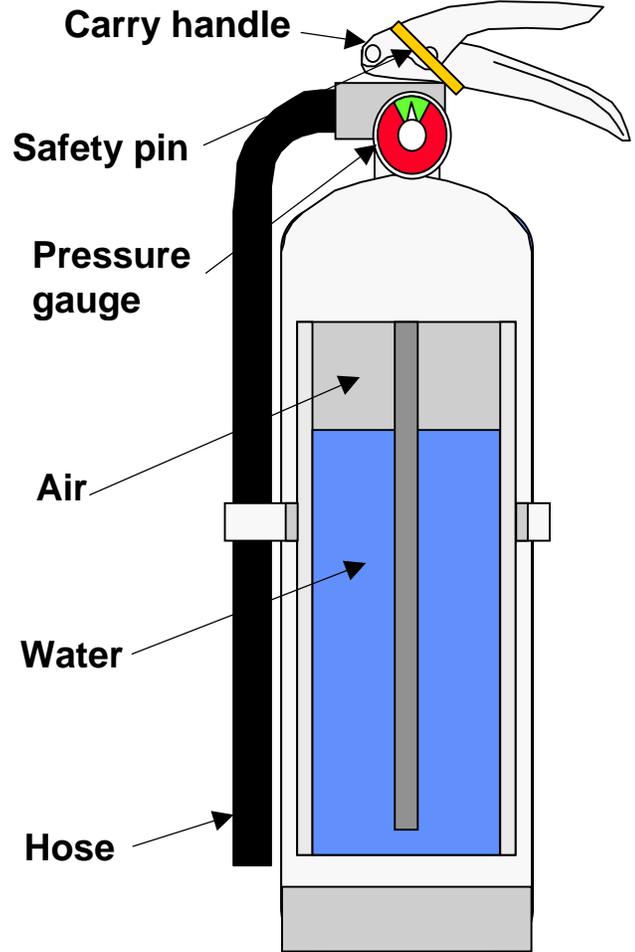
These extinguishers are normally only found in commercial and industrial settings.



Fire Suppression



Water fire extinguisher:
Extinguishing agent: Water



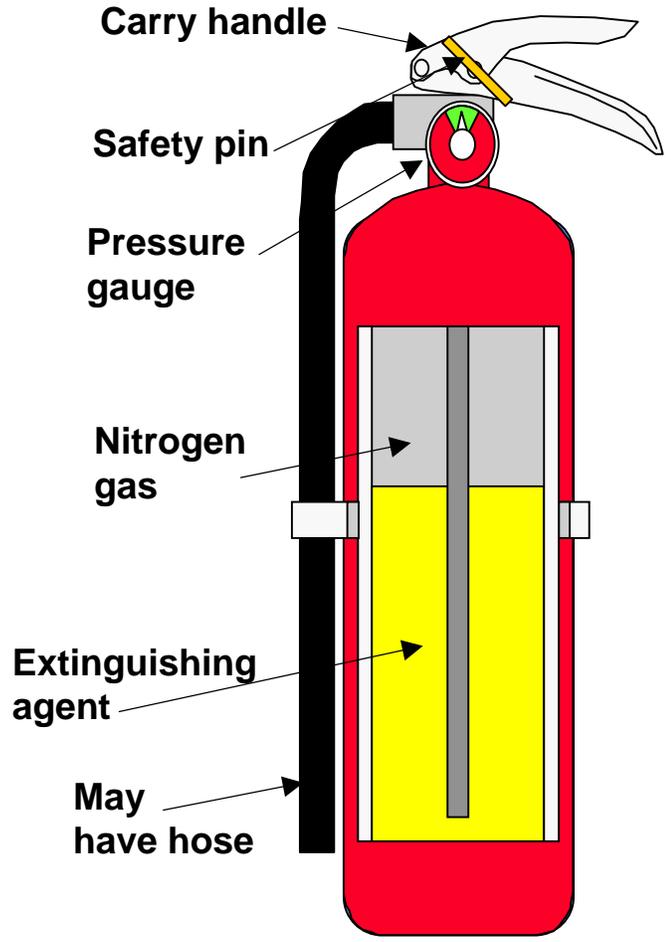
Ordinary Combustibles



Fire Suppression



Dry chemical or ABC fire extinguisher:
Extinguishing agent: Monoammonium Phosphate



A

Ordinary Combustibles

B

Flammable Liquids

C

Electrical Equipment

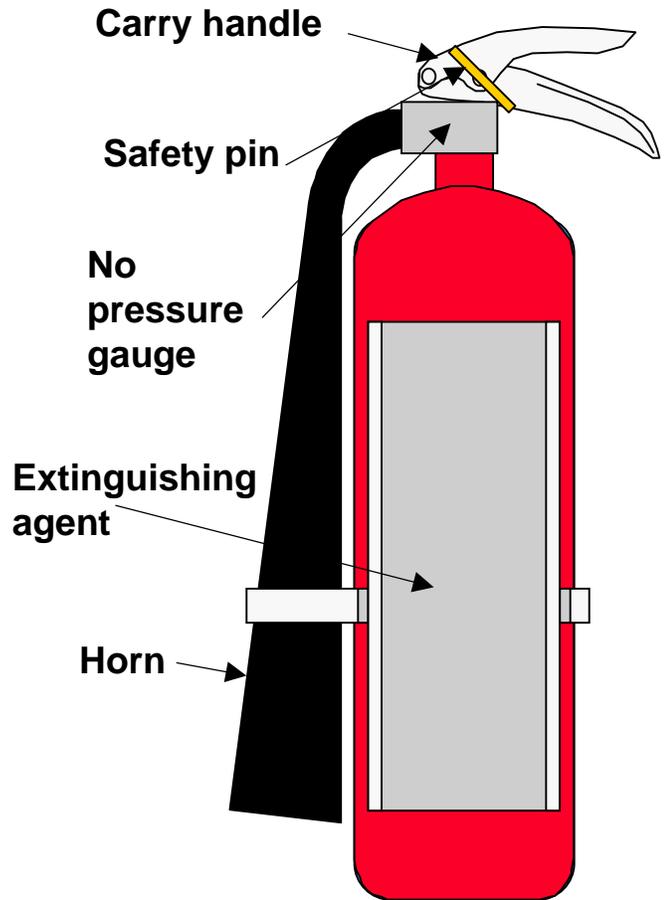


Fire Suppression



Carbon dioxide or CO2 fire extinguisher:

Extinguishing agent: Carbon Dioxide



B



Flammable Liquids

C



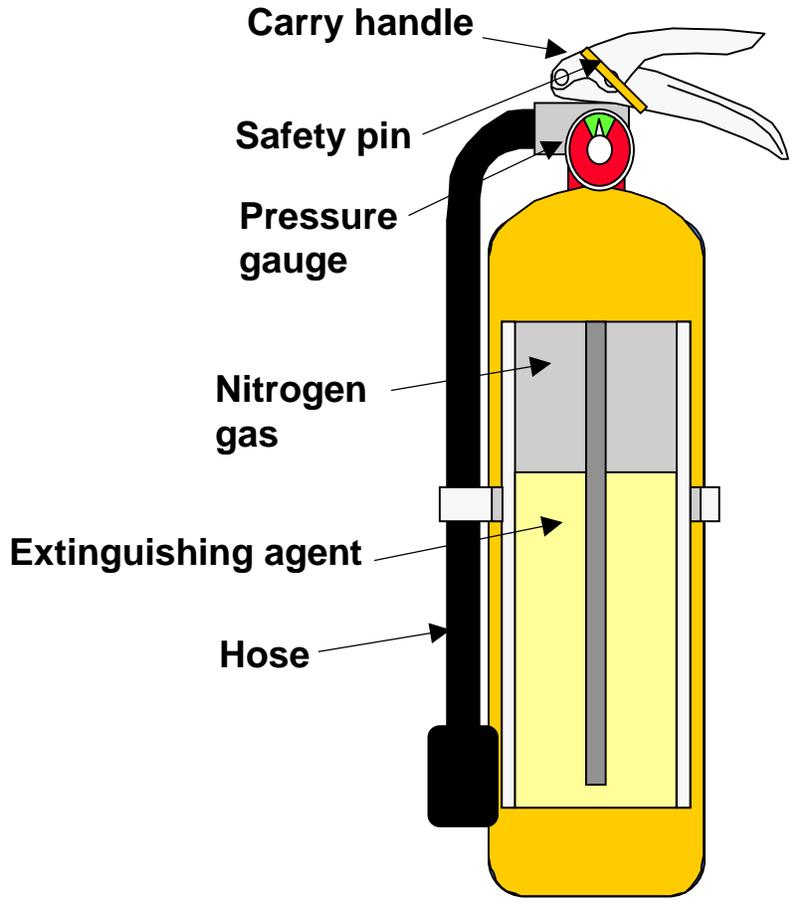
Electrical Equipment



Fire Suppression



Class D or combustible metal fire extinguisher:
Extinguishing agent: Sodium Chloride or Copper Agent



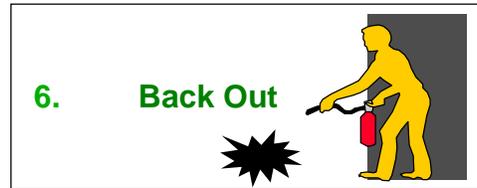
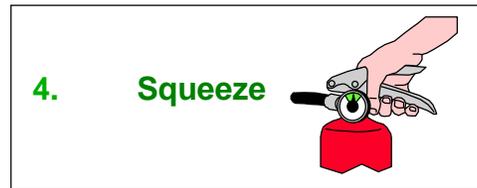
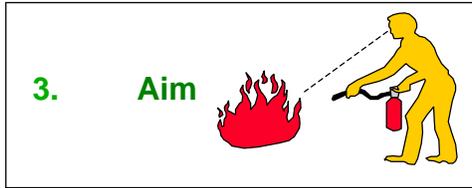
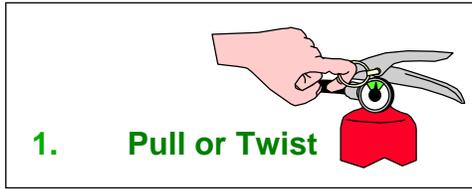
Combustible Metals



Fire Suppression



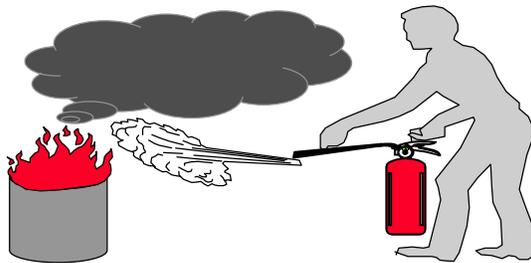
Operating a fire extinguisher:



Note: Hold fire extinguisher in upright position

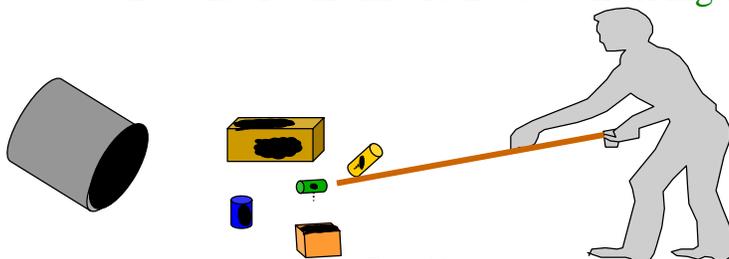
How big of a fire can I fight ?

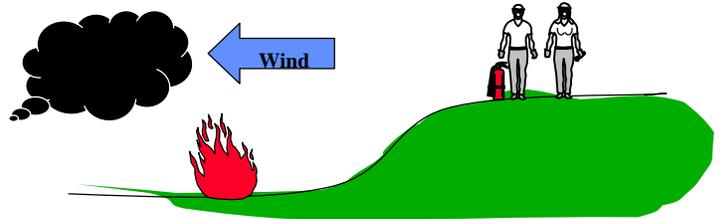
- Using a 10 lb: fire extinguisher you should be able to extinguish a 32 gallon trash can fire.



Overhaul:

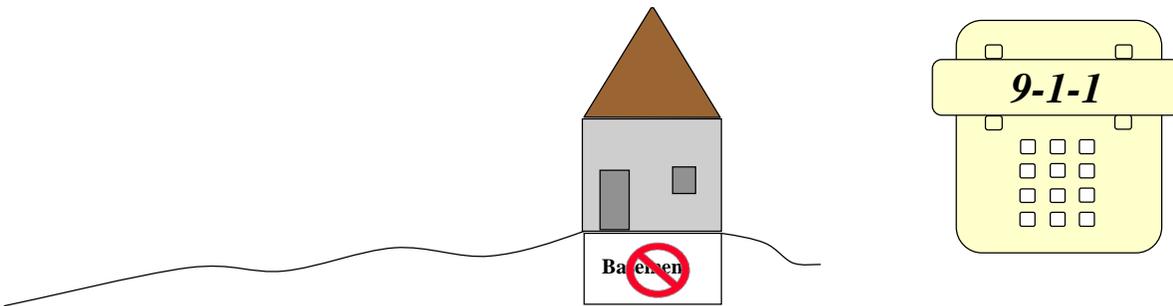
- After extinguishing a Class A fire the smoldering material should be separated and wet down to ensure all embers have been extinguished.





Basic safety rules:

- Stay up-hill and up-wind
- Never go into a basement
- Always call 911 BEFORE you attempt to fight a fire.



How many fire extinguishers do I need ?

- At least two for each floor of your house.
- One for your garage.
- One for each vehicle and boat.

Where do I purchase fire extinguishers ?

- Purchase at local hardware stores, discount stores, or fire extinguisher dealers.

Monthly inspection:

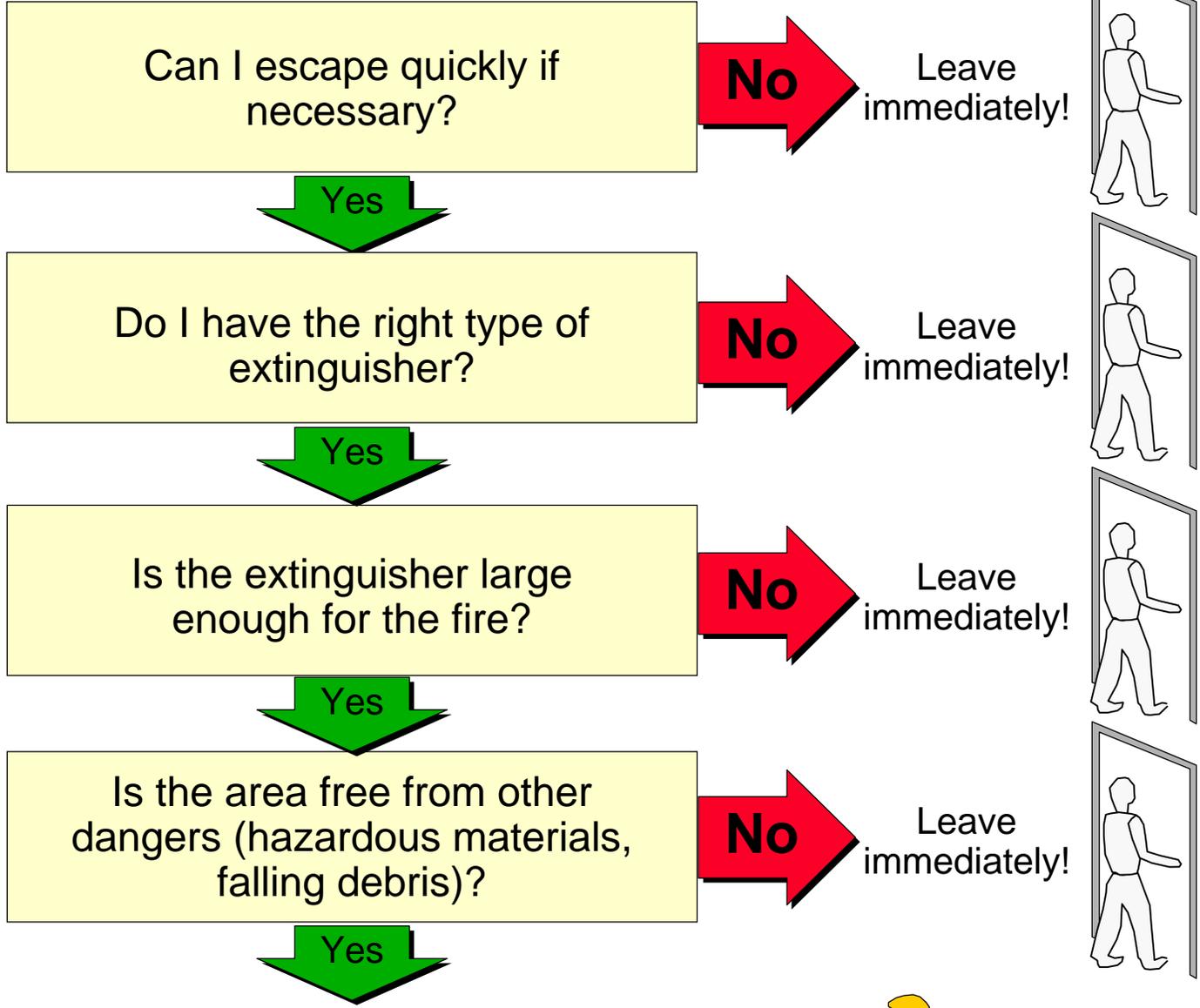
- Is the fire extinguisher where it should be ?
- Are all of the parts there and is the safety pin in place ?
- Is the needle on the gauge on the “green” or full mark ?
- For ABC extinguishers turn upside down and tap on the bottom.
- Initial and date tag.



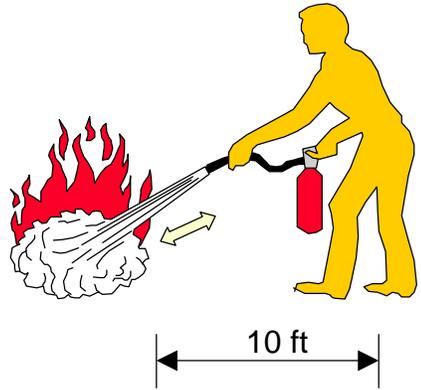
Fire Suppression



Deciding to use a fire extinguisher:



Extinguish the fire!



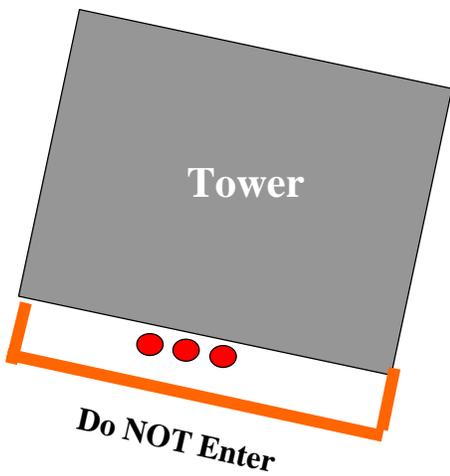


Fire Suppression

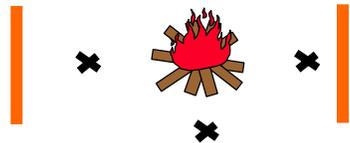


Safety briefing

- Mask is required
- Medical conditions
- Scared of fire
- Stay behind line
- Uphill upwind
- Stay with instructor
- If extinguisher runs out
- Extinguisher won't stop
- Safety whistle
- Release forms



Class B



Class A

Chapter 3

Medical First-Aid



CERT Organization:

Fire Department Liaison

CERT Team Leader

- Organize teams
- Documentation
- Situation status

Fire Suppression

- Small fires
- Shut off utilities
- Control Haz-Mat

Search & Rescue

- Search
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First Aid



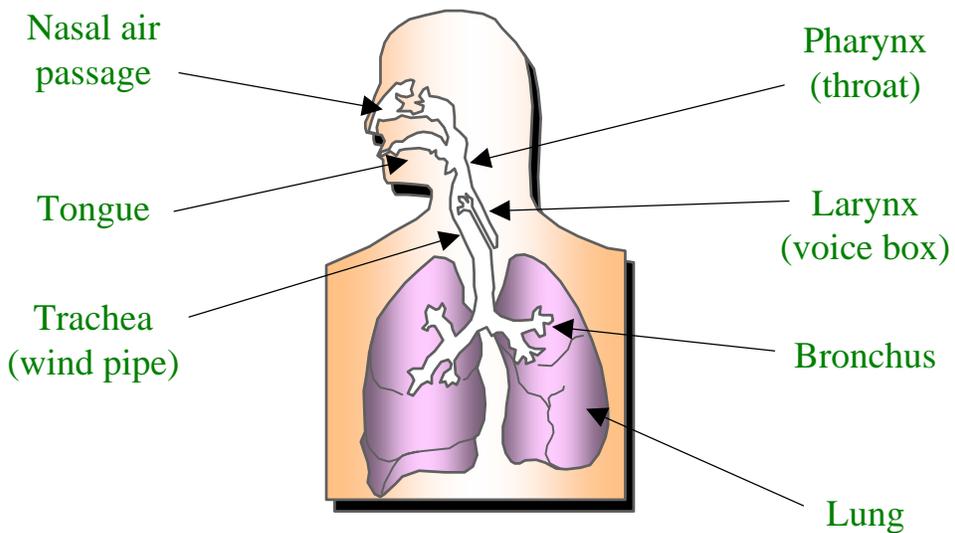
Priority of disaster medical workers:

Airway

Breathing

Circulation (bleeding and shock)

The respiratory system:





First Aid



Airway obstruction:

Airway obstructed by relaxed tongue

Airway obstructed by foreign object



Airway open

Airway closed

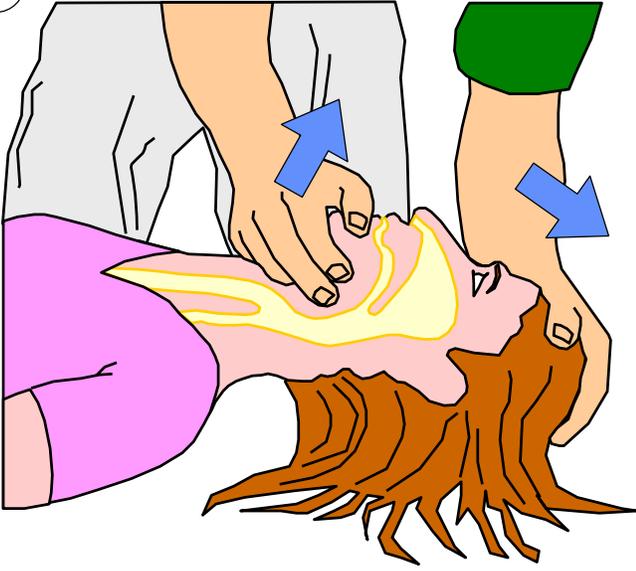
Airway blocked

1. Shake the victim by touching the shoulder and shout, "Can you hear me?"
2. If the victim does not respond, place one hand on the forehead.
3. Place two fingers of the other hand under the chin and tilt the jaw upward while tilting the head back slightly.
4. Look for a chest rise.
5. Listen for air exchange.
6. Feel for abdominal movement.

1 2



3



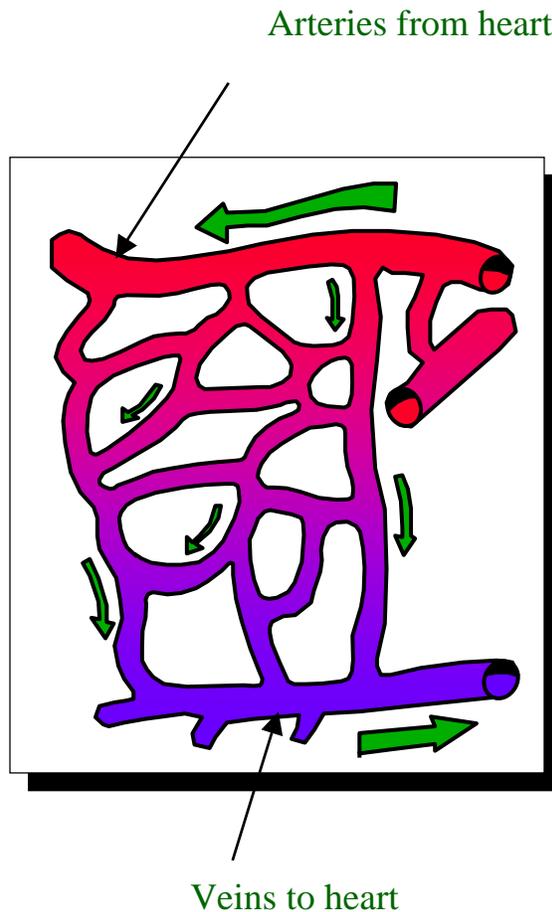
4 5 6





Circulation – controlling bleeding:

- Bleeding must be controlled within a short period of time or victim may go into shock and possibly die.
- The average adult has about 5 liters of blood. The loss of 1 liter poses a risk of death.
- Three main types of bleeding:
 - Arterial (spurting blood flow)
 - Venous (flowing blood)
 - Capillary (oozing flow)



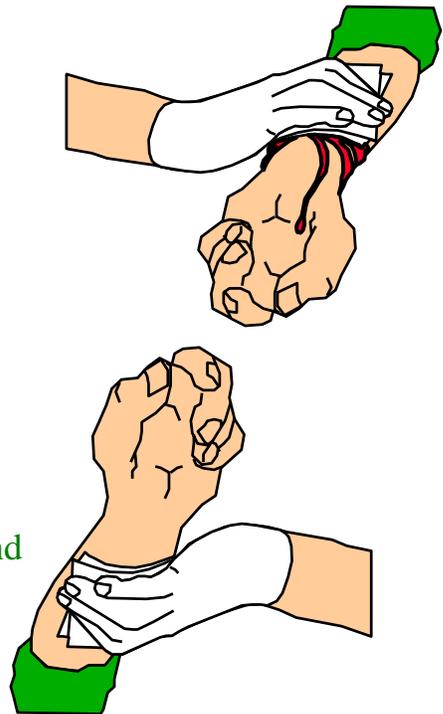


First Aid



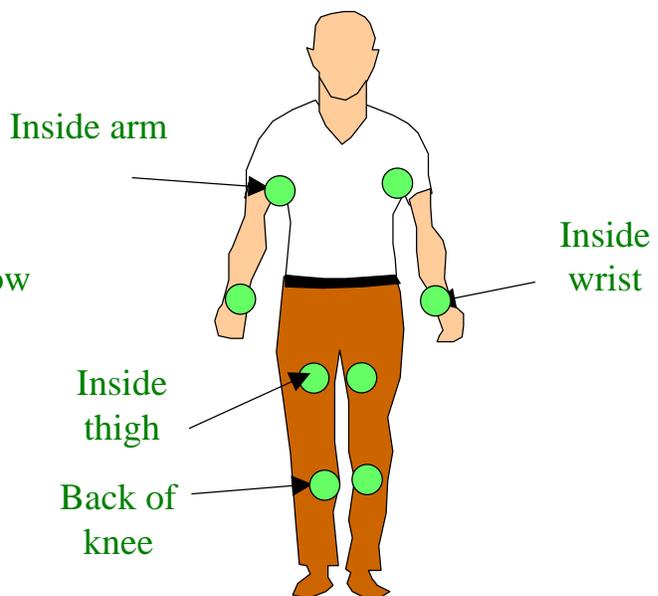
Circulation – controlling bleeding:

- Direct pressure to the wound. Place a clean pad over the wound, wrap wound firmly with a pressure bandage.
- Elevate the wound above the heart. 95% of all bleeding can be controlled with direct pressure and elevation.



Pressure points:

- Pressure points can be used to slow the flow of blood to the wound.





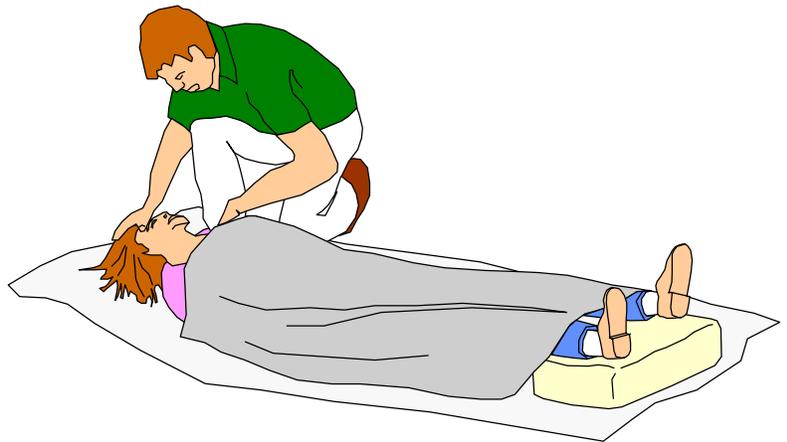
Circulation – shock:

- Shock results from ineffective circulation of blood.
- Shock can lead to the death of cells, tissues, and entire organs.
- Symptoms of shock:
 - Rapid, shallow breathing at a rate greater than 30 times per minute.
 - Cold, pale skin
 - Capillary refill greater than 2 seconds (blanch test)
 - Failure to respond to simple commands, such as “squeeze my hand”



Treating shock:

- Lay the victim on his back
- Elevate the feet 6 to 10 inches
- Maintain an open airway
- Control obvious bleeding
- Maintain body temperature by covering the ground and the victim with a blanket.
- Do not give the person anything to eat or drink.

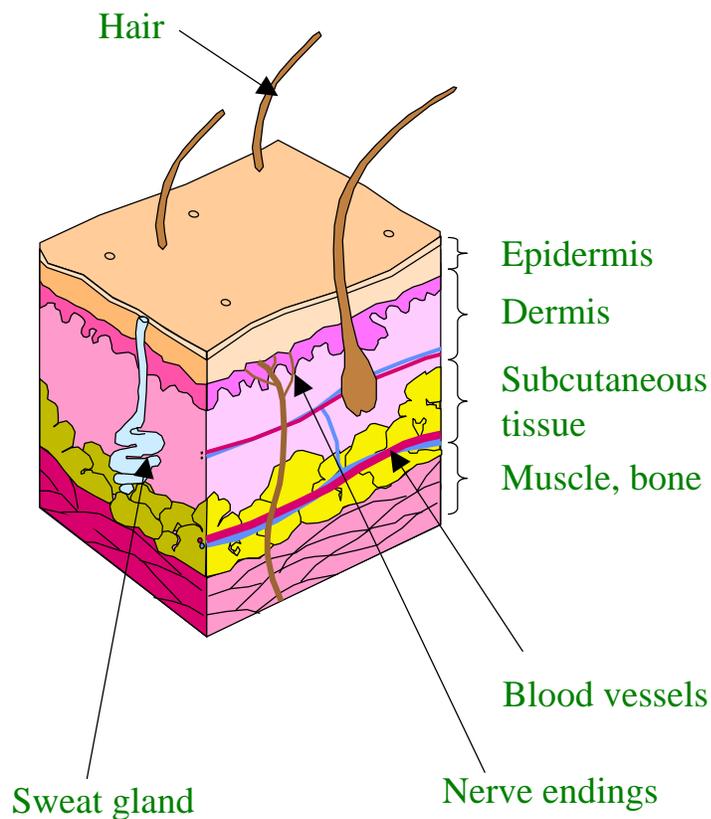


If the face is pale, raise the tail.
If the face is red, raise the head.



Skin layers:

- **Epidermis**
 - The outer layer of skin
 - Contains nerve endings
 - Penetrated by hairs
- **Dermis**
 - The middle layer of skin
 - Contains blood vessels, oil glands, hair follicles, sweat glands
- **Subcutaneous layer**
 - Innermost layer of skin
 - Contains blood vessels and overlies the muscle and fat cells

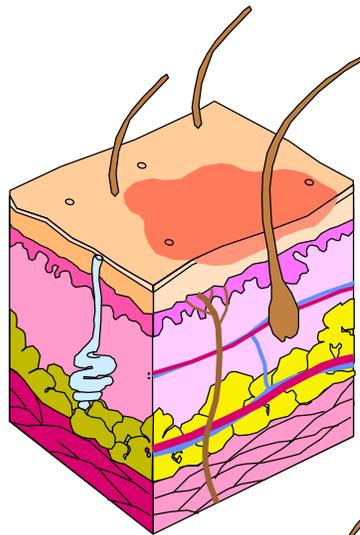




Classification of burns:

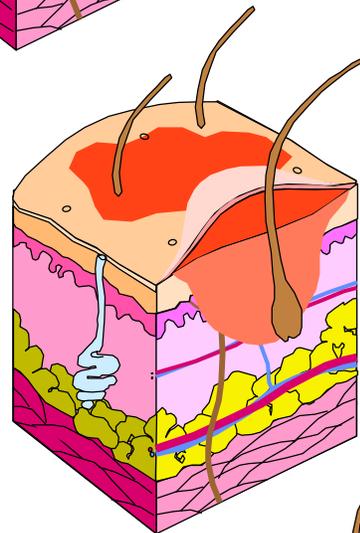
■ 1st Degree

- Epidermis
- Pain
- Redness
- Swelling



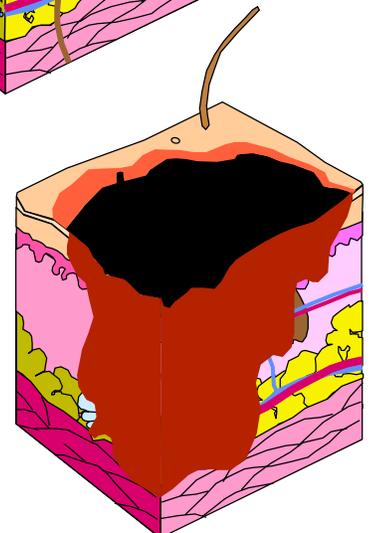
■ 2nd Degree

- Epidermis
- Partial destruction of dermis
- Blistering



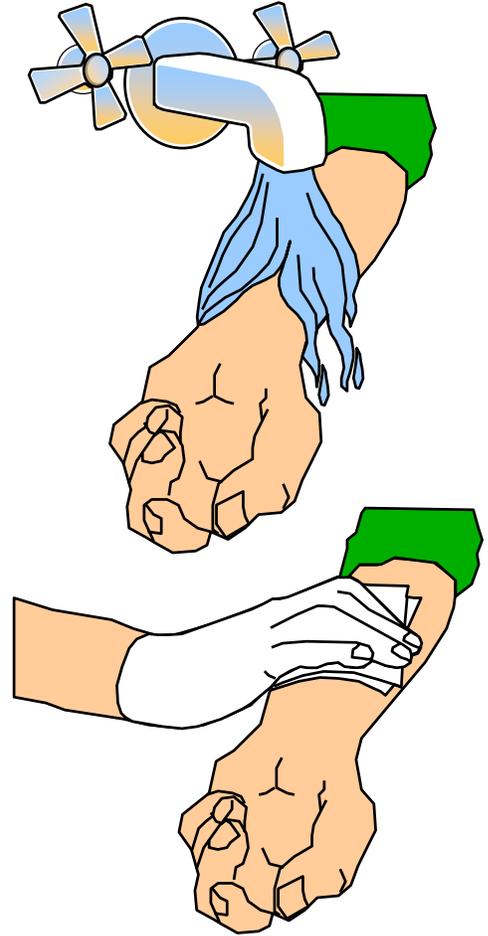
■ 3rd Degree

- Complete destruction of Epidermis and Dermis
- Possible Subcutaneous damage
- Extensive tissue damage



Burn treatment:

- Remove the victim from the burn source
 - Put out any flames
 - Remove smoldering clothing
- Cool the burn
 - Immerse in cool water, under a kitchen or bathroom faucet, or use a garden hose for a maximum of 1 minute.
 - Use clean water if possible
- Cover the burn
 - Cover the burn with a clean towel or sheet that has been soaked in cool water.
 - Do not cover more than 15% of the body (the size of one arm) to prevent hypothermia.



- Do not use ice, which can cause hypothermia.
- Do not apply antiseptics, ointments, or other remedies.
- Do not remove shreds of tissue, break blisters, or remove clothing that sticks to the skin. Cut burned clothing around the burn.

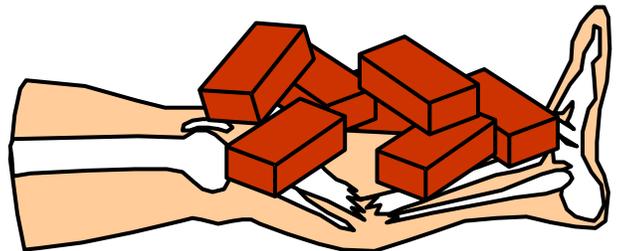
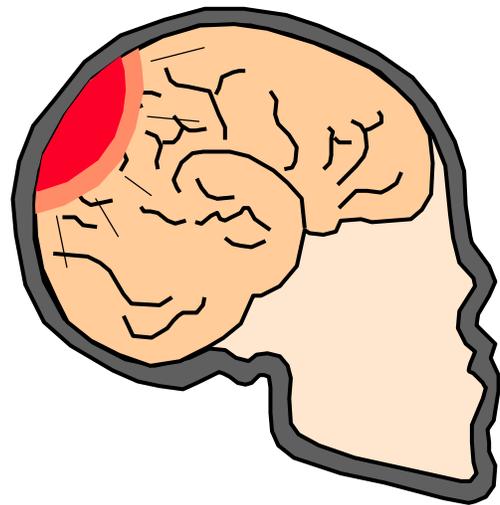


Types of injury from trauma:

- **Penetrating injury**
 - Lacerations (open wounds)
 - Impaled objects

- **Blunt trauma**
 - Damage to deeper tissues by impact over a larger area
 - Can cause internal bleeding, organ rupture, bruising, fractures, brain injury, or other injuries

- **Crushing injury**
 - Force applied to the body over a relatively long period of time





Primary considerations in wound care:

- Control bleeding
- Prevent secondary infection
- Show confidence
- Talk to victim
- Offer reassurance



General wound care:

- Clean the wound
 - Irrigate with water, soap and water, then water
 - Do not scrub the wound
- Apply a dressing directly to the wound
- Apply a bandage to hold the dressing in place
 - If capillary refill is slow, loosen the dressing
- In the absence of active bleeding
 - Remove the dressing every 4 to 6 hours
 - Flush the wound
 - Check for signs of infection at least every 4 to 6 hours
- Signs of infection
 - Swelling around the wound site
 - Discoloration
 - Discharge (pus) from the wound
 - Red striations (streaks) from the wound site
- If there is active bleeding (the dressing is soaked with blood)
 - Redress over the existing dressing
 - Maintain pressure and elevation

Wound care – traumatic amputation:

- Control bleeding
- Treat for shock
- If severed body parts can be found, save these parts
 - Wrap in a clean material
 - Place in a plastic bag if possible
 - Keep cool
 - Keep the severed part with the victim

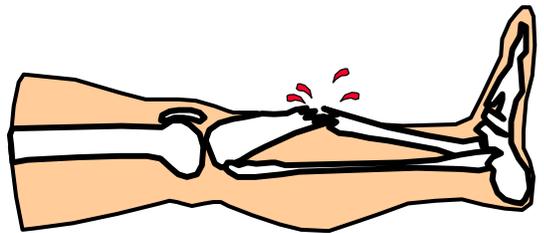
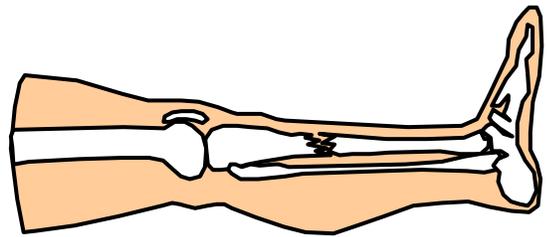


Wound care – impaled objects:

- Immobilize the affected body part
- Do not attempt to move or remove the object unless it is blocking the airway
- Try to control bleeding at the entrance and exit wounds without placing undue pressure on the foreign object
- Clean and dress the wound
- Wrap bulky dressings around the object to keep it from moving

Fracture classification:

- Closed
 - Broken bone with no associated wound
 - First aid may require only splinting
- Open
 - Broken bone with a wound that allows contaminants to enter into or around the fracture site
 - Risk of severe bleeding and infection



Treatment for an open fracture:

- Do not draw the exposed bone ends back into the tissue.
- Cover the wound with a sterile dressing.
- Do not irrigate the wound.
- Cover the exposed bone with a moist 4x4 dressing to keep it from drying out.
- Splint the fracture without disturbing the wound.

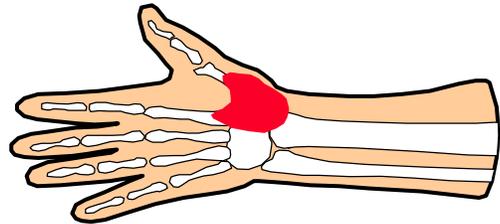


First Aid



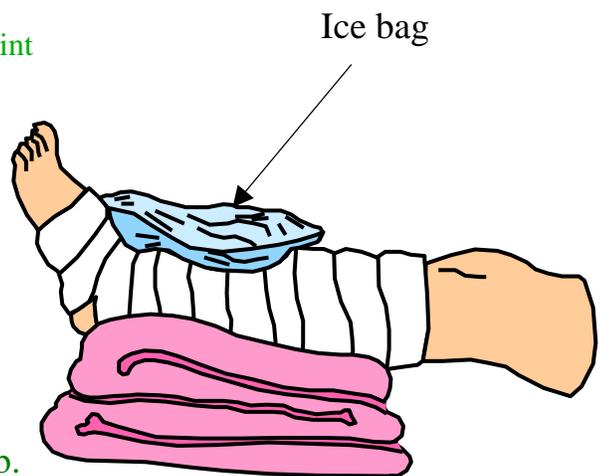
Dislocation:

- Injury to the ligaments around a joint.
- Results in separation of the bone from its normal position at a joint.
- Once dislocated, the bones lock in their new position.
- Commonly seen in fingers, shoulders, elbows, hips, and ankles.
- Appears similar to a fracture.
- Treat as a fracture.



Sprains:

- Stretching or tearing of ligaments at a joint.
- Usually caused by stretching or overextending the joint beyond its normal range of motion.
- Considered a partial dislocation, except that the bone will fall back to its original position.
- Commonly seen in ankles, knees, wrists, and fingers.
- Common symptoms:
 - Tenderness at the site of the injury
 - Swelling and/or bruising
 - Restricted use, or the loss of use of the joint



Care for sprains:

- Immobilize and elevate the sprained limb.
- Remove shoes, tight clothing, and jewelry from an injured area to prevent these items from acting as a tourniquet if swelling occurs.
- Do not attempt to treat the injury.



Nasal injuries:

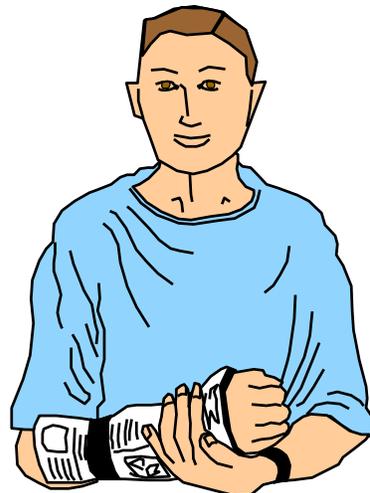
- Possible causes
 - Facial injuries
 - Skull fracture
 - Non-trauma related condition, such as a sinus infection or high blood pressure.
- Can lead to shock with high blood loss
- Control bleeding by
 - Pinching the nostrils together
 - Putting pressure on the upper lip just under the nose. Place a rolled gauze between the upper lip and gum and press against it with the fingers.
 - Have the victim sit slightly forward so that blood trickling down the throat will not be breathed into the lungs.
 - Keep the victim quiet.
 - Do not tilt the head back.

Splinting:

- Used for emergency immobilization
- Guidelines:
 - Support the injured area above and below the site of the injury, including the joints.
 - If possible, splint the injury in the position you find it.
 - Do not try to realign bones or joints.
 - After splinting, check for proper circulation.

Splint materials:

- Cardboard is most commonly used
 - Newspapers or magazines can also be used and held in place with cloth strips.





First Aid



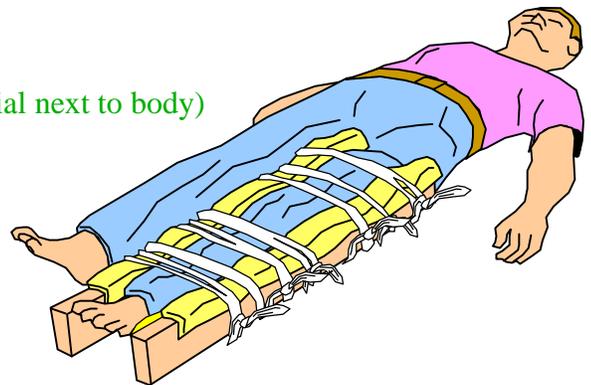
- **Soft materials**

- Roll towels, blankets, or pillows into a thick tube shape, place around injury, secure with cloth strips)



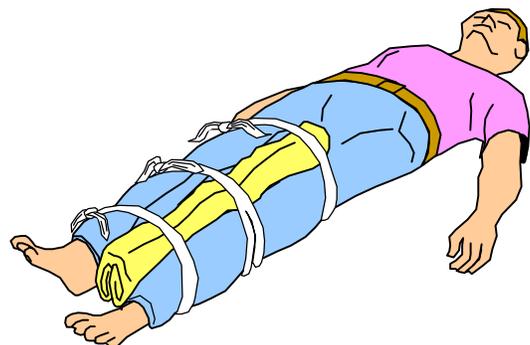
- **Rigid materials**

- Boards or metal strips (place soft material next to body)



- **Anatomical splint**

- A fractured bone can be secured to an adjacent un-fractured bone by binding the two together in several places.





Hypothermia signs:

- Early stages
 - Body temperature of 95 degrees Fahrenheit (37 degrees Celsius) or less
 - Redness or blueness of the skin
 - Numbness accompanied by shivering
 - Older people are especially susceptible
- Later stages
 - Slurred speech
 - Unpredictable behavior
 - Listlessness

Treating hypothermia:

- Remove wet clothing and wrap the victim in a blanket or sleeping bag, covering the head and neck.
- Protect the victim against the weather.
- If conscious, provide warm, sweet drinks and food (no alcohol).
- If unconscious, place victim in the recovery position on their left side.
- Do not re-warm the victim too quickly.

Frostbite symptoms:

- Coldness, stiffness, and a “prickly” sensation (as the area becomes numb, all sensation will disappear)
- Hardness of the skin
- Bluish-white discoloration of the affected areas

Treating frostbite:

- Transport the victim to shelter as soon as possible.
- Remove clothing and jewelry from the affected areas.
- Warm the frostbitten areas with skin-to-skin contact.
- If possible, elevate the the frostbitten area above the heart to reduce pain and swelling.
- Do not place the victim in front of a heat source.
- Do not massage the affected areas.

Chapter 4

Medical Triage



CERT Organization:

Fire Department Liaison

CERT Team Leader

- Organize teams
- Documentation
- Situation status

Fire Suppression

- Small fires
- Shut off utilities
- Control Haz-Mat

Search & Rescue

- Search
- Rescue
- Evacuation

Medical

- Triage
- Treatment
- Transport
- Morgue
- Supply

Logistics

- Communications
- Staffing
- Equipment
- Supplies
- Food



Triage



Three phases of death due to trauma:

Phase 1	Death within minutes due to overwhelming and irreversible damage to vital organs
Phase 2	Death within several hours due to excessive bleeding
Phase 3	Death in several days or weeks due to infection or multiple-system failure

All rescuers in medical operations must wear:

- Hat
- Goggles
- Mask
- Latex gloves
- Boots



Triage:

- The goal of triage is to do the greatest good for the greatest number of victims.
- Triage is a method to evaluate and sort victims by the immediacy of treatment needed.
- Includes the setting up of immediate or delayed treatment.
- Effective strategy when rescuers are overwhelmed, there are limited resources, or time is a critical factor.
- Areas to check

- Airway
- Breathing
- Circulation (bleeding and shock)
- Mental status





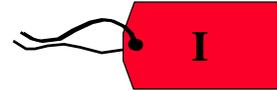
Triage



Triage categories:

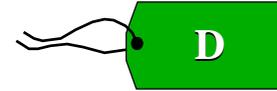
▪ **Immediate (I –red tag)**

- Victim has life-threatening (airway, bleeding, or shock) injuries that demand immediate attention



▪ **Delayed (D –green tag)**

- Injuries do not jeopardize the victim’s life if treatment is delayed



▪ **Dead (DEAD –black tag)**

- No respiration after two attempts to open the airway
- CPR is not performed in the disaster environment because of the tremendous amount of time and resources required.



Triage general rules:

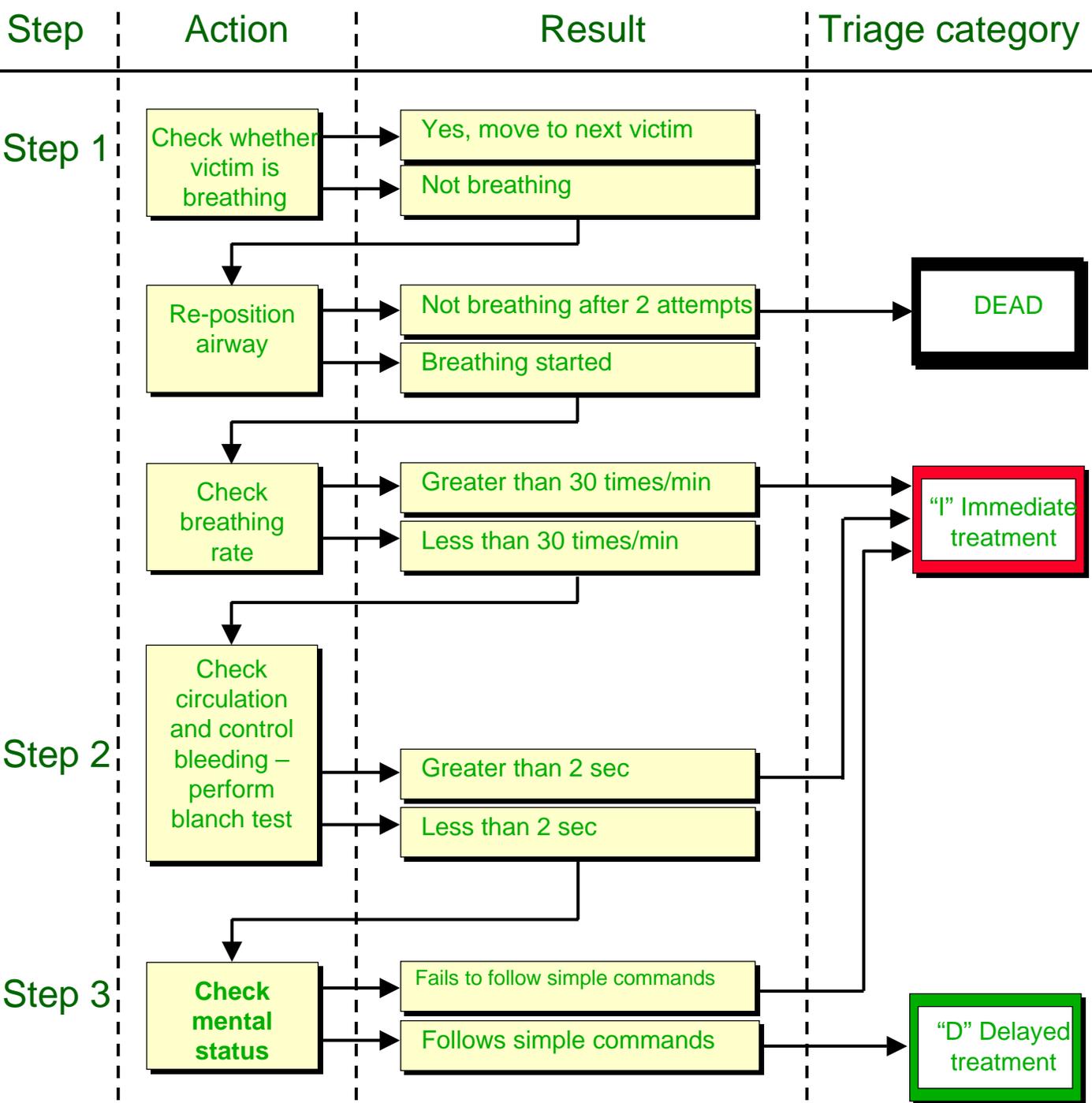
- **Stop, look, listen, think**
 - Think about how you will approach the task.
- **Conduct voice triage**
 - Call out, “Emergency response team. If you can walk, come to the sound of my voice”.
- **Follow a systematic route**
 - Start with victims closest to you and work outward
- **Conduct triage evaluation**
 - Evaluate victims (Airway, Breathing, and Circulation) and tag I (immediate), D (delayed), or DEAD
 - Everyone must get a tag
- **Treat “I” victims immediately**
 - Initiate airway management, bleeding control and/or treatment for shock
- **Document results**



Triage



Performing triage evaluation:





Triage



Triage pitfalls:

- Inadequate medical size-up
- No team plan/organization/goal
- Indecisive leadership
- Too much focus on one injury
- Treatment (rather than triage) is performed

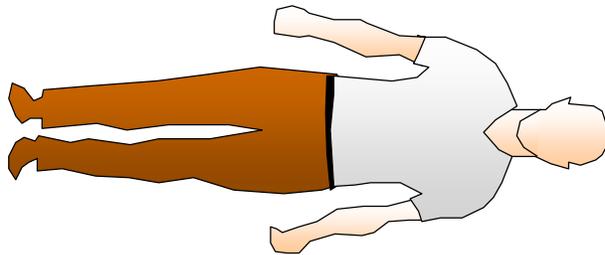
Conducting head to toe assessments:

- Do triage first (airway, breathing, circulation/shock)
- Head to toe assessment
 - Head
 - Neck
 - Shoulders
 - Chest
 - Abdomen
 - Pelvis
 - Legs
 - Arms
 - Back

Airway

Breathing

Circulation/shock



General things to look for during assessment (SAMPLE):

Signs and symptoms

Allergies

Medicines

Past medical history (pertinent)

Last meal

Events leading up to the illness or injury

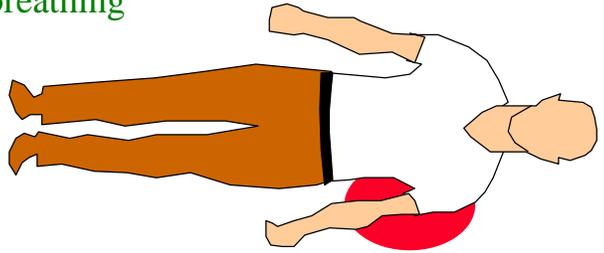


Triage



Specific things to look for during an assessment:

- Signs of shock
- Airway obstructions
- Labored, shallow, or otherwise difficult breathing
- Excessive bleeding
- Bruising
- Swelling
- Severe pain
- Disfigurement



Note: complete your head-to-toe assessment. Do not become fixed on one injury

Documentation of victims:

- Available identifying information
- Description (age, sex, body build, height, weight)
- Clothing
- Injuries
- Treatment
- Transfer location

Triage documentation:

STATUS	LOCATION			
	A	B	C	D
I Immediate	I	III	Ø	I
D Delayed	Ø	II	IIII	III
DEAD	III	IIII II	I	Ø



Spinal injury:

- Main objective is to do no harm
- Minimize movement of the head and spine
- Treat life-threatening conditions (airway, bleeding, shock)
- Treat as a head/neck/spine injury, if one is suspected

Moving victims:

- When moving victims, use teamwork, communication, proper lifting technique, and in-line stabilization

Symptoms of spinal injury:

- Change in consciousness
- Inability to move one or more body parts
- Severe pain or pressure in head, neck, or back
- Tingling or numbness in extremities
- Difficulty breathing or seeing
- Heavy bleeding, bruising or deformity of head or spine (e.g. bump or depression)
- Blood or fluid in the nose or ears
- Bruising behind the ears
- “Raccoon” eyes (bruising around the eyes)
- Seizures
- Nausea, vomiting
- Victim found under a collapsed building or heavy debris

Stabilizing a head, neck, or spinal injury:

- Immobilizing the head, neck, or spine
- Keep the spine in a straight line
- Use cervical collar, place victim on back board
- Secure the victim so movement is impossible



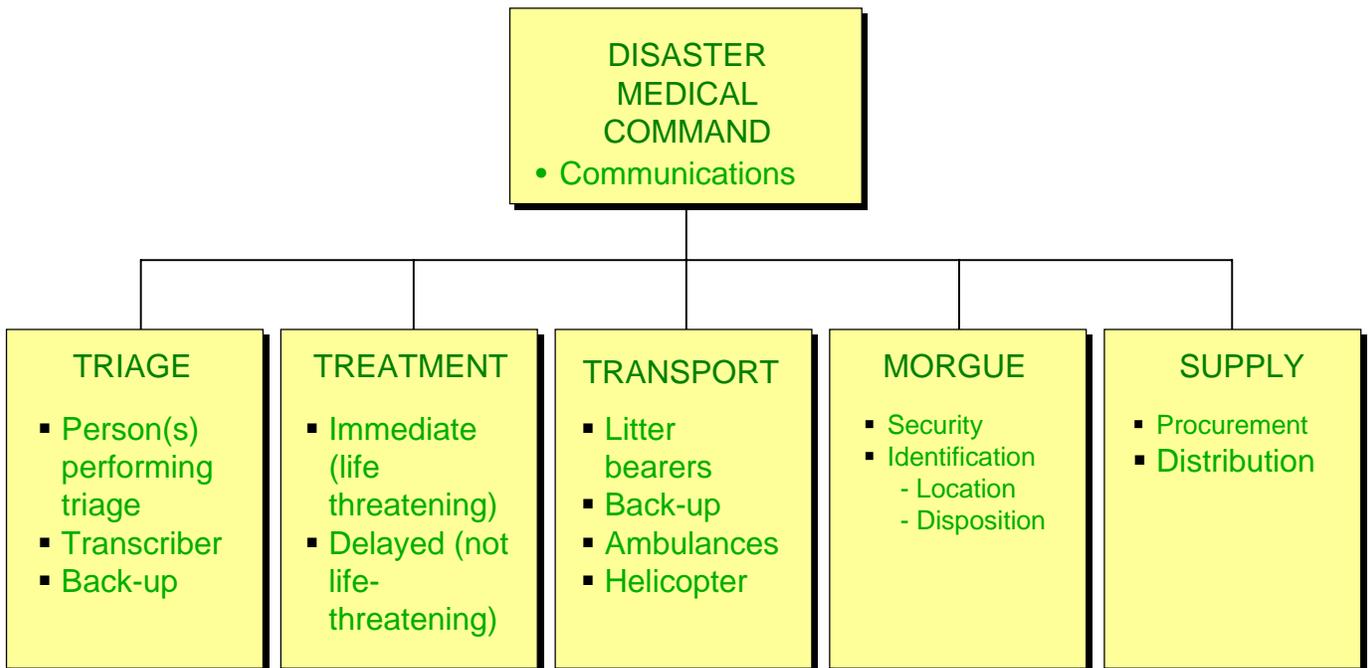
Triage



Spinal stabilization under emergency conditions:

- Look for materials that can be used as a back board
 - Door
 - Table
 - Desktop
 - Building materials
- Look for items that can be used to stabilize the head
 - Towel
 - Blanket
 - Clothing
 - Drapery material
 - Sandbags tucked snugly on either side of the head

Organization of disaster medical operations:



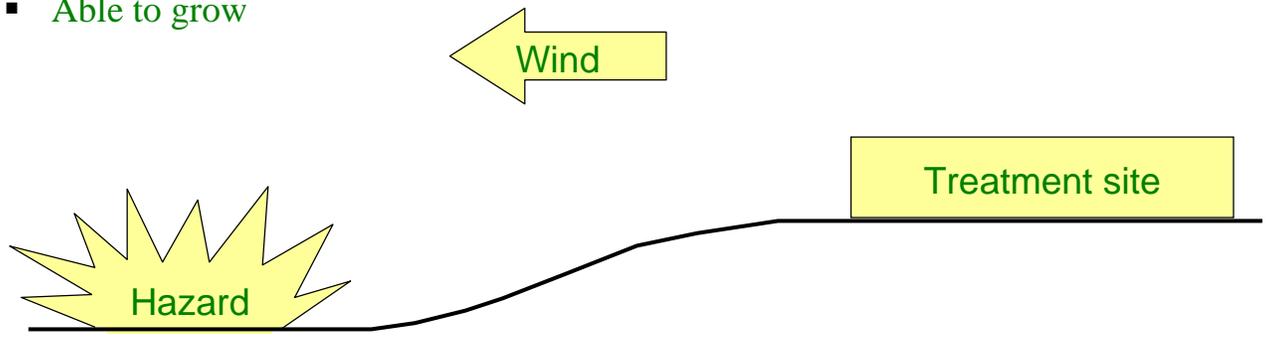


Triage

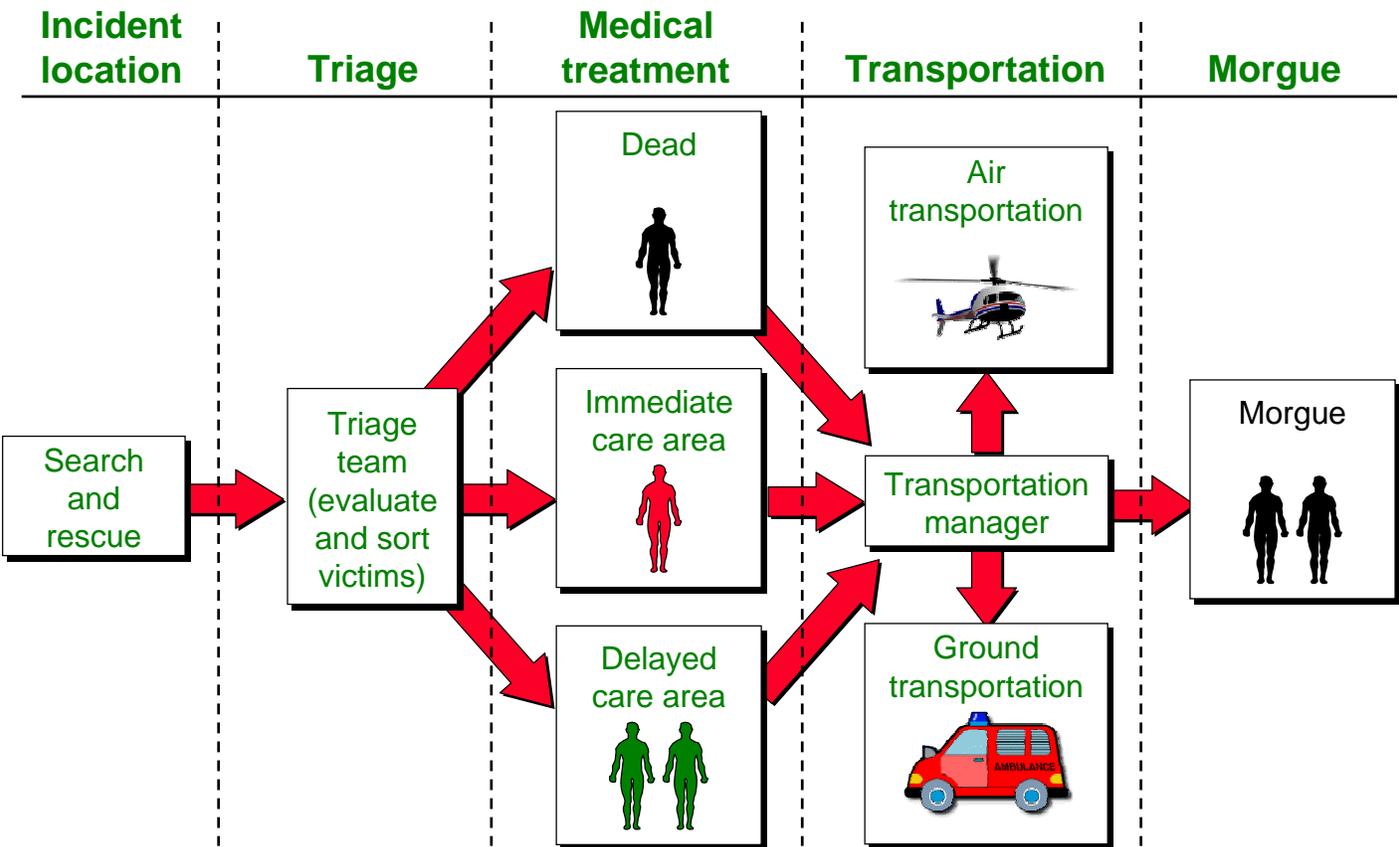


Establishing treatment areas:

- Set up as quickly as possible
- Site where the most advanced medical care is available
- In a safe area, free of hazards and debris
- Close to, but upwind and uphill from, the hazard zone(s)
- Accessible by transportation vehicles (e.g. ambulances, trucks, helicopters)
- Able to grow



Flow through a treatment area:





Public health considerations:

- **Hygiene**
 - Wash hands frequently with soap and water
 - Wear latex gloves at all times
 - Change gloves with each patient or sterilize between patients
 - Wear mask and goggles
 - Keep dressings and bandages sterile
 - Avoid contact with body fluids
- **Sanitation**
 - Control the disposal of bacterial sources (e.g. gloves, dressings)
 - Bury waste, including human waste, in designated location
- **Purifying water**
 - For drinking, cooking, and/or medical use
 - Rolling boil for 10 minutes
 - Water purification tablets

Chapter 5

Light Search and Rescue



CERT Organization:

Fire Department Liaison

CERT Team Leader

- Organize teams
- Documentation
- Situation status

Fire Suppression

- Small fires
- Shut off utilities
- Control Haz-Mat

Search & Rescue

- Search
- Rescue
- Evacuation

Medical

- Triage
- Treatment
- Transport
- Morgue
- Supply

Logistics

- Communications
- Staffing
- Equipment
- Supplies
- Food

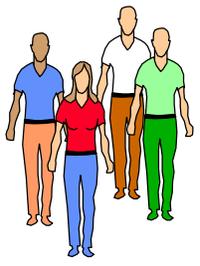
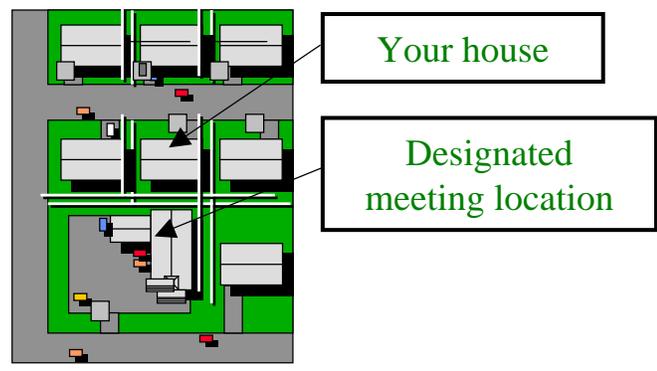


Search and Rescue



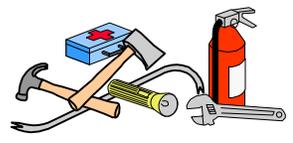
Know your neighbors:

- Name
- Address
- Phone number
- How many in house?
- Any special needs (e.g. handicapped)?
- Occupation
- Equipment/supplies normally found at house



Rescue requirements:

- Rescuers
 - Trained personnel
 - Volunteers
- Tools
 - Based on need (e.g. lifting tool for earthquake, or boats and ropes for flooding)
- Time



Overview of search and rescue:

- Objectives of search and rescue
 - What are we trying to accomplish?
- Guidelines for maintaining a safe search and rescue environment
 - How can we accomplish these goals?
- Search procedures
 - What specific procedures can be used?



Search and Rescue



Objectives of search and rescue:

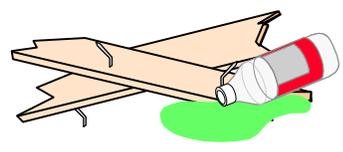
What are we trying to accomplish?

- Safety of the rescuer: the most important person in a rescue attempt is the rescuer
Why? _____
- Good planning: plan the rescue attempt to minimize risk and create a safe rescue environment
Why? _____
- Quantity: rescue the greatest number of people in the shortest amount of time
Why? _____
- Triage or stabilization: as victims are rescued
Why? _____
- Avoid spontaneous rescue attempts by untrained people
Why? _____

Guidelines for safe search and rescue:

How can we accomplish these goals?

- Use safety equipment
 - Helmet or hard hat, goggles, dust mask, leather work gloves (latex gloves may be worn underneath), sturdy shoes (preferably steel-toed), appropriate clothing (e.g. protection from cold or rain)
- Create a safe rescue environment
 - Use tools to move objects out of the way
 - Shore up walls, remove debris
- Use the buddy system
 - Search teams in pairs, using a rope or belt to connect individuals
- Be alert for hazards
 - Sharp objects, dust, hazardous materials, power lines, leaking natural gas, high water, fire hazards, and unstable structures
- Remove victims
 - After performing head to toe assessment, victims can be removed to treatment area
- Triage victims in a safe area
- Provide for rescue worker needs
 - Food, drink, rest
- Rotate teams

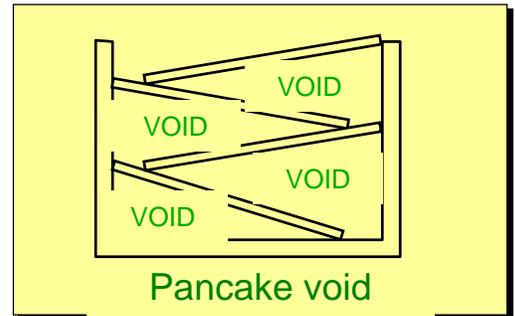




Types of voids where victims may be found:

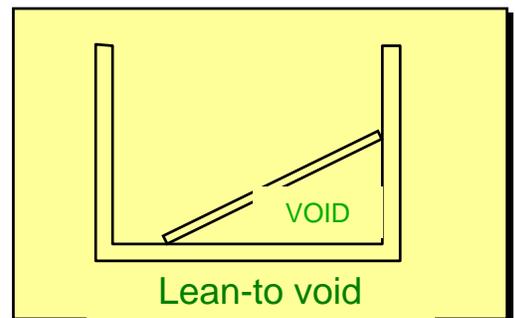
▪ Pancake void

- Collapse of floors onto each other
- Common in pre-1933 buildings
- Most difficult to search



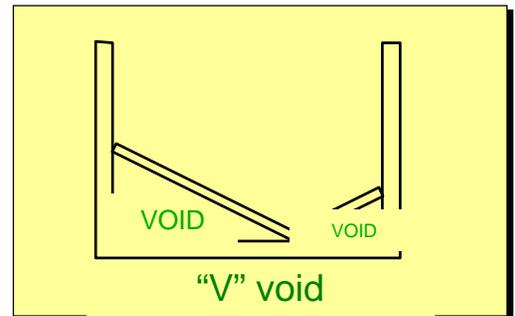
▪ Lean-to void

- Created when a collapsed wall or floor is resting against an outside wall
- “Triangle of life” – greatest chance of victim being alive



▪ “V” void

- Created by a “V” collapse of a floor or wall – the middle collapses and the ends lean against the outside walls



▪ Individual void

- Spaces into which the victim may have crawled for protection (e.g. under desk or in bathtub)



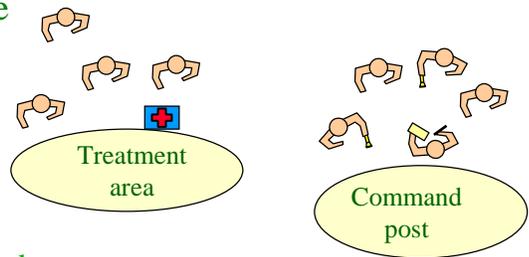
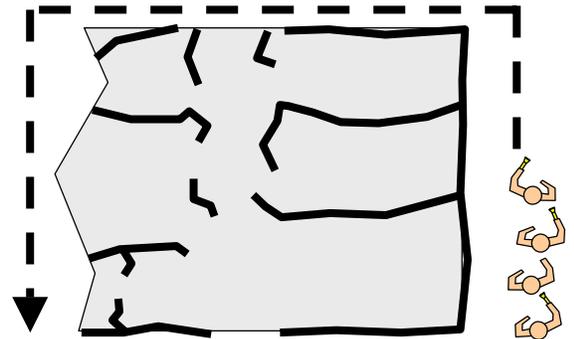


Search and Rescue



On-scene commander responsibilities:

1. Establish a command post.
2. Assign members of each CERT team (Search and Rescue, Fire Suppression, Medical, Logistics).
3. Ensure each member is properly equipped with safety equipment, flashlights, etc.
4. Brief members of each team on duties and responsibilities, establish rescue priorities.
5. Direct Medical CERT team to set up treatment area, prepare for Immediate and Delayed victims
6. Direct CERT teams to “take a lap” around the structure and shut off leaking gas if detected.
7. After taking a lap, receive input from CERT teams on the status of the structure.
 - Structural damage
 - Location of potential victims
 - Hazardous conditions that might exist (downed power lines, hazardous materials, leaking natural gas, etc.)



Input from CERT team after taking a lap

Degree of damage (after a lap)	Description	Should rescue be attempted?
Light	<ul style="list-style-type: none"> • Broken windows, fallen plaster, damage to contents 	<ul style="list-style-type: none"> • Yes – Locate and prioritize removal of victims to the designated treatment area
Moderate	<ul style="list-style-type: none"> • Questionable structural integrity, fractures, tilting, foundation movement 	<ul style="list-style-type: none"> • Perform only quick and safe removals • Limit onsite medical care to Airway, bleeding, and shock • Minimize the number of rescuers inside the building
Heavy	<ul style="list-style-type: none"> • Obvious structural instability, walls collapsed, ceiling failures, fire, gas leak 	<ul style="list-style-type: none"> • No – too dangerous to enter • Secure the perimeter • Control access to the structure



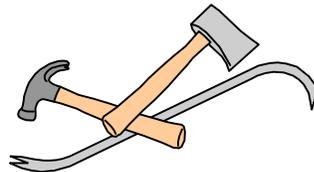
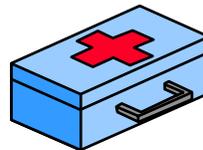
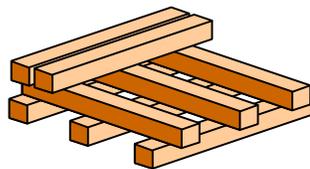
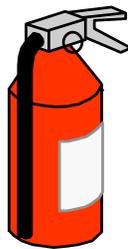
On-scene commander responsibilities:

8. Make a determination if the structure is to be searched, and if so, how to proceed (develop a rescue plan).
9. Direct Search and Rescue, Fire Suppression, or Medical personnel to enter the structure as appropriate.
10. Oversee the rescue.
11. Ensure injured are removed to treatment area.
12. Assemble forms to be filled out, and maintain a list of all the people in the structure.
13. Document results (rescued, trapped, dead), and report to emergency agencies when they arrive.
14. Handle media requests.

Logistics team responsibilities:

1. Make available the tools and emergency equipment that will be required for search and rescue:

- Hard hats
- Goggles
- Face Masks
- Leather Gloves
- Flashlights
- Latex gloves
- First aid kit
- Fire extinguisher
- Duct tape
- Wood for cribbing
- Belt or rope
- Gas shutoff wrench



2. When search has begun, the logistics team can assist another CERT team.

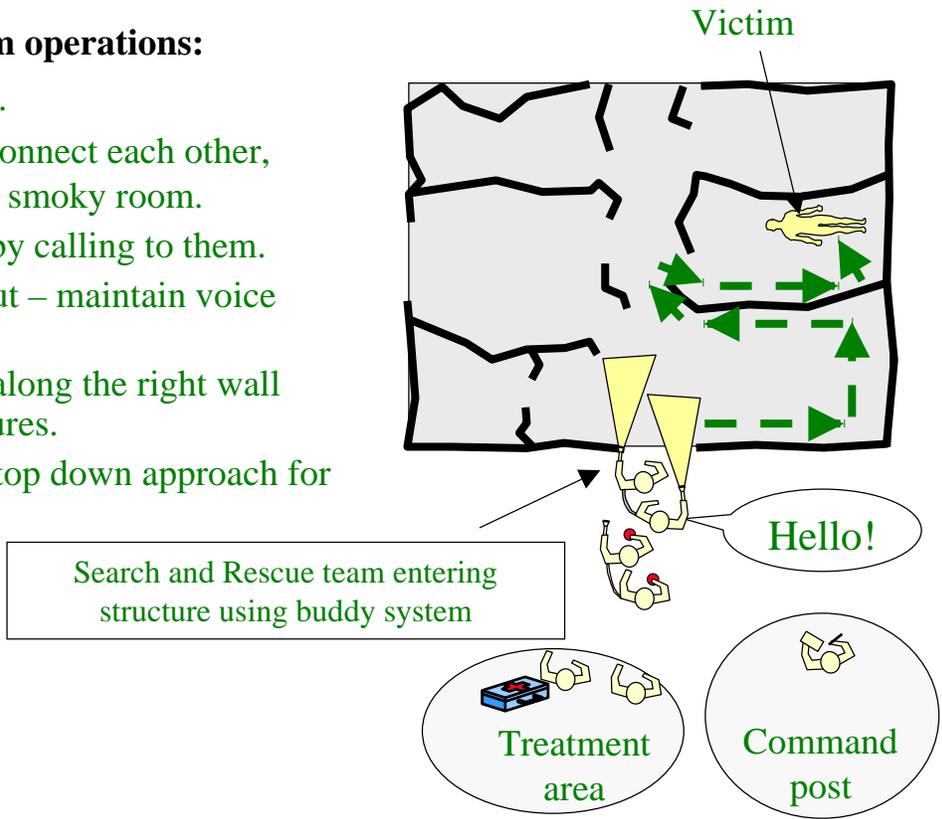


Search and Rescue



Search and Rescue team operations:

1. Use the buddy system.
2. Use a belt or rope to connect each other, especially in a dark or smoky room.
3. Try to locate victims by calling to them.
4. Ask victim to come out – maintain voice contact.
5. Be systematic, travel along the right wall for single story structures.
6. Use the bottom up or top down approach for multi-story buildings.



Fire Suppression team responsibilities:

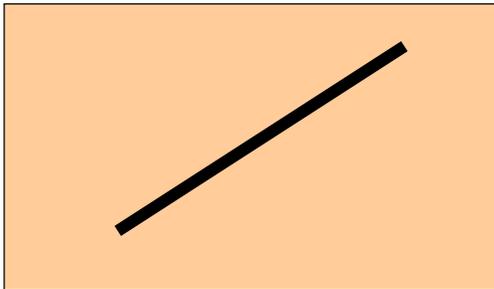
1. Use the buddy system.
2. Follow the Search and Rescue team into the structure.
3. Use a belt or rope to connect each other, especially in a dark or smoky room.
4. Assist Search and Rescue team in trying to locate victims.
5. If a fire is detected, put out the fire or evacuate the structure. The search team can not continue until the fire is put out.
6. If no fires are detected, the Fire Suppression Team can be used to assist another team (maintain buddy system).



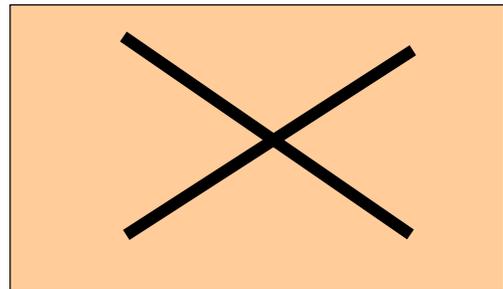


Procedures for entering and searching a structure:

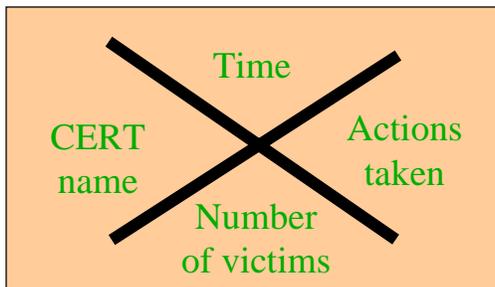
1. Make a single slash on or next to the outside door when entering the structure.
2. Stop frequently and just listen for tapping sounds, movement, or voices.
3. The search and rescue team will not administer first aid, but note the location of victims as they continue the search of the building.
4. When the survey of the facility is complete, the Search and Rescue and Fire Suppression teams will report to the command post for reassignment.
5. The Search and Rescue team is available to help extract victims, especially where leveraging and cribbing are required.
6. The Medical team will enter the structure to administer first aid as appropriate.
7. Make an opposite slash (creating an "X") when all occupants have been removed and the search of the building is complete.
8. Use a marker or paint to denote deceased or trapped victims that were not able to be rescued.
9. The above procedures prevents duplication of efforts.



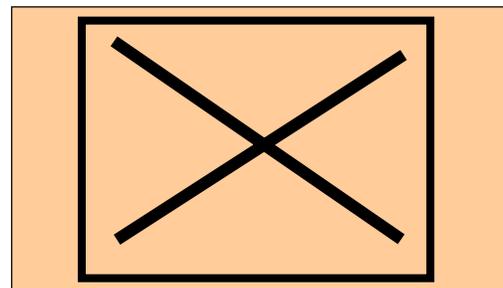
As you enter



When you exit



Complete information



DO NOT ENTER

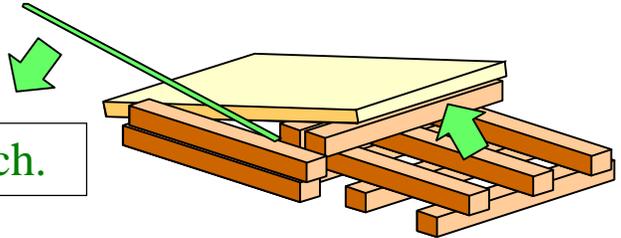
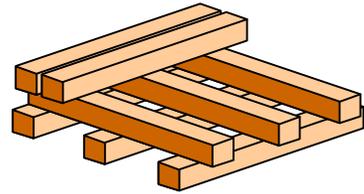
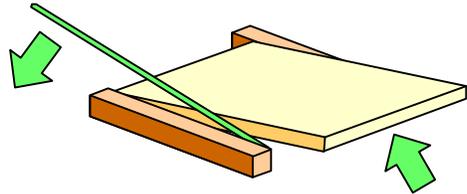


Search and Rescue



Leveraging and cribbing:

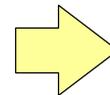
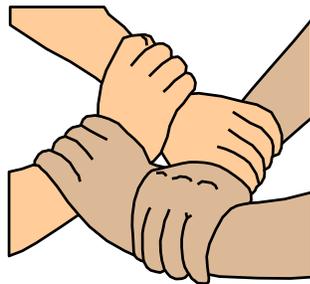
- Leverage is obtained when a lever (pole or other long object) is used for lifting.
- Cribbing is a framework of wood or metal bars used for support or strengthening once the object has been lifted.
- Leveraging and cribbing are used alternately to lift an object and stabilize it.



Lift an inch, crib an inch.

Lifts and drags:

- One person pack-strap carry
 - Stand with your back to the victim.
 - Place the victim's arms over your shoulders and grab the hands in front of your chest.
 - Hoist the victim onto your back by bending forward slightly, so his feet just clear the floor.
- Two-person lift
- Chair carry



Two person lift



Chair carry



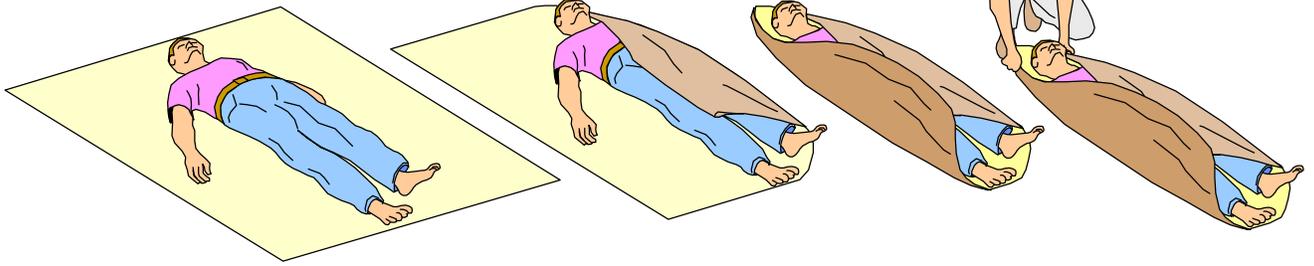
Search and Rescue



Lifts and drags:

- Drag
- Blanket carry
- Improvised stretcher

Drag or blanket carry

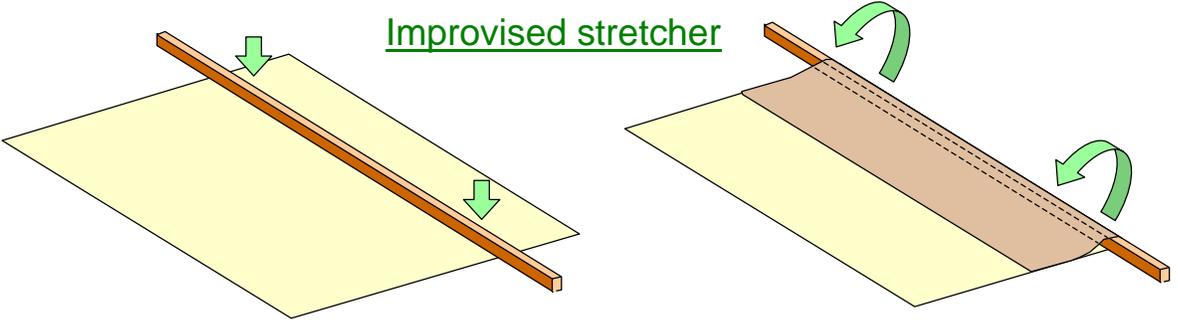


▪ Lay victim on blanket

▪ Fold over sides

▪ Pull or lift from end (s)

Improvised stretcher

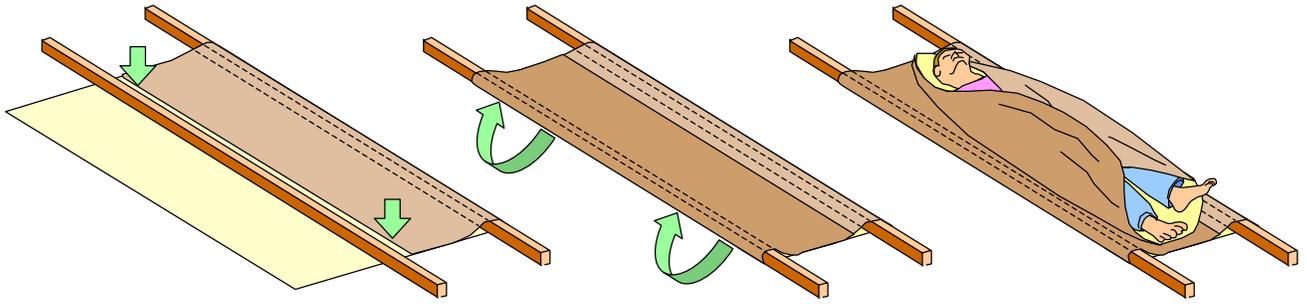


1

- Lay blanket down
- Lay 2x4 approx 1/3 of way across

2

- Fold blanket over 2x4



3

- Lay second 2x4 down

4

- Fold blanket over 2x4, forming stretcher

5

- Lay victim on stretcher, carry out



Documentation forms:

Form	Filled out by	Purpose
Damage assessment survey	CERT leader	<ul style="list-style-type: none"> ▪ Completed by CERT leaders. Provides a summary of overall hazards in selected areas <ul style="list-style-type: none"> - Fires - Utility hazards - Structural damage - Injuries and casualties - Available access
Incident status record	CERT leader	<ul style="list-style-type: none"> ▪ Used by the command post for keeping abreast of situation status. Contains essential information for tracking the overall situation
Group status sheet	Functional group leader	<ul style="list-style-type: none"> ▪ Completed by functional group leaders for <ul style="list-style-type: none"> - Tracking personnel assigned to the group - Monitoring group accountability
Message form	Anyone	<ul style="list-style-type: none"> ▪ Used for sending messages between command levels and groups. Messages should be clear and concise and should focus on such key elements as <ul style="list-style-type: none"> - Assignment completed - Additional resources required - Special information - Status update

Group Status Sheet

(Filled out by Functional Group Leader)

Group leader:	Group assignment:
Asst. group leader:	

Resources	Time	Inc #	Assignment	Time complete	Comments
<i>TEAM 1</i>					
Members:					
<i>TEAM 2</i>					
Members:					
<i>TEAM 3</i>					
Members:					
<i>TEAM 4</i>					
Members:					
<i>TEAM 5</i>					
Members:					

Chapter 6

Disaster Psychology



Post-disaster mental symptoms for rescuers and survivors:

- Irritability
- Self blame, blaming others
- Isolation, withdrawal
- Fear of recurrence
- Feeling stunned, numb, or overwhelmed
- Feeling helpless
- Concentration and memory problems
- Sadness, depression, grief
- Denial
- Mood swings

Post-disaster physical symptoms for rescuers and survivors:

- Loss of appetite
- Headaches, chest pain
- Diarrhea, stomach pain, nausea
- Hyperactivity
- Increase in alcohol or drug consumption
- Nightmares
- Inability to sleep
- Fatigue, low energy

Dealing with stress in rescuers:

- Brief personnel before the rescue operation begins
- Emphasize teamwork
 - Sharing the physical work load
 - Sharing the emotional load
- Encourage breaks
 - Breaks are needed to avoid exhaustion
- Provide for proper nutrition
 - Maintain fluid intake
 - Avoid excessive sweets and caffeine



Dealing with stress in rescuers:

- Rotate teams
 - Rotate teams from high stress to low stress jobs
- Phase out workers gradually
- De-brief after the operation
 - For workers to express feelings about what they have encountered

Post-disaster emotional phases:

- Impact phase
 - Little to no emotion
 - Do what's required
- Inventory phase
 - Assess damage and try to locate survivors
- Rescue phase
 - CERTs and emergency services personnel respond and take a leadership role
- Recovery phase
 - Survivors may believe that recovery efforts are not proceeding quickly enough
 - Survivors may become emotional and pull together against their rescuers

Your goal:

- To stabilize the incident scene by stabilizing each individual

How to accomplish this:

- Assess the survivors for injury and shock
- Get uninjured people involved in helping the injured
- Provide support
 - Listen and encourage them to talk about their feelings
 - Empathize (show that you hear their concerns)



How to accomplish this:

- Help connect survivors to natural support systems
 - Family/friends
 - Clergy
- Avoid patronizing the survivor
 - I understand...
 - Don't feel bad...
 - You're strong/you will get through this...
 - Don't cry...
 - It's God's will...
 - It could be worse...
 - At least you still have...

Saying any of the above phrases will cause negative reactions from survivors

Notification of death in the family:

- Separate the family members
 - Quiet place
 - Private place
- Have person sit down
- Make eye contact
 - Calm voice
 - Kind voice
- Telling the family members of the death
 - “I am sorry, but your family member has died. I am so sorry.”



Managing family members at the scene after the death of a loved one:

- Cover the body
 - Treat with respect
 - Wrap mutilated bodies tightly
- Have one family member look to ID body
- Allow family to hold or spend time with deceased
 - Stay close by for support
 - Do not watch family members
 - Distance yourself emotionally
- Let family grieve
 - Do not try to comfort them

Chapter 7

Hazardous Materials



Hazardous Materials



What are hazardous materials ?

Hazardous materials are any materials that corrode other materials, explode or are easily ignited, react strongly with water, are unstable when exposed to heat or shock, or are otherwise toxic to humans, animals, or the environment. Hazardous materials include, but are not limited to:

1. Explosives
2. Gasses
3. Flammable liquids
4. Flammable solids
5. Oxidizers
6. Toxic substances
7. Radioactive materials
8. Corrosive substances
9. Miscellaneous substances



Hazardous materials pose an ever-present danger. They are stored in all types of locations, and they are transported by a variety of means. They are commonly found in such places as industrial and commercial districts, highways, harbors, airports, and railroads. They are also found in homes and offices.

Identifying Hazardous Materials In Transit:

Hazardous materials that are being transported are marked with the Department of Transportation (DOT), United Nations (UN), or North American (NA) warning placards. For the DOT system, each diamond-shaped placard includes a color, symbol, name, and number, each of which indicated the type of hazard.





Hazardous Materials



Identifying Stored hazardous Materials:

Stored hazardous materials may be identified by means of the National Fire Protection Association (NFPA) 704 symbol. This symbol is located outside of buildings at the entrance to the storage area.

FLAMMABILITY (RED)

- 4-Extremely flammable
- 3-Ignites at normal temperatures
- 2-Ignites when moderately heated
- 1-Must be pre-heated to burn
- 0-Will not burn

HEALTH(BLUE)

- 4-Too dangerous to enter vapor or liquid
- 3-Extremely dangerous, use full protective clothing
- 2-Hazardous, use breathing apparatus
- 1-Slightly hazardous
- 0-Like ordinary material



SPECIAL WHITE
Avoid use of water

INSTABILITY(YELLOW)

- 4-May detonate
- 3-Strong shock or heat may detonate
- 2-Violent chemical change possible
- 1-Unstable if heated
- 0-Normally stable

If you see these !



Do this !





Hazardous Materials



Hazardous materials around the home:

	Product type	Personal safety
Household	Abrasive cleaner Ammonia Bleach Disinfectant Drain opener Flea collar Furniture polish Household batteries Mothballs Mouse and rat poison Furniture oils Oven cleaner Roach and ant killer Rug and upholstery cleaner	May contain ammonia (see ammonia) DO NOT mix with bleach (creates poisonous gas) DO NOT mix with ammonia (creates poisonous gas) May contain bleach (see bleach) May contain lye (corrosive) Avoid skin contact Keep away from heat and flame Beware of corrosive leakage Keep away from children and pets Keep away from children and pets Don't store oily rags (may spontaneously combust) May contain lye (corrosive) Keep away from children and pets Avoid skin contact
Workshop	Enamel or oil-based paint Latex or water-based paint Paint thinner Paint and varnish remover Photographic chemicals Stains and varnishes	Keep away from heat and flame May contain mercury (toxic) Avoid skin contact Keep away from heat and flame Avoid breathing and skin contact Keep away from heat and flame
Auto	Anti-freeze Auto battery Used oil Transmission fluid Windshield wiper fluid	Keep away from children and pets (toxic-sweet) Beware of corrosive leakage Avoid prolonged exposure Avoid prolonged exposure May contain methanol (toxic)
Lawn	Fertilizer Insecticides Herbicides	Keep separated from fuel oil, gasoline Avoid breathing and skin contact Avoid breathing and skin contact



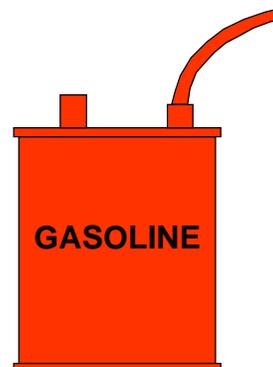
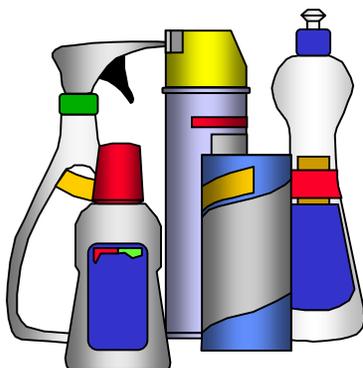
Hazardous Materials around the home:

Many household products, such as gasoline, charcoal lighter, paint thinners, cleaning products, insecticides, bleach, ammonia, anti-freeze, etc., can be considered hazardous materials.

To minimize risks associated with Hazardous Materials you need to:

- * Read labels, use the product as prescribed, follow safety directions
- * Store products properly, and in its original container
- * Know signal words:
 - Caution – Relatively non-toxic, slightly toxic
 - Warning – Moderately Toxic
 - Danger – Highly Toxic
- * Follow the L.I.E.S. Rule:
 - Limit – the amount you have
 - Isolate – products from other products and persons
 - Eliminate – products you don't need anymore
 - Separate – products from each other

If you are not sure of the product with which you are dealing – or if the product produces a noxious odor, smoke, or steam – leave the area immediately. Move away from the product, (uphill and upwind) dial 911 advise them what is going on and request the fire department, keep other people away, and give the fire department as much information as you can when they arrive.



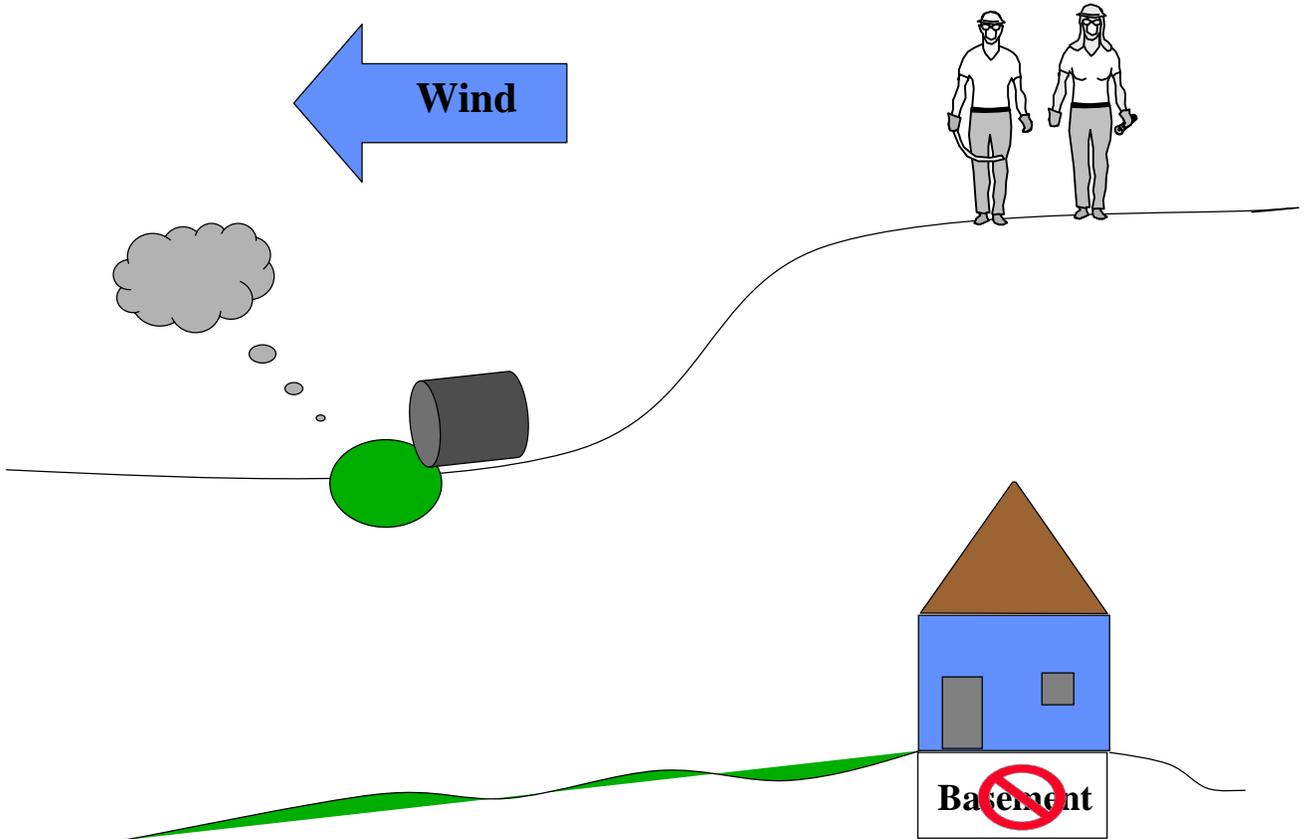


Hazardous Materials



Basic safety rules:

- Always stay uphill and upwind if you encounter a Hazardous Materials spill or release.
- Never go into a basement if there is a Hazardous Materials spill or release.
- Remember Hazardous Materials can cause injury or death. You do not have the knowledge and equipment to handle a spill or release.



Chapter 8

Terrorism



What is terrorism ?

- The unlawful use of force or violence committed by a group or individual against persons or property to intimidate or coerce government and the civilian population.
- Terrorism may be perpetrated by foreign or domestic individuals or groups:
 - Bombing World Trade Center in 1993
 - Bombing Murrah Federal Building 1995
 - Bombing Atlanta Olympic games 1996
 - Airplane attacks on the World Trade Center in 2001
 - Airplane attack on the Pentagon 2001
 - Sending anthrax through the mail 2001

Terrorist attacks can result in:

- Mass casualties
- Loss of critical resources
- Disruption of vital services
- Disruption of the economy
- Individual and mass panic

Terrorist weapons:

- B-NICE

Biological

Nuclear

Incendiary

Chemical

Explosives



Chemical attacks:

What is it?

- Chemical attacks involve poisonous vapors, aerosols, liquids, or compounds.
- The effects can be immediate or last over several days. For example, sarin gas, a nerve agent, acts immediately to paralyze the central nervous system.
- The effects of mustard gas, which causes blistering on exposed skin, can last for days.

Damage:

- Chemicals could be spread by a bomb, with a spray from an aircraft, boats or vehicles; by pouring chemicals into water or onto food; or simply by leaving a container in a confined public space.
- A chemical attack could last from seconds to a few hours.
- Outdoors, chemicals often dissipate quickly, through dispersal by wind or sunlight.
- Cleanup efforts would depend on the chemicals involved.
- Local Hazardous Materials officials would handle cleanup efforts in a manner similar to chemical spills.

What you should have on hand:

- In addition to the emergency equipment listed under dirty bomb, (page 7) have pre-cut segments of plastic sheeting to cover windows, doors, and vents.
- Use duct tape to seal the plastic to form an air-tight seal.
- Use soap and water to clean exposed skin.

What to do during an attack:

- Listen to the radio for instructions as to whether to evacuate or stay put.
- If told to stay inside. Turn off all ventilation, seal windows, doors, and vents of an internal room and keep listening to the radio.
- Ten square feet of a sealed room (closet size) holds air for one person for five hours.
- If outside, move upwind and seek shelter.
- You can provide a minimal amount of protection by breathing through a damp cloth.
- Do not go outside to help someone injured in the attack unless authorities say it is safe.



What to do after an attack:

- Symptoms of a chemical attack include blurred vision or eye irritation, difficulty breathing and nausea.
- If you cannot get to immediate medical help, begin decontamination by removing all clothing, glasses, and contact lenses.
- Cut clothing rather than pull it over your head, and leave it outside or place it into a plastic bag.
- Flush eyes with lots of water.
- Gently wash exposed areas with soap and water and then rinse.
- Find medical help.

Biological attack:

What is it?

- Biological attacks involve bacteria, viruses, or natural toxins that injure or kill.
- Effects of toxins can be immediate.
- Effects of bacteria and viruses may not be apparent for weeks.

Damage:

- A bio-terrorist may attack by infecting animals, contaminating food and water, or spraying bacteria or viruses into the air.
- Infected people can further spread some diseases, such as smallpox and plague.
- An attack could also come through building ventilation, the mail, or through exposure to an infected terrorist seeking to spread disease during an infectious phase.
- Outdoors, biological agents tend to disperse within hours, and some germs cannot survive exposure to the sun's ultraviolet rays.
- Cleanup after exposure would involve experts from the Environmental Protection Agency (EPA) and Centers for Disease Control and Prevention sampling the location.
- The EPA would work with state and local officials to develop a cleanup plan, which may involve pumping chlorine gas or formaldehyde into a sealed location.



What you should have on hand:

- In addition to the emergency equipment listed under dirty bomb, (page 7) have pre-cut segments of plastic sheeting to cover windows, doors, and vents.
- Use duct tape to seal the plastic to form an air-tight seal
- Use soap and water to clean exposed skin.
- Use bleach to disinfect items such as glasses.

What to do during an attack:

- Listen to the radio for instructions as to whether to evacuate or stay put.
- If told to stay inside, turn off all ventilation, seal windows, doors, and vents of an internal room and keep listening to the radio.
- Ten square feet of a sealed room (closet size) holds air for one person for five hours.
- If outside, move upwind and seek shelter.
- You can provide a minimal amount of protection by breathing through a damp cloth.
- Do not go outside to help someone injured in the attack unless authorities say it is safe.

What to do after an attack:

- Symptoms of Smallpox include fever, fatigue, and rash.
- Symptoms of Anthrax include flu-like symptoms, internal hemorrhage and reddish-brown skin lesions.
- Symptoms of Plague include a rapid onset of pneumonia, chills, fever, rapid pulse, and painful enlarged lymph nodes.
- Public Health Officials will direct how medical attention will be delivered to exposed individuals via radio, TV, or emergency alert.
- If you come in contact with a visible, potentially infectious substance, you should remove and bag your clothes and personal items, and wash yourself with soapy water immediately.
- Seek medical assistance.



Nuclear weapon:

Nuclear weapon:

- If you see a bright flash of light like the sun:
 - Drop to the ground.
 - The heat wave will be over in a second.
 - There will be two blast waves (one going out, one coming back in).
 - Everything will be over within two minutes.
 - Heat, radiation, and flying debris will kill most within a half mile or so (depending on the size of the blast).
 - A pulse from the blast will fry all electronics for one to two miles (no cars, phones, computers, ATMs, etc.).
 - If you survive the initial blast, you will probably live.
 - Radioactive dust can be washed off canned food, and will settle to the bottom of water if you let it stand.

Tips for checking suspicious mail – what should you do?

- Look for indicators of a problem.
 - No return address
 - Mailed from a foreign country or excessive postage
 - Misspelled words, poorly typed or written
 - Wires sticking out
 - Lopsided, uneven, rigid, bulky
 - Strange odor
 - Wrong title or name
 - Oily stains, discoloration, crystallization on wrapper
 - Excessive tape or string
- If indicators are present, treat it as suspicious. Call 911 if unsure.
- Isolate, handle with care, don't shake or bump.
- Don't open, smell, or taste.



Dirty bomb:

What is it ?

- A “dirty bomb” is a crude method for spreading radiation over a substantial area
- There is no nuclear explosion.
- Made by packing dynamite or other explosive with some type of radioactive material (left over from x-ray machines, nuclear waste, etc.).
- When explosive is detonated, it spews the radioactive material over the surrounding area.

Damage:

- Immediate casualties would be minimal, and would depend on the size and location of the device (perhaps a few hundred people).
- In a crowded area, thousands could be contaminated, raising their long-term risk of cancer.
- Entire neighborhoods could be fouled with radiation and left uninhabitable.
- The length of time an area would remain contaminated could range from days to thousands of years, depending on the radioactive material used.
- Clean-up could involve demolishing buildings and burying the debris.
- Economic disruption would be massive.

What you should have on hand:

- Food, water, clothing, and toiletries to stay inside for at least three days.
- Radio with spare batteries.
- Coarse soap for washing.
- First aid kit, flashlight.



What to do during an attack:

- Stay inside or get inside quickly until alerted that it is safe to leave.
- If you are not near the blast, stay away and stay upwind.
- If you believe you have been exposed and can't get to a hospital, shed all your clothes as quickly as possible.
- Don't bring the clothes inside because you may spread contamination.
- Go straight to the shower and thoroughly wash all body parts with coarse soap.
- Do not eat contaminated food, chew on fingernails, etc.
- Drink large amounts of water if available to flush radiation from the body.

What to do after an attack:

- Don't travel through a contaminated area
- If you can get out of the general area through an uncontaminated route, do that. Otherwise, stay indoors.
- The contamination area will generally be in a cigar-shaped area downwind of the blast site.

B-NICE indicators:

- Numerous sick or dead animals, fish, or birds
- Unscheduled spraying
- Vapor clouds or mists
- Absence of crops, wildlife, insects
- Unattended and out of place packages, boxes, or vehicles
- Packages that are leaking
- Materials or equipment unusual for the area
- Small explosions
- Multiple casualties without obvious signs of trauma
- Multiple victims who are exhibiting similar symptoms
- Large numbers of people seeking medical attention



Preparing your home and work:

- Assemble disaster kit
- Identify safe room in the home and workplace, and a meeting place outside of the home or workplace
 - The public will not know in advance whether to evacuate or shelter-in-place so it is necessary to plan ahead
- Develop a family communication plan
- Shelter-in-place procedures

CERT and terrorist incidents:

- Number one priority is team safety
- Thorough size-up
 - Stop, look, listen, and think
 - Look for existing and possible dangers
 - Think about how many CERT members are available and the teams capabilities
 - Think about team limitations
- As with hazardous materials, terrorist incidents are a stop sign for CERT members
- If you observe any indicators you should
 - Not touch it, move away from the object or area
 - Report to authorities

How do I take care of me ?

- Time
 - Limit the amount of time in the area of the incident which will limit exposure
- Distance
 - Evacuate the area
 - Uphill and upwind
 - Stay back 1000 to 1500 feet from the incident
- Shielding
 - Go into a sturdy building
 - Shield yourself behind a wall



Decontamination:

- Remove everything
 - Jewelry
 - Cut off clothing, DO NOT pull over the head this will reduce the chance of inhaling the agent
- Wash hands
 - Before you take a shower wash hands
- Shower
 - Flush entire body with large amounts of water
 - Eyes
 - Armpits
 - Groin area
 - Wash with soap and water
- Blot dry
 - Use absorbent (cloth, towels etc)
 - Do not rub skin
 - Put on clean clothes
- Report for decontamination
 - Professional responders will be setting up decontamination stations

Treating others:

- CERT teams should never attempt to treat victims in a contaminated area
- Follow instructions from professional responders