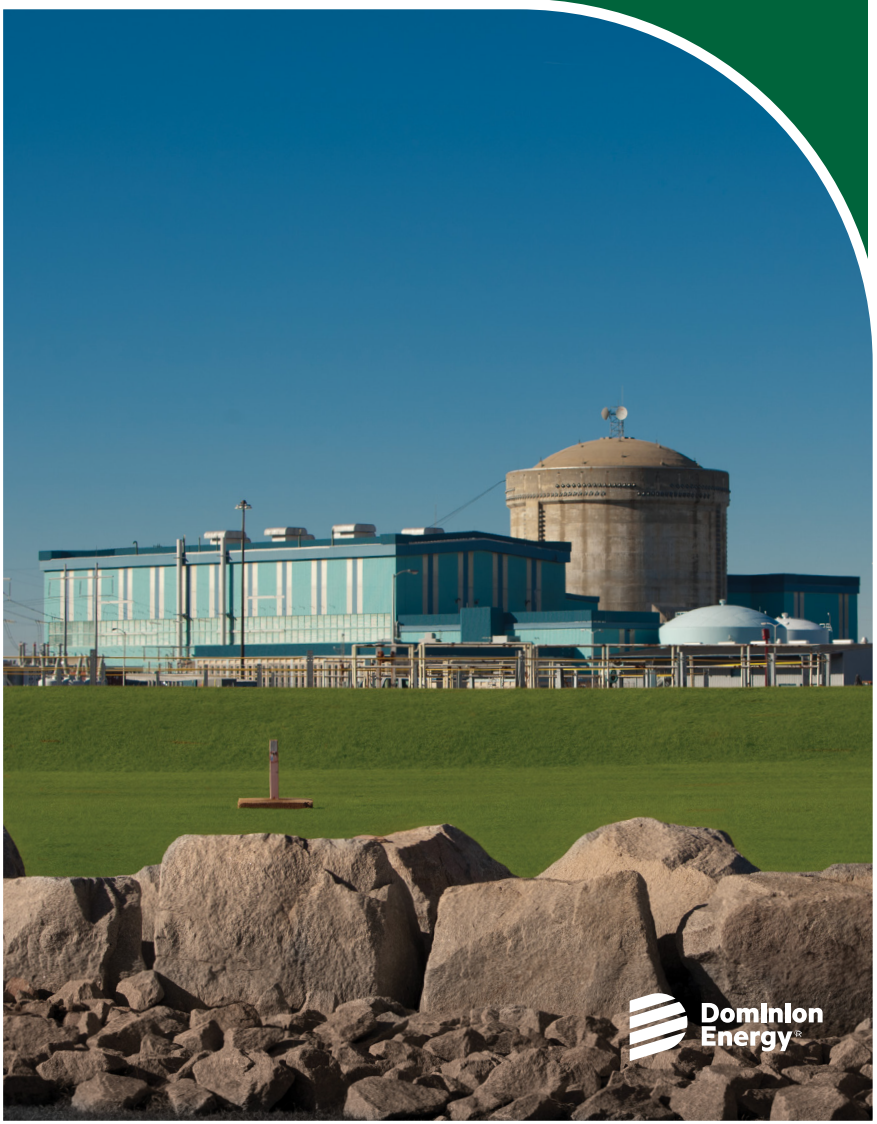
EMERGENCY PREPAREDNESS

V.C. SUMMER NUCLEAR STATION



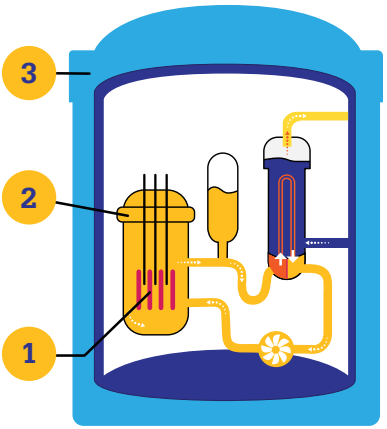
Understanding Nuclear Safety & Radiation

Nuclear power plants are designed, engineered, and operated to adhere to stringent safety and security regulations and practices. Multiple layers of safety systems and structures protect the plant and community from an emergency:

- Reactor safety systems with separate, redundant backup systems to provide reliable protection
- Reinforced concrete and steel designed containment buildings to withstand tremendous forces (e.g., hurricanes, tornadoes, earthquakes, and external explosions)
- Regularly exercised and comprehensive emergency plans and procedures
- Highly skilled, experienced, and continuously trained plant employees
- Highly secured, 24 hours a day, 7 days a week
- Comprehensive security plans and on-site security force personnel
- Advanced physical security and monitoring systems

There are three **fission product barriers** (also referred to as **protective barriers**) that prevent the release of radioactive material into the environment:

1. **Fuel Cladding:** Fuel cladding serves as the first fission product barrier. Fuel cladding is the outer layer of the fuel rods, standing between the reactor coolant and the nuclear fuel (i.e., fuel pellets). It prevents corrosion of the fuel.
2. **Reactor Coolant System:** The reactor coolant system serves as the second fission product barrier. Within the large steel reactor vessel, the reactor coolant system includes the pipes and components (e.g., the reactor vessel, coolant pumps and piping) that supports the transfer and process of reactor coolant (water) to remove heat from the reactor core.



3. **Containment Building:** The containment building serves as the third fission product barrier. The containment is a concrete shield building and steel containment vessel that houses the reactor vessel, steam generators, and piping of the reactor coolant system.

Radiation is energy emitted in tiny waves or particles. It naturally occurs in the environment; it is not new or mysterious. We receive radiation from the sun, minerals in the earth, food we eat, and building materials. We even give off radiation.

You can't see, taste, or hear radiation. However, you can measure radiation – in units called rem and millirem. A millirem (mrem) is 1/1000th of a rem. The rem is a unit of measure that considers the effect that different types of radiation have on the body. The table below shows the average mrem an individual in the United States receives from naturally occurring and man-made radioactive material. *(Source NCRP Report No.160, Ionizing Radiation Exposure of the Population of the United States).*

Radiation can produce charged particles in material it strikes. Charged particles are known as ions. The most common types of ionizing radiation are alpha, beta, and gamma. **Alpha radiation** is the least penetrating type. It can be stopped with a shield equivalent to a sheet of paper. **Beta radiation** consists of electrons that can be stopped by the equivalent of thin cardboard. **Gamma radiation** consists of electro-magnetic waves that can be stopped by heavy shielding such as concrete or lead.

Exposure to large amounts of radiation can be harmful or even fatal; however, radiation emitted during normal plant operations is very small, as indicated in the table below. Radiation risk depends on: (1) Kind of rays and particles that strike an individual. (2) Length of exposure time. (3) Body parts exposed. (4) Amount of radioactive material an individual may have ingested or inhaled. And (5) Age – young children are more at risk because cells in their bodies are growing much faster than the cells of older children and adults.

Natural Background (mrem)		**Man-Made (mrem)**	
Radon & Radon Daughters	228.0	Medical Diagnostic X-Rays	33.0
Cosmic Rays	33.0	Other Medical	267.0
Terrestrial Radiation	21.0	Consumer Products	13.0
Internal Radiation	29.0	Occupational	0.5
Per Year Total	**311.0**	Nuclear Power	0.1
		Miscellaneous	0.3
		Per Year Total	**314.0**
Natural and Man-Made sources Per Year Total			**625.0**



Be Prepared

Develop an Emergency Plan & Kit

It is important to know which types of disasters could affect your area. Your **emergency plan** will contain emergency contacts, medical information, your Protective Action Zone, evacuation and sheltering information, and more. Your **emergency kit** should have supplies to last at least three days for each family member. Keep it in an easy-to-carry bag, such as a backpack, duffel bag, or suitcase. Emergency kit items to include:

- First aid kit *(including list of allergies, extra contact lenses, glasses)*
- Non-perishable foods and can opener
- Matches/lighters
- Water, one gallon per person per day
- Medications
- Flashlight and extra batteries
- Items for individuals with access and functional needs (e.g., special medical equipment)
- Local map
- Important documents, cash, credit cards, and checkbook
- Clothing and blankets
- Phone and phone chargers
- Tools
- Personal items
- Infant and children's items (e.g., diapers, formula)
- Pet supplies
- Photo ID
- Potassium Iodide (KI)

For **persons with access and functional needs** who may need help in an evacuation, complete and return the **Individuals with Access and Functional Needs Survey**.

This survey is mailed to you every year. Residents must complete and mail, at no cost, the survey card every year. Or, contact your locality to learn available options. If you become ill or need assistance at the time of an emergency, contact your local sheriff or ambulance service. Contact information is provided under **More Information on pg. 14**.

Develop a Pet Emergency Plan and Kit

Not all shelters and hotels accept pets. Plan ahead to stay with family, friends, or at pet-friendly locations if you need to evacuate your home. If a hotel has a no-pets policy, ask if they can waive the policy during an emergency. Don't hesitate to leave your home in an emergency because you don't want to leave your pet(s) behind. Take your pets with you, along with a carrier or crate, their food, medication, and health records. Pets will be accommodated at these sites but may not be sheltered at the same physical location as the rest of the family.

Pet Kit Items:



- Microchip your pet
- Familiar items, toys, and beds
- Pet carrier
- Pet food and water for at least 3 days
- Photograph of pet
- Non-spill water and food bowls
- Plastic bags, pet litter, and litter box (if appropriate)
- Extra newspaper and disinfectant
- Collar with ID tag and leash (including backups)
- Pet vaccination and medical records
- Medications

Protect Your Livestock & Agriculture

Livestock and poultry owners are responsible for the care and well-being of their animals. Livestock and poultry owners, farmers, and producers should develop and maintain an emergency plan specific to their needs to use in the case of an evacuation. Nuclear plant emergencies may impact livestock, food, and agricultural products. Protective actions for livestock and agricultural products will be issued by appropriate state and local officials.

As a precaution for public health and safety, and in response to an emergency resulting in contamination, state and federal officials may restrict the movement of livestock, poultry, food and feed items, and other agricultural products. Livestock and poultry owners, farmers and producers can find more information related to emergency preparedness planning from Clemson University Livestock Poultry Health (Office of the S.C. State Veterinarian) and Clemson University Cooperative Extension Service:

- Clemson University Livestock Poultry Health
  (Office of the SC State Veterinarian)
  https://www.clemson.edu/public/lph/ahp/emergency-prep/index.html

- Clemson University Cooperative Extension Service
  https://www.clemson.edu/extension/co/index.html

Preparing for a Radiological Emergency

The Nuclear Regulatory Commission (NRC) defines four emergency classifications that could occur at a nuclear power station. Dominion Energy would contact federal, state, and local authorities in each of the following situations:

- **Unusual Event is the least serious level,** indicating a potential or minor event at the station. Radioactive release, if any, is minimal and far below Federal guidelines. There is no impact to the public and no public action needed. Support from state and local emergency officials is not needed.
- **Alert is a more serious level,** indicating an event that may affect station safety. Radioactive release, if any, is minimal and far below Federal guidelines. There is no impact to the public and no public action needed. State and local emergency officials will share information with the public as needed.
- **Site Area Emergency is a serious level,** indicating an event that may affect or has affected plant safety. Radioactive release, if any, should remain under Federal guidelines. When alerted, you should tune in to local radio and television stations for information and instructions. State and local emergency officials may recommend actions for the public to take.
- **General Emergency is the most serious level** that involves a serious event that may affect or has affected plant safety. Radioactive release, if any, may exceed Federal guidelines. When alerted, you should tune in to local radio and television stations for information and instructions for protective actions. State and local emergency officials will direct actions for the public to take.





Stay Informed

Stay Up to Date & Listen for Emergency Alerts and Notifications

Local radio and TV stations will provide information and actions to keep you safe in the unlikely emergency event at V.C. Summer Nuclear Station. The public will be alerted and notified of an emergency via the Integrated Public Alert and Warning System (IPAWS) fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/public. IPAWS is FEMA's national system for local alerting that provides emergency and life-saving information to the public.

In an emergency, an alert will be sent at no cost to your emergency alert-enabled mobile phone. When you receive an emergency alert on your phone, tune in to one of your local radio or TV station for emergency information and instructions.

Receiving an emergency alert on your phone does NOT mean you should evacuate. Follow the instructions in the alert and monitor local radio or television for instructions on what to do. A list of local radio and television stations is provided below.

To receive an alert on your phone, you must have a mobile phone and be in the affected area where the alert is being sent. To ensure you receive the alert, go to your mobile phone's settings, under notifications, scroll to the bottom and confirm all emergency alerts are turned on.

TV Stations	Radio
WIS, Ch. 10	WCOS 1400 AM
WLTX, Ch. 19	WCOS 97.5 FM
WOLO-TV, Ch. 25	WTCB 106.7 FM
WACH, Ch. 57	WLTR 91.3 FM



Know Your Protective Action Zone & Reception Center

The 10-mile area around V.C. Summer Nuclear Station is divided up into 13 zones, called **protective action zones (PAZ)**. Knowing your PAZ will let you know if your zone is affected by the emergency and what actions to take to keep you safe. Go to the South Carolina Emergency Management Division's (SCEMD) Nuclear Facility Zones interactive map scemd.org/prepare/types-of-disasters/nuclear-power-plants/ to find your PAZ and Reception Center or view in the SC Emergency Manager mobile app.

Listen carefully to instructions specific to your zone. Not all PAZs may be affected by the emergency or need to evacuate. If your PAZ is instructed to evacuate, listen for instructions from officials to report to your assigned **Reception Center**. Reception Centers offer contamination monitoring, and if recommended, potassium iodide (KI). Learn more about potassium iodide on **pg. 12**.

Below is a list of Reception Centers. Unless told otherwise, use the primary evacuation route on **pg. 16** to get to your assigned Reception Center.

- **Fairfield County Reception Center**
  Fairfield Magnet School for Math and Science
  1647 US Highway 321 Bypass North, Winnsboro, SC 29180

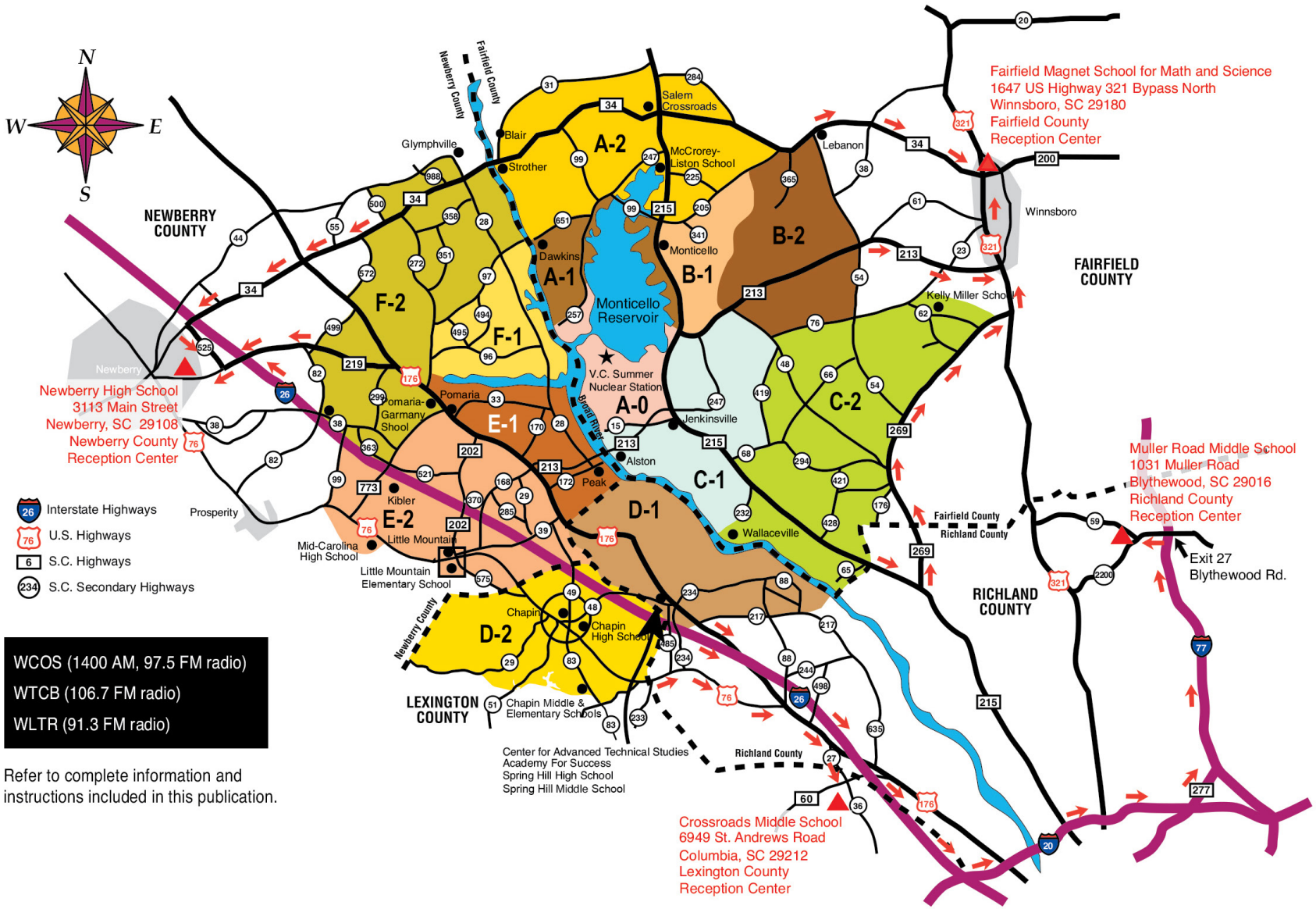
- **Lexington County Reception Center**
  Crossroads Middle School
  6949 St. Andrews Rd., Columbia, SC 29212

- **Newberry County Reception Center**
  Newberry High School
  3133 Main Street, Newberry, SC 29108

- **Richland County Reception Center**
  Muller Road Middle School
  1031 Muller Rd., Blythewood, SC 29016

V.C. Summer Nuclear Station Protective Action Zone and Reception Center Map

You may also use SCEMD's Nuclear Facility Zones interactive map available at scemd.org/prepare/types-of-disasters/nuclear-power-plants/ to find your PAZ and Reception Center.



Refer to complete information and instructions included in this publication.

In an emergency, **parents of school children** need to listen to local radio and/or TV station(s) for updates on school status and instructions. Emergency officials will advise schools on what actions to take. If told to evacuate, the schools will go to the to their assigned Reception Center. Below are the assigned Reception Centers for schools and day care centers in the V.C. Summer Nuclear Station 10-mile area:

Reception Center: Fairfield Magnet School (Fairfield County)

- Kelly Miller Child Development Center
- Kelly Miller School
- McCrorey-Liston Child Development Center
- McCrorey-Liston School of Technology

Reception Center: Central United Methodist (Newberry County)

- Pomaria-Garmany School*

Reception Center: Crossroads Middle School (Lexington County)

- Chapin Baptist Child Development Center
- Chapin Children Center
- Chapin Elementary School
- Chapin Middle School
- Chapin High School
- Inez's Childcare Center
- Abner Montessori School
- Mt. Horeb Lutheran Church

Reception Center: Muller Road Middle School (Richland County)

- Academy for Success
- Spring Hill High School
- Center for Advanced Technical Services
- Spring Hill Middle School

Reception Center: Newberry High School (Newberry County)

- Little Angels Child Care

Reception Center: Wightman United Methodist Church (Newberry County)

- Little Mountain Elementary School*
- Mid-Carolina High School*
- Mid-Carolina Middle School*

** Refer to Parent Information Brochure on Critical Incidents, distributed by Newberry County Schools.*



Follow Emergency Instructions

If Your Protective Action Zone is Told to Evacuate:

- ✔ **Stay calm – review your emergency plan.** In an event, you will have time to take necessary action
- ✔ **Turn on local radio or TV station(s).**
- ✔ **Grab your emergency kit.** Grab all essentials for you, your family, and pet(s). You may be away from home for several days.
- ✔ **Keep up to date and listen to instructions.** Ensure your phone is enabled to receive emergency alerts and listen to local radio or TV for information and potential actions to take to keep you safe.
- ✔ **Limit telephone use to emergencies only,** keep the lines open for emergency response officials.
- ✔ **Check on family and friends** who may need assistance.
- ✔ **Know your children's school emergency plan.** Review emergency school plan(s) and procedure(s) each school year.
- ✔ **Lock your home and turn off appliances.** Lock doors and windows. Turn off appliances (except refrigerator and freezer).
- ✔ **Tie a white handkerchief or cloth to door or mailbox.** This indicates to authorities that you have left your home.
- ✔ **Drive safely to your Reception Center.** If directed, report to your assigned Reception Center for contamination monitoring and other potential protective actions. Close windows, vents, and turn off air conditioner and heater.
- ✔ **If registered as an individual needing evacuation assistance,** wait for instructions from your locality.
- ✔ **Return home when directed.** When the emergency has ended, emergency officials will provide instructions for returning home.
- ✔ **Questions during an emergency and for more information,** contact the South Carolina Public Information Phone System (PIPS) at 866-246-0133, visit SCEMD website scemd.org and/or contact SC 2-1-1.

If Your Protective Action Zone is Told to Shelter-In-Place:

- ✔ **Stay calm – stay inside.** Stay in the middle of the building, as much as possible, and close all windows and doors. Prepare to stay inside for at least three days.
- ✔ **If driving,** close windows and vents and turn off air conditioner and heater.
- ✔ **Bring pets and livestock inside.** Plan for at least three days.
- ✔ **Close all windows and doors, and turn off all devices that draw outside air, if possible.** You can use fans or heating devices inside the home to keep warm or cool.
- ✔ **Close chimney flues when possible.**
- ✔ **Keep informed and listen to instructions.** Continue to monitor local radio or TV and follow instructions. Do not evacuate unless directed.
- ✔ **Limit telephone use to emergencies only,** keep the lines open for official use.
- ✔ **Questions during an emergency and for more information,** contact the South Carolina Public Information Phone System (PIPS) at 866-246-0133, visit SCEMD website scemd.org and/or contact SC 2-1-1.



Take Potassium Iodide (KI)

(If recommended)

Not every radiological emergency will result in the release of radioactive material. Potassium iodide (or KI), non-radioactive form of iodine, may be recommended as an additional protective measure to help protect your thyroid gland in the event of a radiological emergency. A 2-day supply of KI tablets is provided at no cost to residents living or working within the 10-mile area around V.C. Summer Nuclear Station by the South Carolina Department of Environmental Services (SCDES).

To obtain your 2-day KI supply, go to your local county public health department and bring some form of identification or paperwork that shows you live or work within the 10-mile area of V.C. Summer Nuclear Station (no appointment necessary):

County	Address
Fairfield County Health Department	1136 Kincaid Bridge Rd. Winnsboro, SC 29180
Lexington County Health Department	1070-B South Lake Dr. Lexington, SC 29073
Newberry County Health Department	2111 Wilson Rd. Newberry, SC 29108
Richland County Health Department	2000 Hampton St. Columbia, SC 29204

Residents living outside the 10-mile area can purchase KI tablets from their personal pharmacy.

If KI is recommended in an emergency, it is important to follow exact dosing, which can be found on South Carolina Department of Public Health's Potassium Iodide (KI) webpage https://dph.sc.gov/diseases-conditions/diseases/cancer/potassium-iodide-ki. Especially in young children and infants, giving too much KI can cause more serious side effects and health issues.

KI can be taken by most people and is safe for babies and small children. Some people with certain thyroid conditions should consult their doctors BEFORE taking KI. In addition, those people who:

- have a known allergy to iodine (as is used in X-ray dye).
- have a shellfish allergy (and know they are allergic to the iodine, not the protein).
- have certain disorders (such as dermatitis herpetiformis or urticaria vasculitis).

If you have those conditions or believe you might be allergic to iodine, consult your doctor at your next appointment and request guidance on whether you can take KI in the event of a nuclear power plant incident.

Visit SCDES' Radiation, Nuclear Safety webpage https://des.sc.gov/community/disaster-preparedness-relief/radiation-nuclear-safety for more information on radiation, KI, and SCDES's Nuclear Response and Emergency Environmental Surveillance section, or call 1-844-723-7377.



More Information

Local and State Contact Information

Visit or contact your local/state emergency management or public safety agency for additional emergency preparedness and response information specific to your area.

Fairfield County
Office.....(803) 635-4444
24-hour .....(803) 635-5511
24-hour **(emergency use only)**..... 911

Lexington County
Office.....(803) 785-2836
24-hour **(emergency use only)**..... 911

Newberry County
Office..... (803) 321-2135
24-hour ..... (803) 321-2222
24-hour **(emergency use only)**..... 911

Richland County
Office..... (803) 576 -3400
24-hour .....(803) 254-3061
24-hour **(emergency use only)**..... 911

South Carolina Emergency Management Division (SCEMD) scemd.org
Office: (803) 737-8500

SCEMD Public Information (activated only during emergencies) 866-246-0133

South Carolina Department of Environmental Services (SCDES) des.sc.gov: For radiation and nuclear safety related inquiries, call 844-723-7377.

South Carolina 2-1-1 sc211.org: Call SC 2-1-1 for information on all kinds of topics, including school closures, reception center, emergency preparedness, and other emergency planning topics.

Dominion Energy DominionEnergy.com: Call Dominion Energy toll-free at 833-380-6404 for more information about nuclear power station preparedness, or to request a hard copy of this information mailed to you at no cost.



Resources

Radiological Preparedness and About Radiation

- CDC: Radiation Emergencies
  https://www.cdc.gov/radiation-emergencies/index.html
- EPA: Radiation Emergencies and Preparedness
  https://www.epa.gov/radtown/radiation-emergencies-and-preparedness
- NRC: How Can I Prepare for A Radiological Emergency?
  https://www.nrc.gov/about-nrc/emerg-preparedness/prepare-for-radiological-emerg.html
- NRC: How a Pressurized Reactor Works
  https://www.nrc.gov/reactors/power/pwrs.html
- NRC: Sources of Radiation
  https://www.nrc.gov/facilities-safety/radiation-protection/radiation-all-around-us/sources-of-radiation
- World Nuclear Association
  https://world-nuclear.org/nuclear-essentials/is-radiation-safe

Personal and Family Preparedness Resources

- FEMA.gov
- Ready.gov
- SCEMD: Emergency Planning for Your Family
  scemd.org/prepare/your-emergency-plan/
- SCEMD: Emergency Manager Mobile App
  scemd.org/stay-informed/mobile-applications/

Pet Preparedness Resources

- SCEMD: Preparing Your Pets for Emergencies
  scemd.org/prepare/your-emergency-plan/pet-planning/
- Find Pet-Friendly Hotels
  - bringfido.com
  - dogfriendly.com
  - petswelcome.com
  - tripswithpets.com

Evacuation Route Instructions to Reception Centers

Use the primary evacuation route described in the table below to get to your assigned reception center, unless otherwise directed to use another alternative route instead.

County	Sector	Primary Evacuation Route	Reception Center
FAIRFIELD	A-0	213 East, 321 North, to	Fairfield Magnet School for Math & Science
FAIRFIELD	A-1	257 North, to 99 North, to 34 East, 321 North, to	Fairfield Magnet School for Math & Science
FAIRFIELD	A-2	34 East, 321 North, to	Fairfield Magnet School for Math & Science
FAIRFIELD	B-1	213 East, 321 North, to	Fairfield Magnet School for Math & Science
FAIRFIELD	B-2	213 East, 321 North, to	Fairfield Magnet School for Math & Science
FAIRFIELD	C-1	215 South, 269 North, 321 North, to	Fairfield Magnet School for Math & Science
FAIRFIELD	C-2	215 South, 269 North, 321 North, to	Fairfield Magnet School for Math & Science

County	Sector	Primary Evacuation Route	Reception Center
RICHLAND	D-1	 East,  East,  North,  North, Exit 27 Blythewood Rd, to State Rd S-40-59 Muller Rd	Muller Road Middle School*
LEXINGTON	D-2	 East, Exit 103 Harbison Blvd to St. Andrews Rd, West to	Crossroads Middle School
NEWBERRY	E-1	 West,  South/West, to	Newberry High School
NEWBERRY	E-2	 West,  South/West, to	Newberry High School
NEWBERRY	F-1	Broad River Rd North, to  South, to Hillbrook Lane (West),  South/West, to	Newberry High School
NEWBERRY	F-2	 North, to  South, to Hillbrook Lane (West),  South/West, to	Newberry High School

* Students will be released to their parents via the Dutch Fork High School parents' pick-up line at Dutch Fork High School.

Scan the QR code for EP Information

DominionEnergy.com/NuclearEP

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