Imagine If ...

- Natural Disasters
  - Earthquakes
  - Floods
  - Winter Storms
  - Solar Flare
- Manmade Disasters
  - War
  - EMP/Cyber Attack
  - Pandemic
  - Extended Power Outage

Let the Storm Rage On

How to Survive Freezing Temperatures Without Electricity

Important things you should know

Principles

Rule of Threes

- Survive 3 minutes without air
- Survive 3 hours without shelter
- Survive 3 days without water
- Survive 3 weeks without food

Get Your Priorities Straight!
Principles of Heat Loss
1. **Conduction** – heat loss through ground
2. **Convection** – heat loss due to air movement
3. **Radiation** – heat loss to space
4. **Respiration** – breath in cool, breath out warm
5. **Perspiration** – water conducts heat hundreds of times faster than dry air – Don’t get wet!!

Symptoms of Hypothermia
- **Initial Signs**
  - Shivering
  - Grogginess and confusion
  - Normal breathing and pulse
- **Danger Signs of Worsening**
  - Violent shaking or shivering stops
  - Inability to think and pay attention
  - Slow, shallow breathing
  - Slow, weak pulse
- **Signs of Severe Hypothermia**
  - Shivering has stopped
  - Unconsciousness
  - Listens or no breathing
  - Weak, irregular or non-existent pulse

Treatment for Hypothermia
- **Mild (90-98°F)**
  - Reduce heat loss
  - Get into dry clothing
  - Get into a shelter
  - Warm environment
  - Increase heat production
  - Vigorous exercise if victim can walk
  - Apply heat sources (hot pads, hot water bottles)
  - Give lots of fluids (no alcohol or caffeine)

Severe (82-90°F)
- Transport to hospital emergency room
- Rapid rewarming is dangerous and may kill victim
- Handle gently
- If unable to get professional help immediately:
  - Place victim in warm environment
  - Insulate body with blankets
  - Do not rub arms, legs or feet to increase blood flow
  - Give fluids if conscious (no alcohol or caffeine)

Frostbite -- Don’t Let It Happen To You!
- **Day 1**
  - High 18°F
  - Low 1°F
  - Inside 51°F

Our story of surviving freezing January temperatures
The Experiment

Help!
Set Up A Tent
- Increases warmth
- Provides privacy
- Great for sleeping
- Gives extra warmth during stationary activities:
  - Playing games
  - Reading
  - Just warming up

Day 2
Inside 51°F
- High 18°F
- Low -1°F
- Doesn’t slow Dad down one bit!
- He adapts almost as well as the children.
- Reading material focuses on emergency topics

Day 3
- Outside Temp 21°F | 12°F
- Inside Temp (Low) 49°F

“Look Mom!
I can see my breath inside the house.”

Natural Gas Fireplace
- Nice to sit by and warm up
- Works without electricity
- Dependent on working natural gas lines
- Not very efficient without fan

Day 4
Outside Temp 28°F | 16°F
Inside Temp (Low) 46°F

By Day 4 Life Changed!
- Kids still having fun
- Mom no longer cared about having “hat hair” or looking presentable
- Grateful for light and heat!!
- Mom was DONE!!
Lessons Learned
- You can survive without electricity
- Children are fascinated by open flame
- Cold results in survival mode
- Productivity is minimal
- Combination of cold and dark are depressing
- Wear a hat!!
- Store easy-to-prepare foods

Stay Hydrated
- Drink plenty of water
- You may not feel thirsty
- Drink, drink, drink
- Drink tepid water
- Do not eat snow
- Do not drink co-water
- Dehydration thickens blood, increasing risk of hypothermia
- Eat foods high in protein, carbohydrates and fats for energy

Keep Your Core Warm
- Core = Head to knees
- Wear hat
- Layer clothing
- Warm jacket
- Insulate—stuff with newspapers, rags, whatever necessary to stay warm
- Dress warmly from the beginning
- Don’t wait until you are chilled

Layer Clothing
- Wear several layers of loose lightweight clothing as opposed to one heavy layer
- Wear a hat – most heat is lost through the head
- Wear gloves/mittens to keep hands warm
- Wear socks or slippers
- Keep clothing and footwear loose to ensure good circulation

Blankets and Warm Clothing
- Lots of blankets
- Sleeping bags
- Coats, jackets, sweaters
- Hats, gloves, mittens, scarves, ear muffs
- Warm socks
- Boots, warm slippers
- Warm pants

You Can’t Have Too Many Blankets!!
Mylar Blankets/Sleeping Bags
- Good for 72 hour kit
- Wind and vapor barrier
- Returns radiant body heat
- Provides no insulation
- Small and portable
- Does not replace standard blankets or sleeping bags
- May provide shade and deflect heat on hot summer day

Foam Clothing
- Designed by Jim Phillips
- Prepremyfamily.com

Be Active - Exercise
- A healthy body is more tolerant of cold
- 30 minutes of exercise can warm you up and keep you warm
- Exercise increases blood flow to extremities preventing frostbite
- Caution: Avoid sweating in severe cold – stay dry

Warm Up Inside with Hot Drinks and Foods
- Hot cocoa, apple cider, etc.
- Hot cereals
- Hot broth, soups
- Chili
- Stew
- Hot meals

Hand & Foot Warmers
- Effective for short term emergency heat
- Good for evacuation
- Rotate – short shelf life

Bed Warmers
- Be creative
- Heated rock
- Hot water bottle
- Warmed blanket
- Another person
- Wear a cap, socks
Special Needs

- Consider special needs of family members
- The very young, old, or individuals with compromised health cannot tolerate cold temperatures or toxins in the air
- Plan carefully to ensure their safety

Prepare Your Home

- Take time now to winterize your home
- Install weather stripping around windows and doors
- Check insulation especially in your attic, basement and exterior walls. Are they up to code?
- Check for cold air entry points
  - Exterior wall electrical outlets
  - Sinks
  - Gaps around windows or doors
- Clean chimney and vents
- Keep roof in good repair
- Insulate pipes exposed to cold (exterior walls)

Select Living Area

- Close off all rooms except the one to be heated. Consider the following:
  - Fireplace or built-in heat source
  - Sink or kitchen facilities
  - South facing to take advantage of passive solar heat
  - Avoid rooms with large windows or uninsulated walls
  - Basements are good because the earth acts as natural insulator
- Confine emergency heat to a small area.
- Isolate the room from the rest of the house by keeping doors closed, hanging bedding or heavy drapes over doorways, or putting up temporary partitions of cardboard or plywood.

Cover Windows

- Cheap clear shower curtain
- Thick clear plastic sheeting
- Blankets
- Close blinds
- Curtains
- Bubble wrap (spray with water to adhere)
- Plywood
- Anything to insulate!

Store Heavy Plastic

- Heavy plastic sheeting (6 ml)
- Store plastic out of direct sun and weather
- Rolls of duct tape
- Duct tape gets gummy as it ages—rotate it!

Passive Solar Heating

- Capture the sun’s heat within the building and release heat during periods when sun is not shining
- Thermal mass can be concrete, bricks, tile, water, etc.
- Do not exceed 6 inches of thickness
Our Sunroom/Solarium

- South-facing windows designed with sun angle optimization to maximize solar gain in winter with no heat gain in summer
- High mass floor and wall to retain heat

Active Solar Heating

- Can be used for hot water heating or space heating
- Technology is mature and systems function extremely well
- Attractive
- Cost-effective

Carbon Monoxide Poisoning

- Flu-like symptoms
- Headache
- Nausea
- Weakness
- Impaired Judgment
- Irritability
- Confusion
- Dizziness

- Carbon monoxide is
  - Odorless
  - Colorless
  - Tasteless

- Producers
  - Charcoal, coal
  - Gasoline
  - Diesel
  - Generator fuel (white gas)
  - Propane
  - Natural gas
  - Wood
  - Any flame with incomplete combustion

Side Effects of Carbon Monoxide Poisoning

- Short and intermediate memory loss for 6 months to 1 year
- Lifelong brain damage
- Symptoms similar to Parkinson's Disease
- Death

It may take 3-4 weeks for levels to build up before you recognize carbon monoxide poisoning.

Hyperbaric Chamber

Utah Valley Regional Medical Center

- Don't take chances!!
  - He may not be available to save you from a stupid choice!

Eugene Worth, M.D
Safety First!

- Do not burn any flame larger than a candle without providing adequate ventilation.
- Any appliance that has not been rated for indoor use should not be used indoors.
- Have one person watch for fire whenever an open flame is used.
- One person should also stay awake to watch for fire and make sure ventilation is OK. If you feel drowsy or have a headache, it may be a sign of poor ventilation.

Working Carbon Monoxide Detector

- MUST HAVE!!!!
  - One on each floor of home
  - One in the garage
  - Place one near portable heater while in use

Fuel Storage & Safety

- Store safely and legally!
- Be selective
- Understand dangers and limitations
- Never store fuel inside your home
- Store fuel in a detached shed
- Keep away from children!

Vented Heaters

Variety of vented household heating systems that burn a variety of fuels.
1. Buy quality
2. Professional installation
3. Maintain regularly
4. Vent / exhaust to the outside
5. Use according to manufacturer directions
6. Store fuel safely!

Coal

- Stores well
- Dark place
- Away from moving air
- Store in plastic-lined pit or sheds, bags, boxes, or barrels
- Keep away from circulating air, light and moisture
- Cover to protect from weather and sun
Wood

• Good, inexpensive fuel source
• Safe to store
• Takes a lot of wood to keep a home warm for the winter
• Storage life 4+ years

Newspaper Logs/Bricks

• Inexpensive
• Easy to make
• Best if mixed with real wood
• Long shelf life
• Creates more ash than wood
• Do not make from slick ads

Wood Stoves / Cookstoves

• Beautiful and welcoming
• Great for emergency heating and cooking
• Safe, secure option
• Proper installation and operation important
• Be sure to maintain and clean regularly
• Wood is safe and easy to store

Propane

• Indefinite shelf life
• Produces carbon dioxide
• May produce carbon monoxide without complete combustion
• Pressurized cylinder of flammable gas
• Store away from home
• Heavier than air, may pool causing explosive risk

Mr. Heater Portable Buddy

• Portable propane heater
• Rated for indoor use
• Low-oxygen shut off
• 4,000 – 9,000 BTU
• Use 1 or 20 lb propane cylinders
• Never bring 20 lb propane tank indoors
• Larger size available

Alcohol

• Denatured alcohol
• Grain alcohol with toxins added
• Best choice for alcohol stove
• Cheap – available at hardware stores
• Pure ethanol
• Grain (potable)
• Expensive – available at liquor stores
• Indefinite shelf life if store in airtight container
• May be burned indoors
• Not explosive

Use at higher elevations (7000+ feet) – heat may result in increased risk of carbon monoxide poisoning.

Open flames present a fire hazard – Use Great Caution!
**Alcohol Heater**
- Heat Pal 5100
- Burns alcohol
- Produces carbon dioxide
- Stove and heater
- Alcohol has an indefinite shelf life
- Lightweight, small, portable

**Terracotta Pot Heater**
- Two different sized clay pots
- Convection
- Thermal mass collects heat and radiates it back
- Place to warm hands
- Takes the chill off

**Kerosene**
- Inexpensive
- Less explosive than gasoline or Coleman fuel
- 5+ year shelf life
- Requires very little oxygen to burn
- Must provide ventilation
- Store in approved blue containers

**Unvented Kerosene Heaters**
- Produces dangerous gases
  - Carbon monoxide
  - Nitrogen dioxide
  - Sulfur dioxide
- High fire risk
- High burn risk
- Avoid indoor use
- If you choose to use be sure to ventilate!!

**Generators**
- Good for providing emergency power
- NEVER use indoors
- Do not use in garage
- Use a long extension cord and operate outdoors away from windows and doors
- Safely store fuel

**Important principles**
- SAFETY FIRST!!
- When power goes out:
  - Don’t panic
  - Keep doors and windows closed to conserve heat
  - Conserve fuel by warming only one room
  - Turn off all lights and appliances
  - Wear warm clothing
  - Block movement of cold air (stuff blankets under doors, cover windows)
- Relax—you know what you are doing and have a practiced plan!
Emergency Heating Checklist

✓ Educate self and family cold weather survival
✓ Prepare your home
✓ Prepare warm clothing, bedding, blankets, and special needs
✓ PRACTICE!!!

Do Something NOW!

• Make your goal right now!
• Be realistic
• Do something in the next few days
• Report share your success story
  jbjonesoc29@gmail.com
  kyleneanne@gmail.com
• Keep making progress!

Follow Us

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Do Something NOW!