Community Emergency Response Team

Contra Costa CERT Coalition

Utilities, Hazardous Materials And Fire Safety

Released: 20 January 2023 **Contra Costa CERT Coalition**

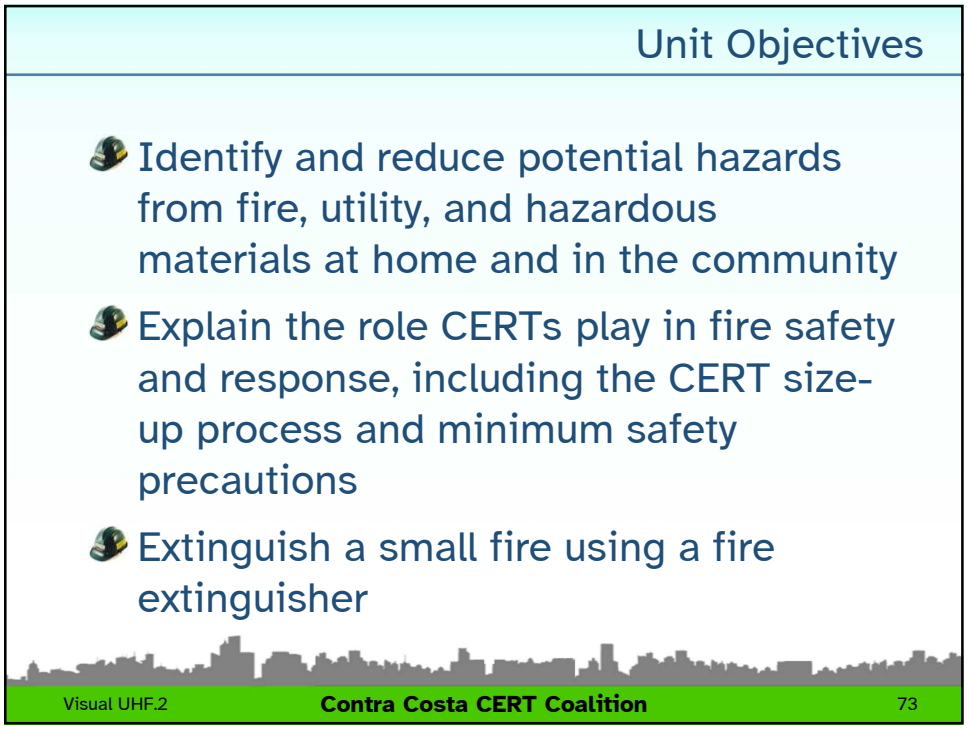
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Community Emergency Response Team

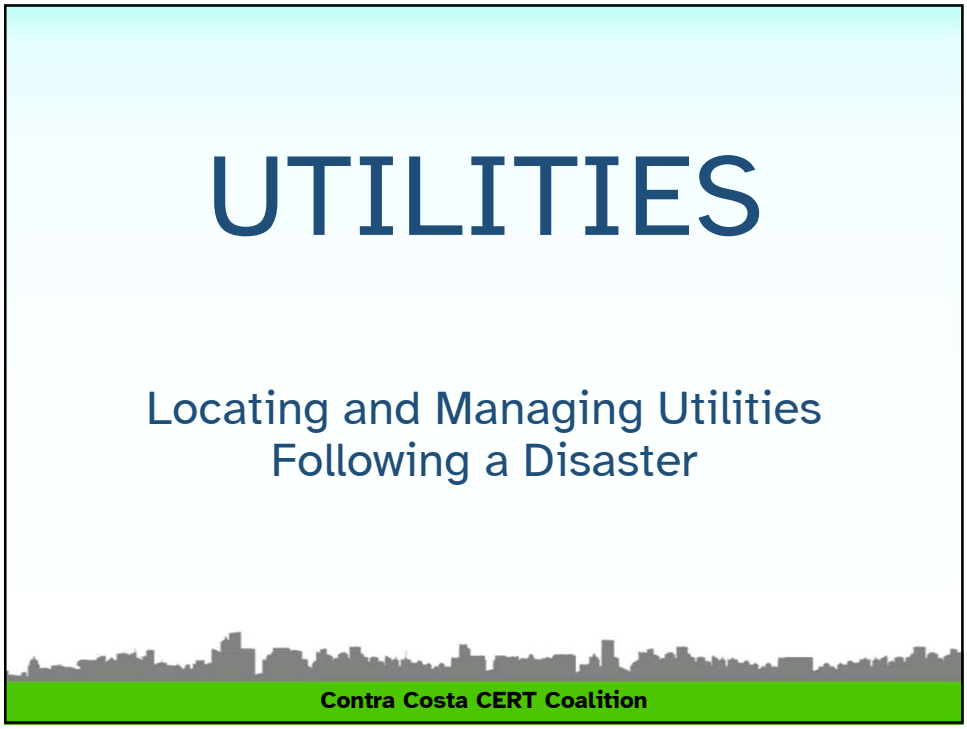
- Personal safety is ALWAYS the number one priority
- Show up prepared
  - Wear appropriate clothing and footwear, have WATER
  - Wear PPE – your personal protective equipment …gloves, helmet, goggles, mask, boots, etc.
  - Have at least one communications device: cell, radio, etc.
- Work as a team
- Size-up - maintain situational awareness
- The CERT goal is to do the **Greatest Good for the Greatest Number**
- *Hope for the best but plan for the worst!*

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Unit Objectives
Identify and reduce potential hazards from fire, utility, and hazardous materials at home and in the community
Explain the role CERTs play in fire safety and response, including the CERT size-up process and minimum safety precautions
Extinguish a small fire using a fire extinguisher
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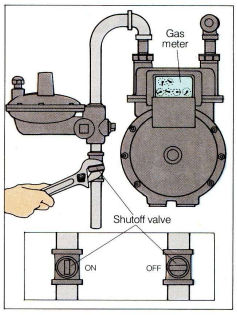

UTILITIES
Locating and Managing Utilities Following a Disaster
Contra Costa CERT Coalition

3

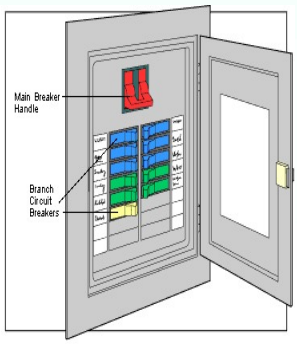
Utilities

- Locate and label gas, electricity and water shutoffs

GAS SHUTOFF



ELECTRICAL PANEL



WATER SHUTOFF



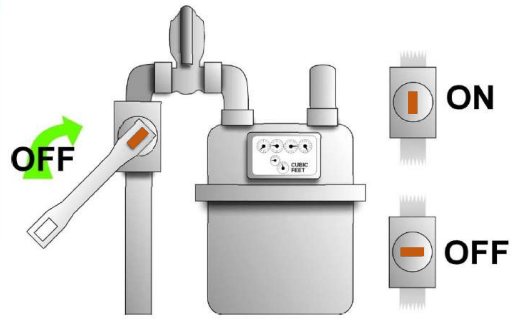
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Utilities

- Keep a gas shutoff wrench or crescent wrench near, but not on the gas shutoff valve







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Utilities

Automatic Gas Shutoff Valve



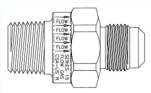
- Two types:
  - Excess flow
  - Quake triggered, approximate magnitude 5.5
- Installed by a licensed plumber

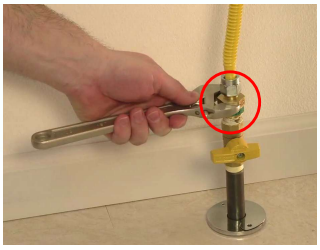
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Utilities

Appliance Gas Excess Flow Shutoff Valve





- Placed between line valve and flex line to appliance
- Sized based on BTU per hour of appliance
- One valve for each appliance
- Installed by homeowner or a licensed plumber

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House Electrical Service Drop



- A Service Drop is an electrical line that carries energy from the power pole to the house.

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Electrical Service Devices



Electrical Meter



Service Disconnect



Generator Manual Transfer Switch



Breaker Panel



Breaker Panel with Tesla Powerwall, Grid-tied Solar Controller and Transfer Switch

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Electrical Sub-Panel

Sub-Panels

- Sub-panel acts as a waypoint between the main service panel and branch circuits down the line
- Saves money during construction
- May be found in utility closets, add-ons, laundry rooms



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Curb Box – Water Supply Shutoff



- Shutoff here at the supply valve in case of broken sprinkler or construction work



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House Water Shutoff

- Recommended water shutoff for inside the home is not the supply valve near the street but the shutoff valve next to the house



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HAZARDOUS MATERIALS

Identifying and Managing Hazardous Materials Before and Following a Disaster

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Home Chemistry

- When storing chemicals, use the acronym

L. I. E. S.

- **L**imit, **I**solate, **E**liminate, **S**eparate
- Store gasoline safely





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L. I. E. S.

- Some common household chemicals that should never be mixed or stored together:
  - Bleach with Acid Toilet Bowl Cleaners
  - Bleach with Vinegar
  - Bleach with Ammonia
  - Highly Alkaline Products with Highly Acidic Products
- Drain cleaners are frequently made from sodium hypochlorite which is chlorine bleach. Other common ingredients are acids like hydrochloric and sulfuric and caustic chemicals such as lye and caustic soda

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Getting Rid of Chemicals

Need to get rid of 'stuff' ?

- Household hazardous waste disposal is possible for residents, normally AT NO CHARGE, at many places in the Bay Area. For the nearest location, search the web for "Household Hazardous Waste"
- Fire extinguishers that are no longer in use are considered Hazardous Waste by Federal Law and must be taken to a hazardous waste disposal site. Most fire departments cannot accept used extinguishers

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Should I Eat / Drink That ?

- Poison Control
  - Toddler, dog or you eat pills?
    - People – (800) 222-1222 (free) Poison.org
    - Animals – (888) 426-4435 (not free, $65.00)

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Old Drugs

Disposal of unused medications / old pills

- Disposal of pharmaceuticals into sewers has become a serious public health concern. It can allow medications to make their way into regional water sources by passing through wastewater treatment plants
- There is disagreement between the FDA and most local sanitary districts. **Most local districts say do not flush**
- Many local law enforcement offices and pharmacies have collection boxes for unwanted drugs



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Hazardous Materials





- Are toxic to humans, animals or the environment through absorption, inhalation, injection or ingestion

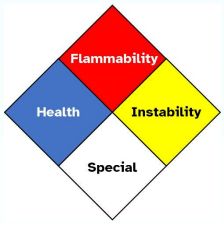
THE GOLDEN RULE OF HAZMAT: If you have not yet identified the substance, treat it like it's ETHYL METHYL NASTY STUFF. Stay away from it. Don't poke it, look at it the wrong way or insult it. Report your finding and let professionals handle the rest.

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Hazardous Materials

Building Placards





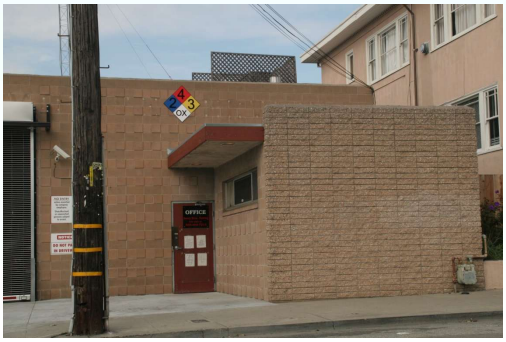
Blue = Health
Red = Flammability
Yellow = Instability
White = Special hazard

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard
0 = Minimal Hazard
W = Use NO WATER
OX = Oxidizer
SA = Simple Asphyxiant

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Hazardous Materials

- Examples of building placards





The NFPA 704 diamond provides information to first responders and are typically located outside buildings, on doors, or on tanks, and visible to emergency responders during spill or fire.

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Hazardous Materials Identification

Global Harmonized System on Containers



HazCom GHS labels that are on chemical containers provide information about hazards to workers using hazardous chemicals under normal conditions of use.

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HazMat in Storage

UN and NA Placards



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HazMat in Transit

Vehicle Placards



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Hazardous Materials

- Example of vehicle placard



Chemical code 1203 is Gasoline

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Hazardous Materials Response

Most important: Remember **S. I. N.**

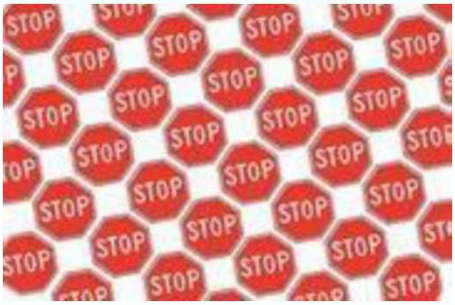
- **S**afety: Safety is the Number 1 priority
- **I**solate: Keep people out of the area
- **N**otify: Get help, document what you see



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Hazardous Materials



Remember:

All hazardous material placards are a stop sign for CERT volunteers!

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Hazardous Materials

- Question: Who carries hazardous materials on a regular basis and does not have to have placards on their vehicles?



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Hazardous Materials

- Answer:





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FIRE SAFETY

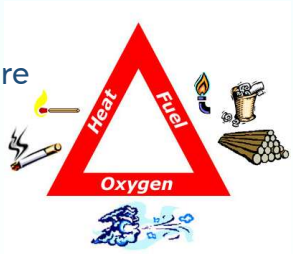
Reducing Fire Hazards and Putting Out Fires

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The Fire Triangle

- Three things must be present at the same time to produce fire:
  1. **Oxygen** to sustain combustion
  2. **Heat** to reach ignition temperature
  3. **Fuel** or combustible material
- Together, they produce the chemical reaction that is fire
- Take away any one of these things and the fire will be *extinguished*



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Flashover Video



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Reduce Fire Hazards

- Never leave a pan unattended
- If things go wrong, don't panic !
- Turn off the heat if it is safe to do



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Reduce Fire Hazards

- NEVER use water on oil or grease
- Use a cookie sheet to smother flames
- Put a lid or slide the cookie sheet over the top of the pot







Reduce Fire Hazards

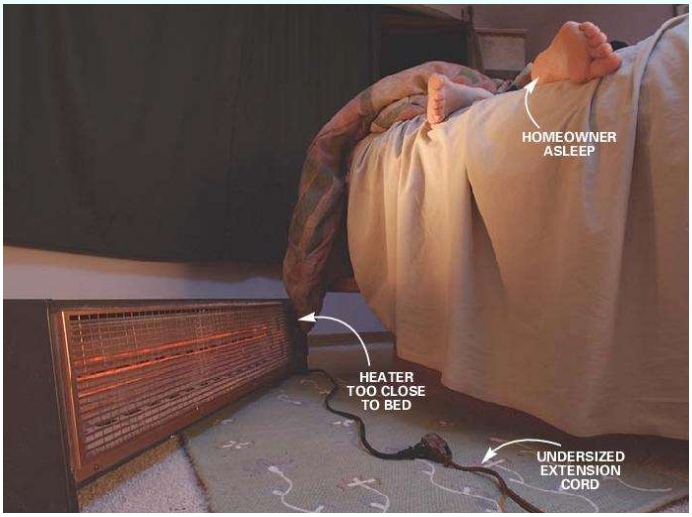
- Don't be a "pack rat"





Stuff = fuel for a fire

Reduce Fire Hazards

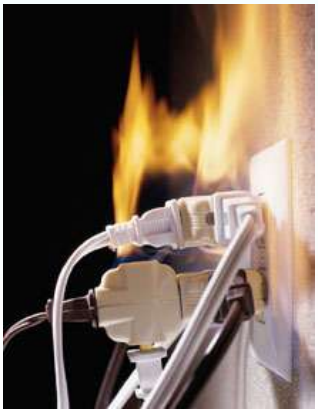


3 feet from the heat

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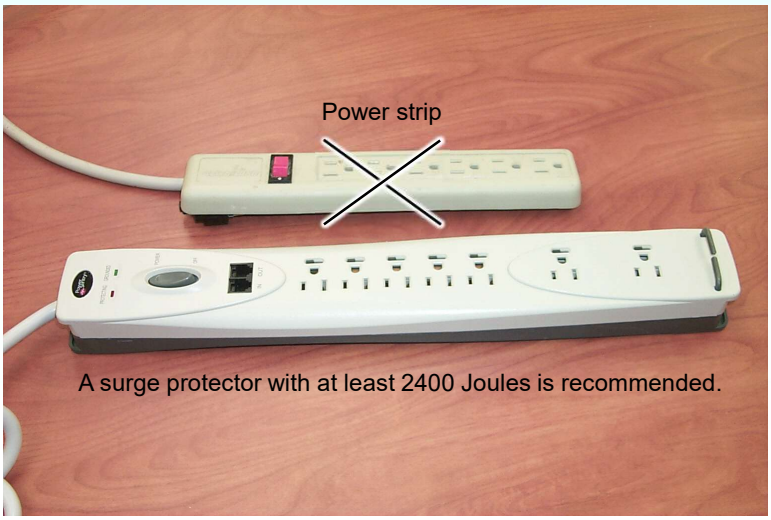
Reduce Fire Hazards

- Avoid the “electrical octopus”



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Reduce Fire Hazards



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Reduce Fire Hazards



Be “firewise” around your home and neighborhood
www.firewise.org

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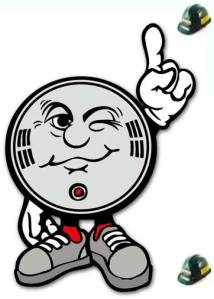
Natural Gas, Carbon Monoxide and Propane

- Natural gas is *lighter* than Air
  - Accumulates near the ceiling
- Carbon Monoxide (CO) is *almost same* as Air
  - Diffuses into the air
  - Rises slowly in warm air currents
- Propane is *heavier* than Air
  - Accumulates near the floor
- All are Asphyxiants and displace oxygen in the lungs and blood

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Smoke and CO Detectors

- Most house fire victims die from smoke or toxic gases
- Install carbon monoxide detector
  - CA State Law effective July 1, 2011
  - CO results from incomplete burning of organic matter including all petroleum products
    - Gasoline
    - Natural gas
    - Propane
- Test batteries for natural gas and carbon monoxide detectors every month
  - Change batteries every 6 months
  - New models have 10 year batteries

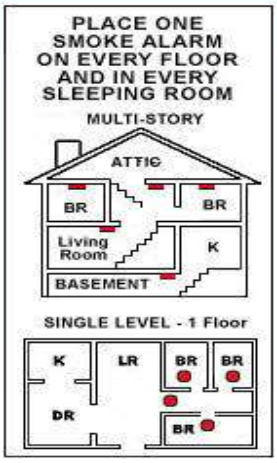


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Fire Detection - Smoke Detectors

- Is one enough?



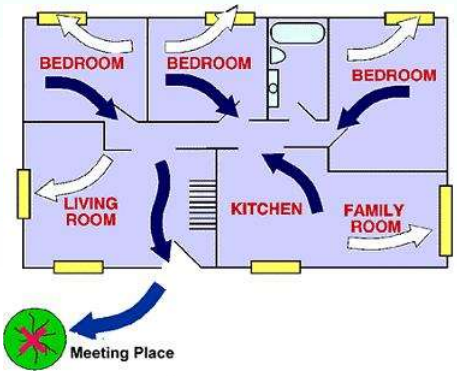


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Fire Safety

- Plan and practice 2 fire escape routes
- Once you're out, stay out !
- Don't go back in



Use the **back** of your hand to feel for heat



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Fire Suppression Resources

- Local fire department
- Fire alarm systems
- Sprinkler systems
- Interior wet standpipes with hose
- Portable fire extinguishers

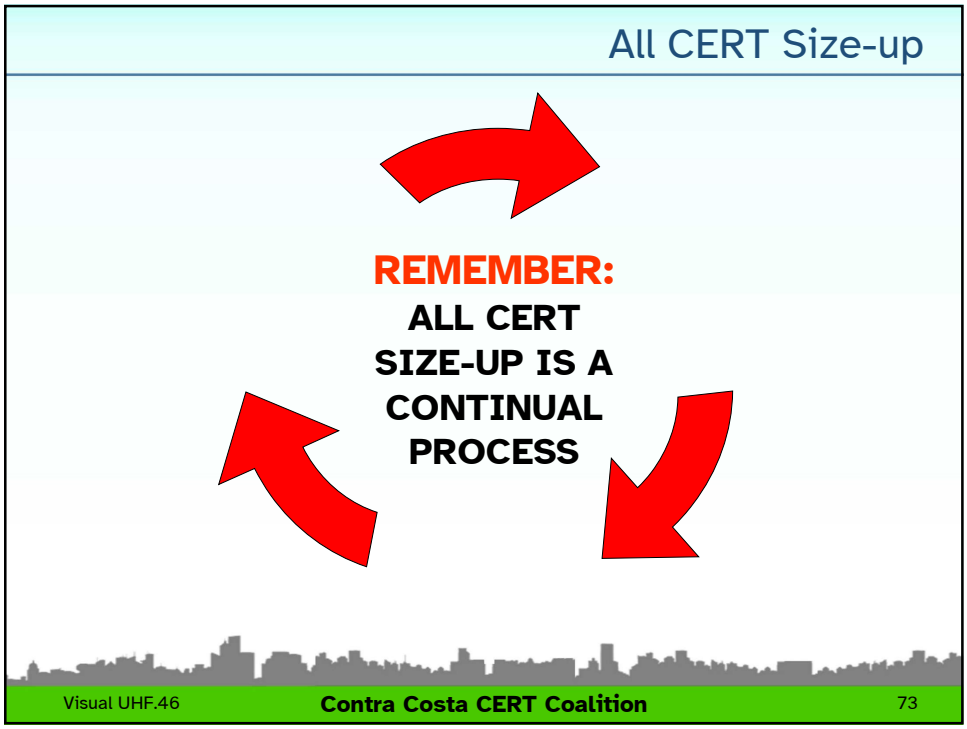


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CERT Fire Size-up

- Size-up is the on-going evaluation of problems confronted within any emergency situation
- Size-up starts with the recognition of the emergency and continues until the emergency is under control. This process is carried out many times and by many different individuals at each emergency event
- The responsibility for size-up initially lies with the first responder that arrives on scene

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All CERT Size-up
REMEMBER:
ALL CERT SIZE-UP IS A CONTINUAL PROCESS
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All CERT Size-up
360° SCAN – all around and everything above ground
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CERT Fire Size-up

- Can my buddy and I escape?
- Helps CERT volunteers decide:
  - Whether to attempt to suppress a fire
  - A plan of action
- Answer these questions:
  - Do my buddy and I have the right equipment?
  - Are there other hazards?
  - Is the building structurally damaged?
  - Can my buddy and I fight the fire safely?

Remember: The safety of individual CERT members is always the top priority

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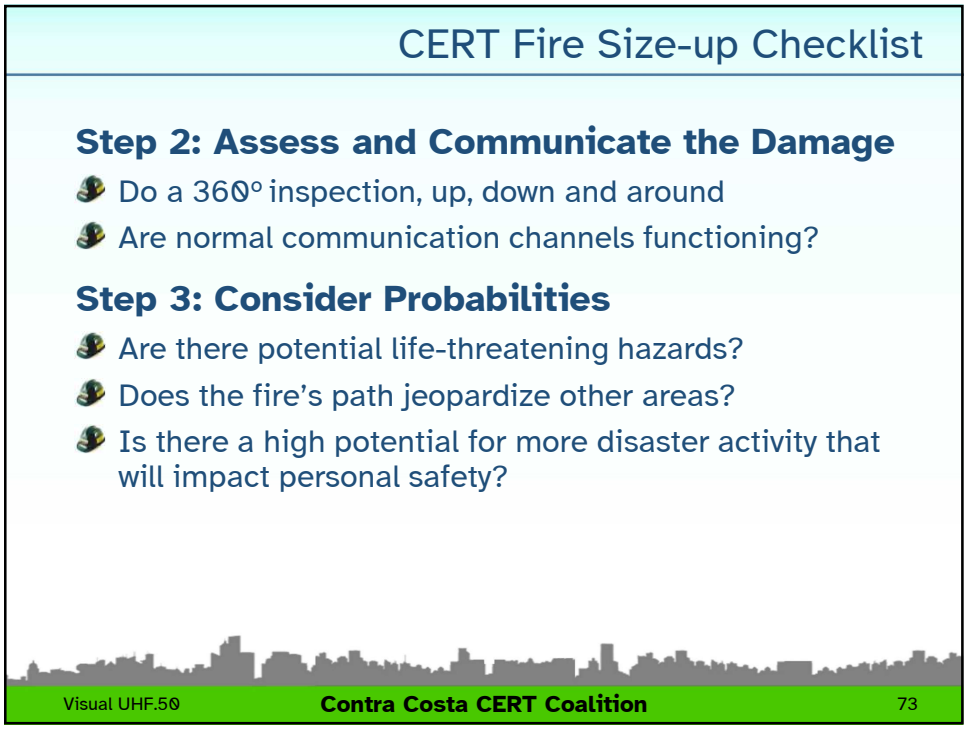
CERT Fire Size-up Checklist

Step 1: Gather Facts

- Does the time of day or week impact fire suppression?
- Will weather conditions affect the fire situation?
- What type of structure is involved?
- Is the structure occupied?
- Are there special considerations?
- Are any other hazards likely to be involved?

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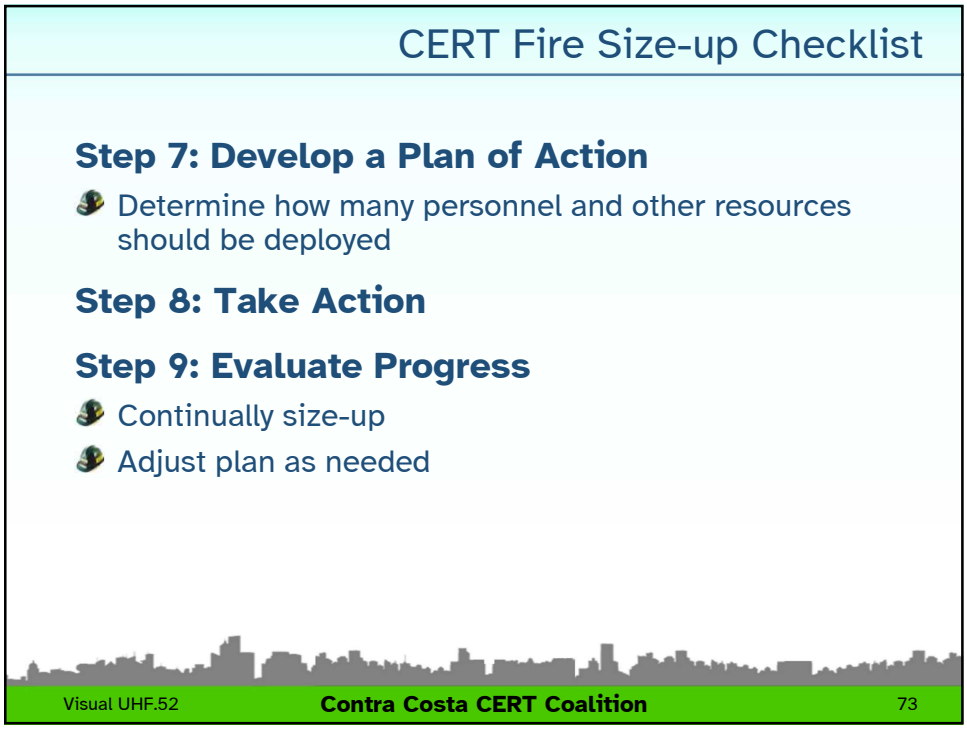
49


CERT Fire Size-up Checklist
Step 2: Assess and Communicate the Damage
Do a 360° inspection, up, down and around
Are normal communication channels functioning?
Step 3: Consider Probabilities
Are there potential life-threatening hazards?
Does the fire's path jeopardize other areas?
Is there a high potential for more disaster activity that will impact personal safety?
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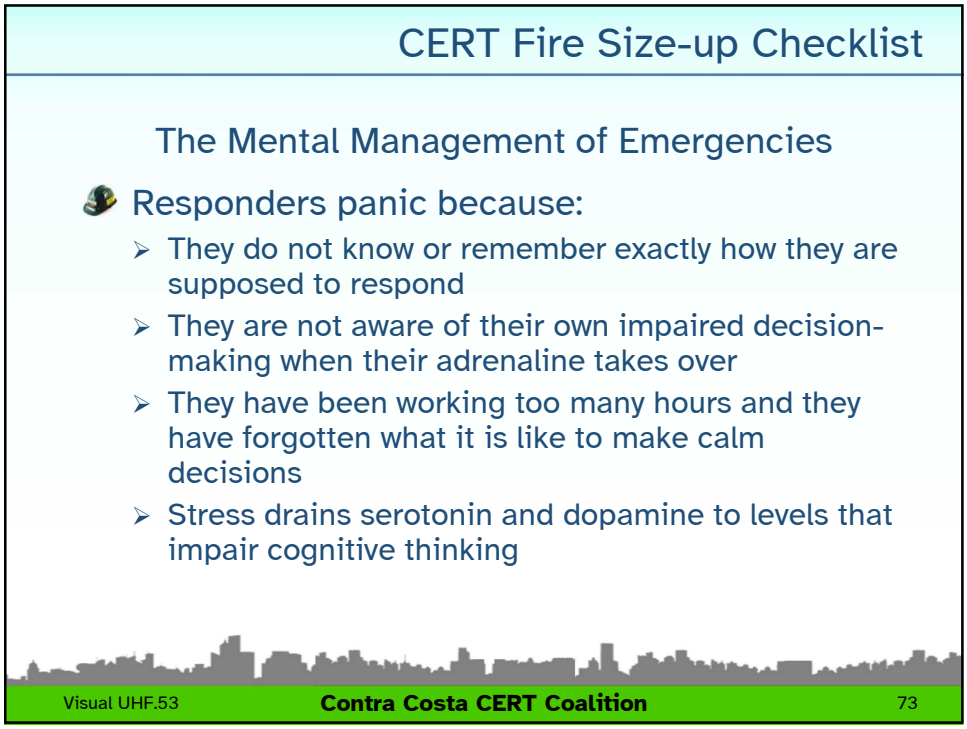
50


CERT Fire Size-up Checklist
Step 4: Assess Your Own Situation
What resources are available?
What equipment is available?
Step 5: Establish Priorities
Can fire suppression be safely attempted by CERT?
Are there other, more pressing needs at the moment?
Step 6: Make Decisions
Where will deployment of available resources do the greatest good while maintaining an adequate margin of safety?
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CERT Fire Size-up Checklist
Step 7: Develop a Plan of Action
Determine how many personnel and other resources should be deployed
Step 8: Take Action
Step 9: Evaluate Progress
Continually size-up
Adjust plan as needed
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CERT Fire Size-up Checklist
The Mental Management of Emergencies
Responders panic because:
They do not know or remember exactly how they are supposed to respond
They are not aware of their own impaired decision-making when their adrenaline takes over
They have been working too many hours and they have forgotten what it is like to make calm decisions
Stress drains serotonin and dopamine to levels that impair cognitive thinking
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CERT Fire Safety

"CERTS Don't Get Hurt"

- Use **P**ersonal **P**rotective **E**quipment (**PPE**)
- Have a communications plan
- Have a backup team
- Have two ways to exit



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CERT Fire Safety

- Put out small fires, this size ☞
- Prevent additional fires





- Shutoff utilities after a disaster to prevent fires

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Fire Suppression Don'ts

- Don't get too close
- Don't try to fight a fire alone
- Don't try to suppress large fires
- Don't enter smoke-filled areas



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CERT Fire Safety

Use the buddy system for all CERT activities, especially fire safety!





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Fire Fuels

- Fuels are things that will burn
- There are three main classifications of fuels
  - Two more for commercial environments

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Classification of Fuels

A		Ordinary Combustibles	Wood, Paper, Cloth, Etc.
B		Flammable Liquids	Grease, Oil, Paint, Solvents
C		Live Electrical Equipment	Electrical Panel, Motor, Wiring, Etc.
D		Combustible Metal	Magnesium, Aluminum, Etc.
K		Commercial Cooking Equipment	Cooking Oils, Animal Fats, Vegetable Oils

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Fire Extinguisher Types

Standard ABC Extinguishers



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Choosing a Fire Extinguisher

Typical ABC Fire Extinguisher specifications

Size	2.5	5	10
Height	14.87	15.25	18.94
Width	5.5	7.25	7.75
Depth	3	4.25	5.25
Weight Pounds	5.8	10.4	13.3
Nominal Discharge Time	9.5	14	22
Discharge Range, Feet	10-15	12-18	16-20
Rating	1-A:10-B:C	3-A:40-B:C	4-A:80-B:C

Source – Badger Fire Protection

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Parts of a Fire Extinguisher



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Parts of a Fire Extinguisher

- Pressure gauge indicating a full extinguisher



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Fire Extinguisher Rating / Labeling

- Labels show the class of fire and the amount of extinguishing agent.
  - 1A is equivalent to 1.25 gallons of water
  - 10B can cover roughly 10 square feet



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Maintenance of Fire Extinguishers



MYTH

Every six months, turn them over a few times to prevent caking of the powder

Fire extinguisher manufacturers agree that this is not needed and may, in fact, be harmful

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Maintenance of Fire Extinguishers

- Replace if 10 years or older
  - Most extinguishers do not have a date code. Use a marker and put your purchase date on the bottom.
- Replace with a metal head, not plastic



Where to buy or service? Look in the yellow pages

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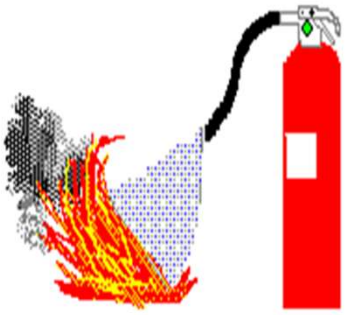
How to Use a Fire Extinguisher

Pull

Aim

Squeeze

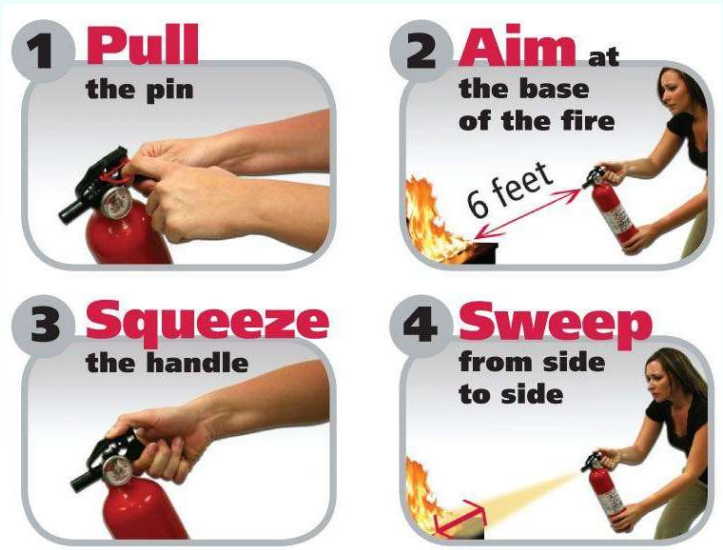
Sweep



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How to Use a Fire Extinguisher



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How to Use a Fire Extinguisher

- Size-up fire before you decide to fight it. Be upwind!
- Before approaching a fire, have pins pulled on both extinguishers (yours and your buddy's)
- Test the extinguishers before approaching any fire to be sure they work
- LEAD :: BUDDY
  COMMAND RESPONSE
  Ready :: Ready
  Going in :: Going in
  Backing out :: Backing out
- Communicate!



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How to Use a Fire Extinguisher



- Start using the extinguisher from a safe distance away, about 8 feet and then move forward
- Keep about 6 feet between you and the fire

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Firefighting Resources



Flow at 40 PSI
100 Foot Hose
1/2" Hose 6 GPM
5/8" Hose 11 GPM
3/4" Hose 18 GPM

Double the length – Half the flow

What if you don't have an extinguisher?

Try "creative" resources or confinement





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Questions ?



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Takeaways

- Utilities – locate and shutoff as needed
- Hazardous Materials
  - L.I.E.S. - Limit, Isolate, Eliminate, Separate
  - Placards, Building, Global Harmonized, Vehicle
  - S.I.N. – Safety, Isolate, Notify
- Fire
  - Reduce Hazards – Detect
  - Firewise USA® – Protect Your Home
  - Size-Up
  - Fire Extinguishers

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