

Helping Child Care Providers Prepare for Radiation Emergencies

March 26, 2018

2018 Child Care Emergency Preparedness, Response, and Recovery Webinar Series



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Today's Presenters:



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Child Care Aware® or America



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Senior Service Fellow
Emergency Management, Radiation and Chemical
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Division of Environmental Health Science and Practice
National Center for Environmental Health
Centers for Disease Control & Prevention

Today's Presenters:



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Executive Director
MRC GEM (Medical Reserve Corps
Georgia East Metro)



Betsy T Kagey, PhD
Academic and Special Projects Liaison
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Georgia Department of Public Health

What's The Risk: Radiation Emergencies

- How likely is this to occur?

IMPACT	High	Medium	High	High
	Medium	Low	Medium	High
	Low	Low	Low	Medium
		Low	Medium	High
		LIKELIHOOD		

Child Care Providers within 10 mi of Monticello Power Plant

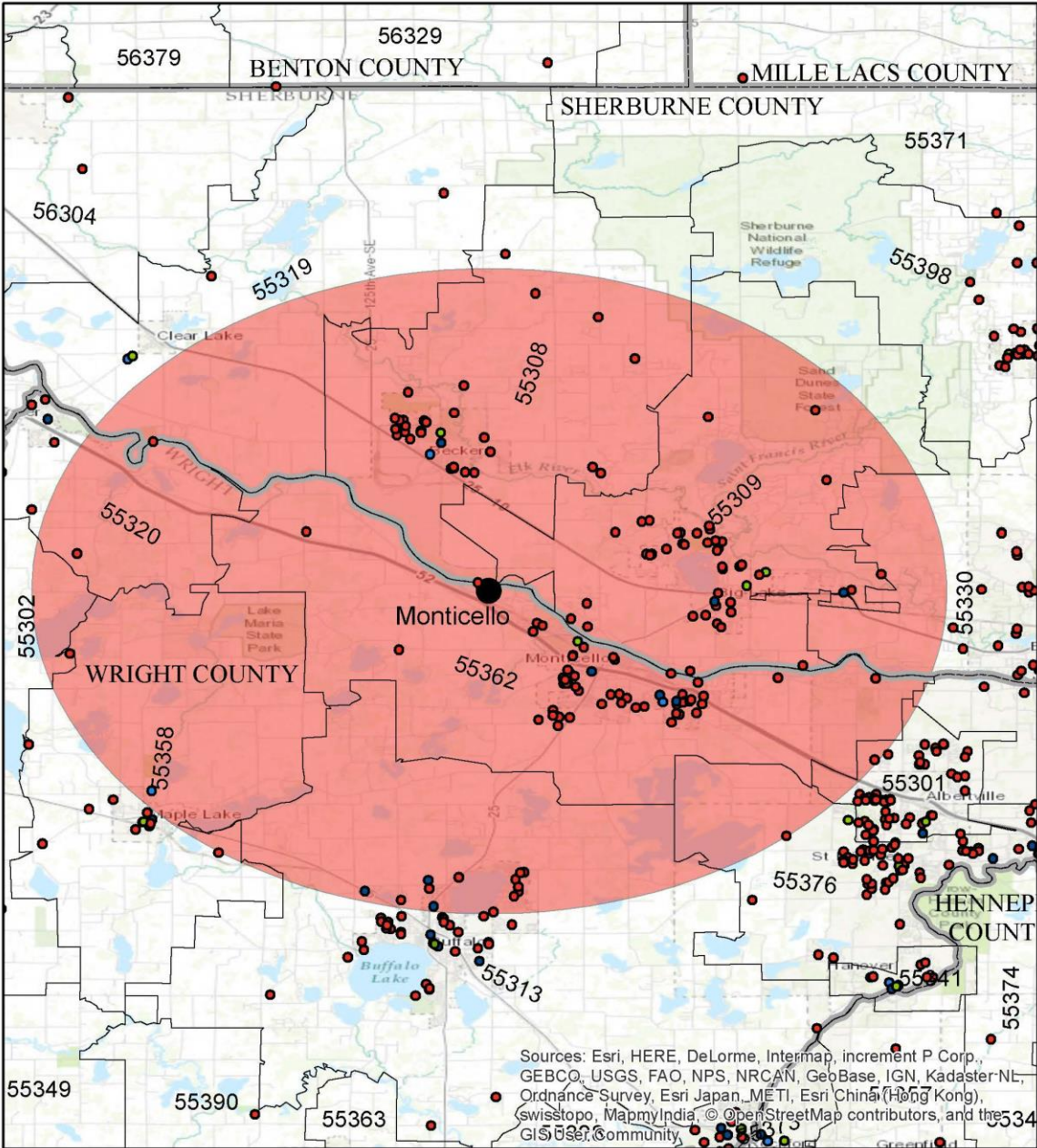
Zip Codes Impacted:
 55301 - Albertville
 55319 - Clear Lake
 55376 - St. Michael
 55308 - Becker - 46 providers
 55309 - Big Lake - 71 providers
 55313 - Buffalo - 13 providers
 55320 - Clearwater - 1 provider
 55330 - Elk River - 2 providers
 55358 - Maple Lake - 2 providers
 55362 - Monticello - 62 providers

Total Providers Affected: 197

- Early Childhood Special Education (ECSE)
- Head Start/Early Head Start (grantee)
- Legally non-Licensed or License Exempt
- Licensed/Tribally Licensed Child Care Center
- Licensed/Tribally Licensed Family Child Care
- Public School Pre-K (individual site)
- School Age Program
- Tribally Licensed Child Care

- Zip Codes
- Monticello Power Plant
- Counties
- 10 mile Radius

*Closest Child Care Provider to
Power Plant: 1.5 miles



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster-NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

RADIATION BASICS AND BACKGROUND

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Division of Environmental Health Science and Practice

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BASIC RADIATION CONCEPTS

- Radioactive Contamination
- Radiation Exposure
- Radiation Dose
- Types of Radiological Emergencies

RADIOACTIVE CONTAMINATION

What is Contamination?

- Radioactive material that is *somewhere it is not supposed to be*
 - **External** contamination: radioactive material that gets on your skin, hair or clothing
 - In most cases can be removed by simply changing clothes and washing with soap and water
 - **Internal** contamination: radioactive material that gets **inside** your body
 - It is harder to remove. Some medicines (known as medical countermeasures) can help remove some types of radioactive materials from the body



RADIATION EXPOSURE

What is Exposure?

- Is a measure of the amount of ionizing radiation that interacts with your body.
- Think of a flashlight
 - When it's on and it's shining on you: *you are exposed.*
 - When it's off or if you are behind a wall or object: *you are not exposed*



RADIATION DOSE

- **Radiation dose is the amount of radiation you receive from a source**
- **What determines the dose:**
 - Strength of the source
 - Proximity to the source
 - Amount of time you spend near the source



- **The best way to minimize your dose**

The three cardinal principles of radiation protection:

- Time – minimize time spent
- Distance – maximize distance between you and the source
- Shielding – place shielding between you and the source



POTENTIAL RADIATION EVENTS

- Transportation
- Power Plant
- Weapons
- Laboratory
- Industrial
- Medical
- Space
- Terrorism





RADIOLOGICAL DISPERSAL DEVICE (RDD)

- A device that disperses radioactive material by ***conventional*** explosive (dirty bomb) or other mechanical means, such as a spray.
- Contamination and exposure hazard





NUCLEAR EMERGENCIES

- A nuclear emergency involves the explosion of a nuclear weapon or improvised nuclear device (IND).
- The explosion produces an intense pulse of heat, light, air pressure, and radiation.
- Nuclear explosions produce fallout (radioactive materials that can be carried long distances by the wind).

EXAMPLES OF NUCLEAR INCIDENTS

❑ Strategic Nuclear Weapons

- Think Cold War (megaton range)



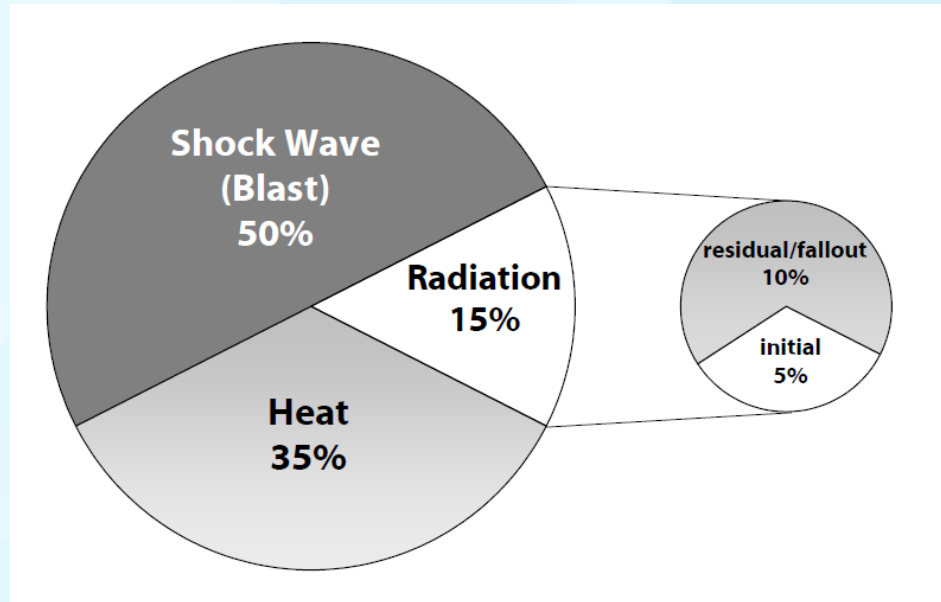
❑ Improvised Nuclear Device (IND)

- Think Hiroshima “Little Boy”
- Low-yield kiloton range
- Possible tool of terrorism
- No warning!
- National Planning Scenario #1



Operation Teapot, *MET*, 22 KT, 4/15/1955

Immediate and massive destruction by a nuclear bomb is NOT caused by radiation!



*Adapted from Glasstone and Dolan, the Effects of Nuclear Weapons, 1977
Printed in Ansari, Radiation Threats and Your Safety, 2009.*

THREE PHASES OF RADIATION EMERGENCY RESPONSE

Early Phase (days to weeks)

- Those actions required for lifesaving and immediate protection from radiation and radioactive materials
- Often based on limited information or projections (modeling)

Intermediate Phase (weeks to months)

- Typically involve protecting individuals from *chronic exposure* to radioactive materials on the ground, bodies of water, or incorporated in or deposited on food products

Late Phase (months to years)

- Activities designed to return the affected area to normalcy

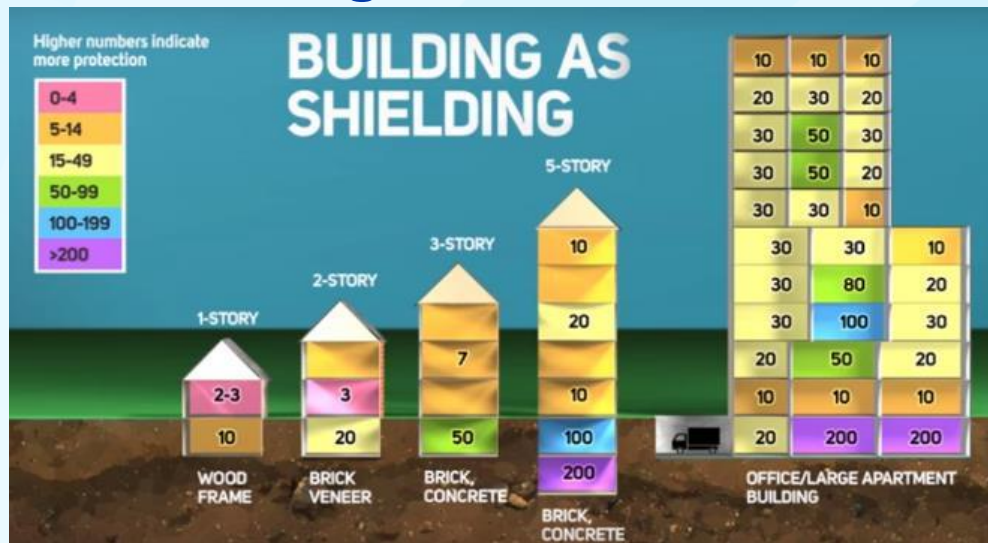


SHELTER-IN-PLACE

- Involves directing people to get indoors and stay indoors during an incident
- Considered a *short-term protective measure*, lasting a few hours to no more than 2-3 days, depending on the nature of the incident
- Recommended by radiation professionals when either
 - Expected to be of short duration (ex. “puff release”)
 - During nuclear detonation where sheltering-in-place allows for radioactive fallout to decay, making it safer to evacuate




SHELTER-IN-PLACE Building “Protection Factors”




- Sheltering in place provides protection while response officials coordinate evacuation efforts
- Multi-story buildings and basements offer the most protection

EXAMPLE - INFOGRAPHICS


Do you know what to do in a radiation emergency?



GET INSIDE



STAY INSIDE



STAY TUNED

For more information, visit <http://emergency.cdc.gov/radiation>

WHERE TO GO IN A RADIATION EMERGENCY


If a radiation emergency happens in your area, you should get inside immediately. No matter where you are, the safest action to take is to: **GET INSIDE. STAY INSIDE. STAY TUNED.**

- Close and lock all windows and doors.
- Go to the basement or the middle of the building. Radioactive material settles on the outside of buildings, so the best thing to do is stay as far away from the walls and roof of the building as you can.
- If possible, turn off fans, air conditioners, and forced-air heating units that bring air in from the outside. Close fireplace dampers.
- Bring pets inside.
- Stay tuned for updated instructions from emergency response officials.

GET INSIDE

STAY INSIDE

STAY TUNED



Adapted from Ventura County Public Health, Ventura County, CA

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
<http://emergency.cdc.gov/radiation>

DECONTAMINATION FOR YOURSELF AND OTHERS

- #### 1 TAKE OFF OUTER LAYER OF CLOTHING

Taking off your outer layer of clothing can remove up to 90% of radioactive material.

Be very careful in removing your clothing to prevent radioactive dust from shaking loose.

Put the clothing in a plastic bag or other sealable container.

Put the bag in an out-of-the-way place, away from other people and pets.
- #### 2 WASH YOURSELF OFF

If you can take a shower: Use soap and shampoo. Do not use conditioner because it will cause radioactive material to stick to your hair.

If you cannot take a shower: Wash your hands, face, and parts of your body that were uncovered at a sink or faucet. Use soap and plenty of water.

Do not scald, scrub, or scratch your skin.

Keep cuts and scrapes covered when washing to keep from getting radioactive material in open wounds.

If you cannot use a sink or faucet: Use a moist wipe, clean wet cloth, or damp paper towel to wipe the parts of your body that were uncovered. Pay special attention to your hands and face.

Blow your nose and wipe your eyelids, eyelashes, and ears with a moist wipe, clean wet cloth, or damp paper towel.
- #### 3 PUT ON CLEAN CLOTHES

If you have clean clothes: Clothes stored in a closet or drawer away from radioactive material are safe to wear.

If you do not have clean clothes: Take off your outer layer of clothing, shake or brush off your clothes, and put your clothes back on.

Rewash your hands, face, and exposed skin at a sink or faucet.
- #### 4 HELP OTHERS AND PETS

Wear waterproof gloves and a dust mask if you can.

Keep cuts and scrapes covered when washing to keep radioactive material out of the wound.

Rewash your hands, face, and parts of your body that were uncovered at a sink or faucet.

STAY TUNED FOR UPDATED INFORMATION FROM PUBLIC HEALTH OFFICIALS.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
<http://emergency.cdc.gov/radiation>

<https://emergency.cdc.gov/radiation/resourcelibrary/all.asp>

EXAMPLE – EDUCATIONAL VIDEOS

Where to Go in a Radiation Emergency



[View Low Resolution Video](#)

Get Inside, Stay Inside, Stay Tuned



[View Low Resolution Video](#)

Self-Decontamination in a Radiation Emergency



[View Low Resolution Video](#)

Food and Water Safety in a Radiation Emergency



[View Low Resolution Video](#)

<https://emergency.cdc.gov/radiation/protectiveactions.asp>

CDC VIDEO: Where to Go In A Radiation Emergency

- <https://www.youtube.com/watch?v=ux8trcUoCC8>



Where to Go in a Radiation Emergency

VENTURA COUNTY VIDEOS



- https://www.youtube.com/watch?v=Nld2BHU6_b0
- <https://www.youtube.com/watch?v=2jls-Lwh6U0>
- <https://www.youtube.com/watch?v=jGPetxZ3iMM>

TOOLS AND TRAININGS

- **Radiation Hazard Scale**
 - <https://emergency.cdc.gov/radiation/radiationhazardscale.asp>
- **Myths of Radiation: Communicating in Radiation Emergencies**
 - <https://emergency.cdc.gov/radiation/radiationmyths.asp>

FOR MORE INFORMATION:

<https://emergency.cdc.gov/radiation/>



Radiation Emergencies

Information on Specific Types of Emergencies > Radiation Emergencies

Language: English (US)

What Should I Do? +

Questions About Radiation (FAQ)

Radiation Dictionary

Radiation Emergencies & Your Health

Types of Radiation Emergencies

Information for Professionals

Radiation Emergency Training, Education, and Tools

Isotopes

Radiation Emergencies

Facebook Twitter Plus

In a radiation emergency, potassium iodide (KI) should only be taken on the advice of a Public Health Official.

In a Radiation Emergency:

- Get Inside
- Stay Inside
- Stay Tuned

Are You Prepared?

Coping with a Disaster or Traumatic Event

Information on Specific Types of Emergencies

Information for Specific Groups

Resources for Emergency Health Professionals

Training & Education

Social Media

What's New

Preparation & Planning

More on Preparedness

What CDC is Doing

Blog: Public Health Matters

Protect Yourself and Your Family

- In a Radiation Emergency:
 - Get Inside
 - Stay Inside
 - Stay Tuned
- Decontamination
- Types of Radiation Emergencies
- Preparing for Emergencies

Radiation and Health Effects

- It's All About the Dose
- Effects of Radiation Exposure and Contamination
- Treatments and Countermeasures
- Health Information for Pregnant and Nursing Women

Information for Professionals

- Information for:
 - Clinicians
 - Public Health Professionals
 - Medical Examiners & Coroners
 - Communication & Media Professionals
- Guidance, Training, and Tools
- Radiation Emergency Tool Kits
- Radiation Emergency Resource Library

Highlights/What's New?

CRC Electronic Data Collection Tool (CRC e-Tool)

This tool is designed to collect, analyze, visualize, and securely exchange population monitoring data, including demographics, radiation contamination measurements, radiation exposure assessment, and health outcomes, using the Epi Info™ 7 platform.


Public Health Radiological/Nuclear Preparedness Webinar

This August 2017 webinar provides discussion of the priority public

Quick Links

- Population Monitoring & CRC Resources
- Legal Issues
- Potassium Iodide (KI)
- National Alliance for Radiation Readiness (NARR) & Other Partner Resources
- FAQs
- Radiation Dictionary

ZIKA PREGNANCY



THANK YOU!

For more information please contact Radiation Studies, CDC

4770 Buford Highway NE, Atlanta, GA 30341

Telephone, 1-770-488-3800

E-mail: rsbinfo@cdc.gov

Web: emergency.cdc.gov/radiation

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Public Health Considerations

Sherwin Levinson
Executive Director
MRC GEM (Medical Reserve Corps
Georgia East Metro)



Picture it this way...

You're six years old and have been playing outside. What would your very finicky parent expect you to do before sitting down to dinner?

- Change clothes?
- Take off your shoes?
- Wash your face and hands?



Radioactive contamination is mostly like playground dirt – easily removed by changing outer clothing and washing exposed areas of body.

Or think about where a gentle snowfall accumulates



Where to go?

The best shelter location would be similar to what you'd use for a tornado, with some key differences:

- Turn off fans, air conditioners, forced-air heating units that bring air in from the outside.
- Close and lock all windows and doors, and close fireplace dampers.
- See <https://emergency.cdc.gov/radiation> for more details.

WHERE TO GO IN A RADIATION EMERGENCY




GET INSIDE




STAY INSIDE



STAY TUNED

 NOT SAFE

 SAFER

 SAFEST

If a radiation emergency happens in your area, you should get inside immediately.

No matter where you are, the safest action to take is to: **GET INSIDE. STAY INSIDE. STAY TUNED.**

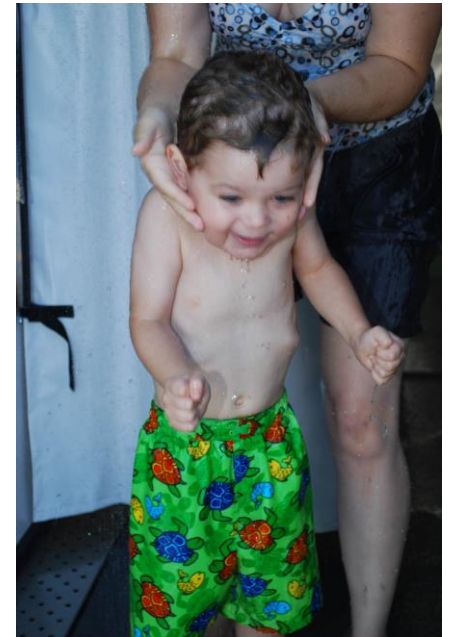
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- Bring pets inside.
- Stay tuned for updated instructions from emergency response officials.



https://emergency.cdc.gov/radiation/pdf/Infographic_Where_to_go.pdf

Important considerations:

- Shelter area should be secured.
- Anyone wishing to enter **MUST** remove outer clothing, shoes, accessories. Trash bags can be provided to hold these items, IF the bag is sealed before entering. Where is this done?
- All exposed skin surfaces and top of head should be washed or at least wiped down with damp toweling before shelter entry. Used towels should be treated as contaminated waste.



Other considerations

- Parents/guardians might be in a contaminated area even if the facility is not, so some children might need to be kept until a responsible adult is available.
- Parents/guardians might show up before your area is declared safe. Do you let them in? Release the child?
- Do any of the children in your care require meds? How would you assure an adequate supply?

How long will it last?

There's no way to tell for certain, but we can still plan for the most likely scenarios. Actual timeframes will depend on:

- type of disaster/accident/release.
- geographical area affected.
- number of trained response personnel available.

In most cases, it could be anywhere from a few hours to a few days before you can leave shelter.



What Happens Once You Can Leave Shelter?

Community reception centers (or CRCs) are opened 24 to 48 hours after a radiation incident. They are located outside of the affected area to serve the people living in that community, as well as the displaced population arriving there.

What Happens at a Community Reception Center?

The basic services provided at a Community Reception Center include:

- Screening people for radioactive contamination.
- Assisting people with washing or decontamination.
- Registering people for long-term follow-up.
- Prioritizing people for further care.

Other services, such as assistance in finding shelter, might also be provided

Top Tips for Child Care Providers



Betsy T Kagey, PhD

Academic and Special Projects Liaison
Office of Emergency Preparedness
Georgia Department of Public Health

Tips for Child Care Providers



Tip #1

- Know where to turn for emergency related alerts and instructions

Tips for Child Care Providers



Tip #2

- Build off from your expertise and experience with your regularly practiced emergency drills, such as fire and tornado drills

Tip #3 Do I Stay or Do I Go?

- Be aware of radiation emergency general protocol for response.

In a Radiation Emergency:



<https://emergency.cdc.gov/preparedness/index.asp>

Tip #3 Do I Stay or Do I Go?

- Be aware of radiation emergency general protocol for response.

WHERE TO GO IN A RADIATION EMERGENCY

If a radiation emergency happens in your area, you should get inside immediately.

No matter where you are, the safest action to take is to: **GET INSIDE. STAY INSIDE. STAY TUNED.**

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GET INSIDE

STAY INSIDE

STAY TUNED

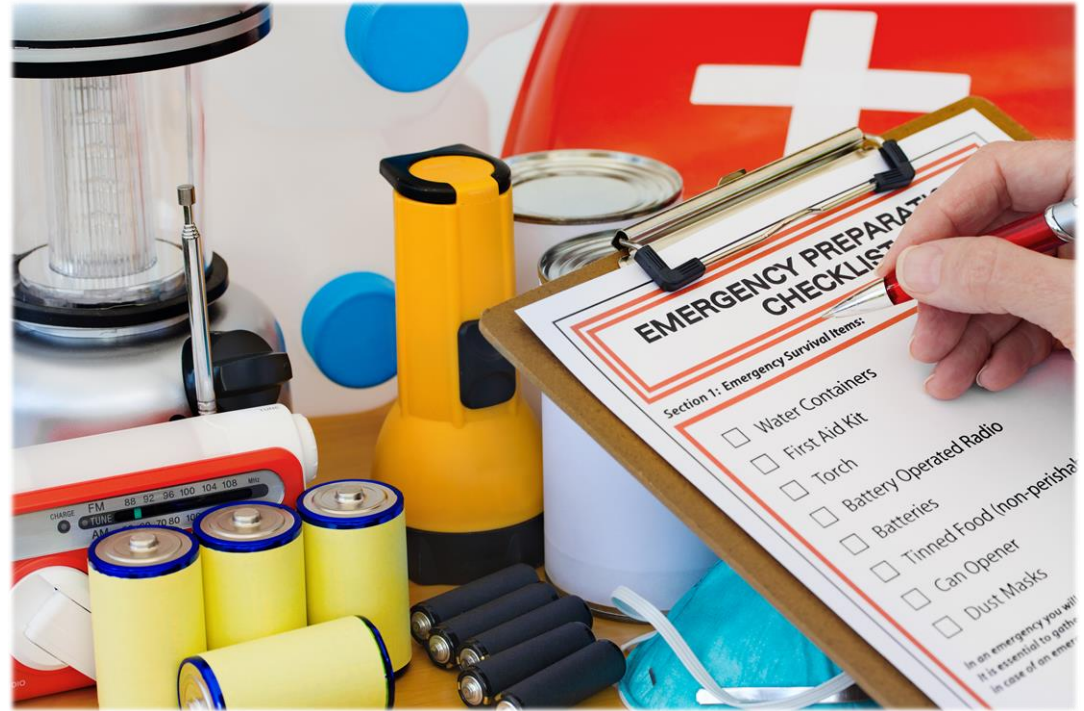
NOT SAFE

OK SAFER

SAFEST

The infographic illustrates safety levels in a radiation emergency. It shows a person and a dog standing outside, a car, a house with windows, a schoolhouse with a flag, and a multi-story building with a basement. The person and dog, the car, and the house with windows are marked with a red 'X' and labeled 'NOT SAFE'. The schoolhouse and the multi-story building are marked with a yellow 'OK' and a green checkmark, labeled 'OK SAFER'. The multi-story building is also marked with a green checkmark and labeled 'SAFEST'. The multi-story building has a basement area marked with a green checkmark and 'SAFEST'.

Tip #4



- Prepare a well stocked emergency supply kit to meet children and staff needs for an extended amount of time



Emergency Supply Kit

It is best to prepare before a disaster happens by assembling the following supplies in advance:

	Short Term Emergency (Evacuation lasting up to 6 hours) <i>Pack listed supplies in a backpack, wheeled bin, or wheeled duffle bag</i>	72-Hour Emergency <i>Pack listed supplies in a sturdy, waterproof tote with wheels or garbage can with wheels</i>	Short Term Emergency (Evacuation lasting up to 6 hours) <i>Pack listed supplies in a backpack, wheeled bin, or wheeled duffle bag</i>	72-Hour Emergency <i>Pack listed supplies in a sturdy, waterproof tote with wheels or garbage can with wheels</i>
Important Papers*	<ul style="list-style-type: none"> Emergency information on each child in a small notebook or on cards Emergency plan and numbers Care plans Medical releases Relocation site agreements and maps 	All short-term supplies PLUS: <ul style="list-style-type: none"> Emergency Transportation Permission 	First Aid	<ul style="list-style-type: none"> Small first aid kit Any needed medications (Epi-Pen, Insulin, etc.) for children/staff with special needs
Water**	<ul style="list-style-type: none"> One-two gallons of water for every 4 children/staff 	<ul style="list-style-type: none"> One gallon per person per day 	Sanitation	<ul style="list-style-type: none"> Diapers and wipes Tissues Toilet paper Paper Towels Hand sanitizer Disinfecting wipes
Food Infant Formula Labeled Breast Milk	<ul style="list-style-type: none"> Non-perishable food items (i.e.: granola bars, crackers, cereal, etc.). Consider food allergies of currently enrolled children. Formula /appropriate (pre-packaged) food for infants Breast milk stored in small cooler Disposable cups, plates, utensils, bowls, including infant bottles 	All short-term supplies PLUS <ul style="list-style-type: none"> Extra formula/appropriate food for infants Extra non-perishable food Canned fruits and meat Non-electric can opener 	Comfort and Safety	<ul style="list-style-type: none"> At least one age appropriate play activity Flashlight with batteries or crank-style Paper and pen Dust/filter masks (1 per person) Towels Utility knife or multi-tool Teething rings/pacifiers Walking rope Emergency cash Mosquito repellent and sunscreen
Clothing and Bedding	<ul style="list-style-type: none"> Emergency blankets Pair of work gloves 	All short-term supplies PLUS <ul style="list-style-type: none"> Change of clothes per person, especially socks and underwear Extra bedding/blankets Emergency blankets (one per person) 	Communication	<ul style="list-style-type: none"> NOAA weather radio (battery or crank powered) Cell phone charger Portable power pack
				<ul style="list-style-type: none"> Large first aid kit Any needed medications (Epi-Pen, Insulin, etc.) for children/staff with special needs
				All short-term supplies PLUS <ul style="list-style-type: none"> Extra diapers and wipes 5-gallon plastic bucket with toilet seat Large garbage bags/plastic bags -various sizes Extra disinfecting wipes Extra hand sanitizer Extra paper products Feminine supplies
				All short-term supplies PLUS <ul style="list-style-type: none"> Additional age appropriate play activities to rotate Glow sticks Extra batteries for flashlights Emergency cash Waterproof tarps, duct tape and plastic sheeting
				All short-term supplies PLUS <ul style="list-style-type: none"> Walkie-talkie Non-electric phone Signal/flare

Handout available at www.childcareprepare.org

Tips for Child Care Providers



Tip #5

Think about parental communication in advance of an emergency.

Parents need to stay safe in their setting and not put themselves in danger trying to reach your child care program. Reassure them that you are following safety procedures.

Tips for Child Care Providers



When little people are overwhelmed with big emotions, it is our job to share our calm, not to join their chaos.”

—L.R. Knost

Tip #6

- Model calm behavior with the children.

SUMMARY in 6 Tips

- Tip 1 – Know where to get Emergency Alerts
- Tip 2 – Build off your emergency plans and experience
- Tip 3 – Go inside, Stay Inside, Stay Tuned
- Tip 4 – Be Prepared – Emergency Supply Kit
- Tip 5 – Communicate with Parents
- Tip 6 – Remain Calm

In a Radiation Emergency:





Questions?

Thank you for your participation!