Radiological Emergency Information for Farmers, Food Processors and Distributors

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This publication was prepared in cooperation with the following:

Georgia Emergency Management Agency
935 East Confederate Avenue, SE
Atlanta, GA 30316
P.O. Box 18055
Atlanta, Georgia 30316
(404) 635-7000 or 1- (800)-TRY-GEMA (1-800-879 4362)

Georgia Department of Agriculture
19 Martin Luther King, Jr. Drive, S.W.
Atlanta, Georgia 30334
(404) 656-3645 or 1- (800) 282-5852

Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King, Jr. Drive, Suite 1152 East Tower
Atlanta, Georgia 30334
(404) 657-5947 or 1- (888) 373-5947

Introduction

This booklet contains information to help food producers and home gardeners take effective action during and after a radiological emergency. This booklet is intended to address only those areas where the health risk is from the ingestion of significant quantities of contaminated food and water, not from direct exposure. Contaminated areas where there is a risk of direct exposure will have their access restricted.

A radiological emergency at any of the nuclear power plants listed below could affect Georgia residents who live and work in the surrounding counties.

Alvin W. Vogtle Electric Generating Plant near Waynesboro, Georgia
Edwin I. Hatch Nuclear Power Plant near Baxley, Georgia
Department of Energy Savannah River Site near Aiken, South Carolina
Joseph M. Farley Nuclear Generating Station near Dothan, Alabama
Oconee Nuclear Station near Greenville, South Carolina
Sequoyah Nuclear Plant, near Chattanooga, Tennessee
Watts Bar Nuclear Plant near Spring City, Tennessee

While it is unlikely that an emergency will occur, it is important to be prepared because of the potential impact to public health, safety, and the agricultural community. In the event of an actual emergency, radioactive materials may be released to the environment. State and local emergency response agencies will provide specific information on actions you can take to provide additional protection for your family, workers, animals, and farm products. This booklet contains information to help you prepare to take effective action during and after a radiological emergency.

The information in this booklet may also be useful in helping you deal with other kinds of emergencies. During any emergency, your first concern should be the safety of your family, your employees, and yourself. Please read this booklet thoroughly.

Why Protective Measures May Be Needed

A release of radioactive materials into the environment can pose a threat to the agricultural community and to the safety of the food supply. The deposition of radioactive materials could contaminate crops, livestock, uncovered water supplies, and land, above established safety levels. When this level is exceeded, the food is considered to be “contaminated.” Eating contaminated foods and drinking contaminated milk or water could have a harmful, long-term effect on your health.

Emergency Response Agencies

State and local emergency response agencies are prepared to notify the agricultural community quickly during a radiological emergency by distributing emergency information through contact points such as local Co-Op’s and food processing plants. State and local government agencies will recommend actions to reduce contamination and the public consumption of contaminated food, milk and water. Decisions or recommended actions will be based on a variety of factors.

These factors include:

- The possible health effects.
- Emergency conditions at the nuclear facility.
- The amount and type of radioactive material.
- Weather conditions.

Emergency Alert System Stations

The Emergency Alert System (EAS) is one of the primary means local officials have to communicate with the public in times of emergency.

Official information will be provided to affected residents through local radio and television stations in their area.

Sources of Emergency Information

Your best source of information during an emergency depends on where you live or work. For example, people near the nuclear facility experiencing an emergency will receive initial information over the Emergency Alert System. People in adjacent areas will receive information from the media or other means. Major food processors and distributors will receive information directly from the Georgia Department of Agriculture.

Emergency Alert System (EAS)
Local emergency response officials will provide instructions and emergency-related information over designated radio and television stations.

News Media
Local and State emergency response officials will be providing information to the news media. These reports will appear on radio and television, as well as in newspapers.

Personal Contact
The Georgia Department of Agriculture or the local office of the University of Georgia Cooperative Extension Service will provide information directly to food producers.

Toll-Free Phone
Additionally, the State of Georgia may provide information through toll-free phone numbers established at the time of the emergency.

Purpose of Protective Actions

Three types of hazards may result from a release of radioactive material from a nuclear power facility. Radioactive particles emit energy, which can disrupt normal cell functions. By reducing the amount of exposure to radioactive material, risk can be minimized.

Different actions are taken to protect against the risks presented.

1. Direct Exposure
Direct exposure to radioactive material is most significant during the emergency phase of the event, while the radioactive material is being released. Access will be restricted to areas where exposure to radioactive materials exceeds acceptable levels. These levels are well below those that can cause any observable health effects.

2. Ingestion
Ingestion of radioactive material by drinking or eating can also pose a hazard. If food or water that contains radioactive material is consumed, it poses an increased risk to the organs of the body. Large or prolonged exposure of organs to radiation can damage them, eventually resulting in dysfunction or even cancer.

3. Inhalation
Inhalation allows energy emitting particles to come in direct contact with the lining of the lungs. The lining of the lungs is sensitive to, and easily damaged by, the energy being emitted by radioactive particles. Normal biological processes can expel inhaled radioactive particles. Some particles are more difficult to expel and stay in the lungs longer resulting in a greater risk of damage. Care should be taken to minimize the inhalation of radioactive particles.

Protective Actions

Protective actions are intended to prevent or minimize the possibility of consuming contaminated food, or minimize the contamination of food products as they are consumed. An example is washing, scrubbing, peeling or shelling fruits and vegetables to remove surface contamination. Another example is to restrict or withhold agricultural or dairy products from the market place by prohibiting their transportation out of affected areas.

Food Control Area

Initially, State and/or Federal Radiation Experts will determine which areas may be contaminated by radiation by using information from field measurements and computer projections. Early monitoring and testing will help protect people living or working within the suspected affected area. The area, which includes potentially contaminated food, is called the Food Control Area.

The purpose of the Food Control Area is to:

- Prevent consumption of potentially contaminated fresh food and milk products from the area; and
- Prevent potentially contaminated food products from being moved to the market place.

As an emergency protective action to prevent the consumption of contaminated food, the transport of all food from the Food Control Area will be stopped. Cargo en route to processors is to be returned to its point of origin. Early field monitoring and laboratory testing will focus on two segments of the agricultural community within the Food Control Area:

1. Commercial dairies, milk processing plants, and feed and dairy animals will be checked first because contamination can appear in fresh whole milk within 72 hours of a release of radioactive materials. Children are the primary consumers of milk products and the segment of the population most sensitive to radiation.
2. Fresh foods at farms and food processors cannot be moved from within the Food Control Area until testing is completed. The timing and order of testing will be determined by the harvest times for crops.

Fresh food and milk products will be condemned if lab testing shows they are contaminated. The Georgia Department of Agriculture will direct the disposition of condemned food and milk products and checkpoints will be set up at the boundary of the Food Control Area to ensure that contaminated fresh food and milk products do not leave the area. Food and milk products shown by lab testing to be safe for consumption by the public can be moved to market.

Home gardeners and small-scale farms

Checking for contamination at home gardens and small-scale farms may not begin for weeks after the emergency. Homegrown produce should be tested for radioactive contamination before it is consumed. Home gardeners and small-scale farmers should wait for a field monitoring team to help them, or for further instructions from local and State agriculture and health agencies.

Lifting Food Controls

The boundary of the Food Control Area will be revised as data becomes available on the extent of radioactive contamination. The Georgia Department of Agriculture will provide information when normal farming activities can be resumed in areas where food controls have been lifted.

Relocation Area

Field monitoring teams may find an area too contaminated for people to live in or for normal farming activities to continue. Such an area is called a relocation area.

Access to relocation areas will be limited to emergency workers, monitoring teams, and others who must enter under controlled conditions. If people are living in a designated Relocation Area, they will be asked to leave the area. The length of time they will be away from their homes and farms will depend on the level of contamination. Farmers may be allowed to return to care for animals and to perform other necessary functions in relocation areas under controlled conditions designed to minimize radiation exposure. Assistance will be provided for the relocation of animals.

Assistance Centers

Information for farmers who must care for animals and other necessities in a relocation area will be provided at assistance centers opened during the emergency. Locations of the assistance centers will be announced during the emergency.

Protecting Farm Workers

People who continue to work their farms or gardens may be advised on how they can further reduce the possibility of being contaminated by radioactive materials. To minimize the inhalation or ingestion of radioactive materials deposited on vegetation or in the soil, and to avoid bringing contamination into living spaces, you might be asked to take the following steps:

- Wash your hands thoroughly before eating.
- Wear clothing such as coveralls, gloves, and hats while working outside. The clothing should cover all portions of your body. Remove outer clothing before going inside.
- As much as possible, avoid activities that can re-suspend contamination, such as plowing, digging, burning, or mowing. Wear a dust mask or a folded, dampened cloth over your nose and mouth to reduce the quantity of radioactive materials inhaled when such activities cannot be avoided.
- Shower after completing outside activities.
- Wash outer clothing.

Protecting Your Farm

You may be asked to shelter your farm animals and give them protected feed and water. This will help prevent contamination from harming your animals, and potentially entering the human food supply.

Sheltering Animals

If you are advised to shelter animals, remove them from pasture and house them in a farm building. You may not have enough shelter available for all your animals, so priority should be given to your most valuable livestock. The Georgia Department of Agriculture will have more advice and directions for decontaminating farm animals.

Giving Animals Protected Feed

You may be advised to place animals on protected feed and water that has not been stored in the open or exposed to radioactive contamination. Types of protected feed include:

- Grain stored in covered bins.
- Hay stored in a barn or covered shed.
- Ensilage stored in a covered silo.
- Hay bales covered by a tarp or barrier plastic or bales with the outer layers discarded.

Giving Animals Protected Water

Even if you have no protected feed during a radiological emergency, animals can live for several days on water alone. Water from enclosed wells or other covered or underground sources will normally be safe for livestock. It is unlikely these water supplies will be affected. Open water troughs should be drained, rinsed and refilled after notification that radioactive materials have settled to the ground. The same procedure may need to be repeated should conditions arise that would cause a large amount of dust and dirt to be stirred up or re-suspended in the air.

Protecting Water Sources

Open sources of water, such as rain barrels and tanks should be covered to prevent contamination. State and local health and environmental experts will check open sources of water and tell you whether they are safe. Filler pipes should be disconnected from storage containers supplied by runoff from roofs or other surface drain fields. This will help prevent contamination from entering the storage containers. Intake valves on water systems should be closed when you suspect the water source may be contaminated. This will prevent distribution or irrigation until the water source is tested and found to be safe.

Protection from Contaminated Soil

If State and local officials find that the soil is contaminated above established safety levels, proper soil management procedures can reduce contamination to safe levels. Idling, the non-use of land for a specific period of time may be necessary. In situations involving highly contaminated soil, removal and disposal of the soil may be more appropriate. Growing alternative non-food crops may also be recommended in some situations. Deep-plowing the soil can move radioactive substances below the plant root level; prevent plants from taking up contaminated nutrients, and allow the level of radioactivity to decrease with the passage of time.

Protecting Your Crops

The following specific actions may be advised to reduce the danger of ingesting contaminated food products.

Milk

Remove all dairy animals from pasture and shelter them if possible. Continue to provide them with protected food and water. Sampling teams from the Georgia Department of Agriculture, the Georgia Department of Natural Resources Environmental Protection Division, or the Federal Radiological Monitoring and Assessment Center will come to your farm to take milk, feed and water samples for laboratory analysis to determine whether any of these products are contaminated. If dairy products are found to be contaminated, it will be recommended that milk and milk products be withheld from the market. It is possible, however, for milk products contaminated with very low levels of radioactive materials to be safe for human consumption. You will be advised by officials from the Georgia Department of Agriculture as to which protective actions are appropriate.

Vegetables and Fruits

Locally grown fruits and vegetables, including roots, tubers and legumes, should be washed, scrubbed, peeled, or shelled to remove surface contamination.

Meat and Meat Products

If there is a release of radioactive materials into the environment, you may be advised to place meat animals on protected feed and water, and if possible, provide them with shelter. If livestock consume feed and water contaminated with radioactive materials, some of the contamination will be absorbed into their bodies and could then enter the human food supply through meat and meat products.

Poultry and Poultry Products

Poultry raised outdoors, especially those kept for egg production, should be monitored by taking samples and performing lab tests to determine the presence of radioactive contamination. Poultry raised indoors and given protected food and water are not likely to be contaminated. If contamination is verified, officials from the Georgia Department of Agriculture will advise that poultry and eggs not be eaten.

Grains

If grains are permitted to grow to maturity, most contamination will probably be removed by the wind and rain. Milling or polishing will probably remove any remaining contamination. Sampling and laboratory analysis will determine if the grain is safe to use. When harvested, contaminated and uncontaminated grains should be stored separately.

Bees

If radioactive contamination is detected in the area, honey and beehives will need to be sampled and analyzed by the Georgia Department of Agriculture, the Georgia Department of Natural Resources Environmental Protection Division, or the Federal Radiological Monitoring and Assessment Center. You will be instructed by Georgia Department of Agriculture officials on how to handle the beehives and honey.

Fish

Fish may continue to be harvested unless officials determine through laboratory analysis of samples that they are contaminated. Dilution of the radioactive material in large bodies of water should make contamination of fish highly unlikely. Samples of water and fish from open bodies of water will be analyzed to ensure they are safe.

Protecting Food Products

Food and Milk Processors, Warehouses and Commodity Terminals

Windows and vents to the outdoors should be closed. Vacuum systems should be shut down, as should compressed air systems. Any system that draws air from outdoors to the inside should be shut down. Your facility will be notified directly by the Georgia Department of Agriculture if the food products in your facility are affected. Samples will be collected and Department of Agriculture officials will notify you which products can be released for sale.

Protection of Packaged Food Products

Food in finished packaging should not be harmful to eat as long as the outer wrappings are discarded. Radioactivity will travel as fine particles that may coat the outside of the food product container. The Georgia Department of Agriculture will provide further advice to avoid any contamination from exterior packaging.

Reimbursement for Damages, Losses and Expenses

A radiological emergency may lead to additional living expenses, loss of farm or business income, or physical or property damages.

Claims for Damage or Loss

Utilities operating nuclear power facilities are required to have insurance to cover damages suffered by the public. American Nuclear Insurers will open Claims Centers within 48 hours of an emergency at one of the nuclear facilities. The Claims Centers may provide reimbursement for reasonable additional claims, including living expenses, to persons affected by an ordered evacuation. Staff at the Claims Centers also will handle claims for personal injury, property damage and loss of income.

Claims for damage or loss resulting from an emergency occurring at a facility operated by the U.S. Department of Energy (DOE), or its contractors, could be filed at a Claims Center. Information concerning the location of the Claims Center, and when and how to file a claim, will be provided to the public in a timely manner.

General Information on Radiation

Radiation is a natural part of our environment. Radiation is in the air we breathe, the food we eat, the soil, our homes, sunshine, and even our bodies. The radiation naturally occurring or existing in our environment is called background radiation. The amount of background radiation varies from one location to another. People may also exposed to radiation through medical and dental x-rays.

Health Effects of Radiation Exposure

The health effects of radiation exposure to people are measured in units called millirems. In the United States, each person is exposed to about 620 millirems of background radiation per year. It is difficult to observe any immediate effects to human health for exposures below 25,000 millirem. In comparison, the State of Georgia initiates protective actions based on the trigger levels recommended by the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA):

- Evacuate or shelter in place 1000 millirem or less if possible (from passage of radioactive plume).
- Relocate resident's 2000 millirem over the next 12 months
- Interdict contaminated food 500 millirem whole body or 5000 millirem to any organ

Average Annual Background Radiation in Georgia (Millirem/Year)

Natural radioactivity (cosmic and terrestrial)	50
From inside human body	16
Radon (air contamination from terrestrial sources)	229
Medical uses and nuclear medicine	300
Consumer products	13
Other sources (fallout, occupational exposure, nuclear energy)	12
Total Millirem/Year	620

How exposure to radiation will affect a person's health depends on:

- The amount and time of exposure.
- How much of the body or particular organ is exposed.
- How much radioactive material stays in the body.
- The general health and age of the exposed person.

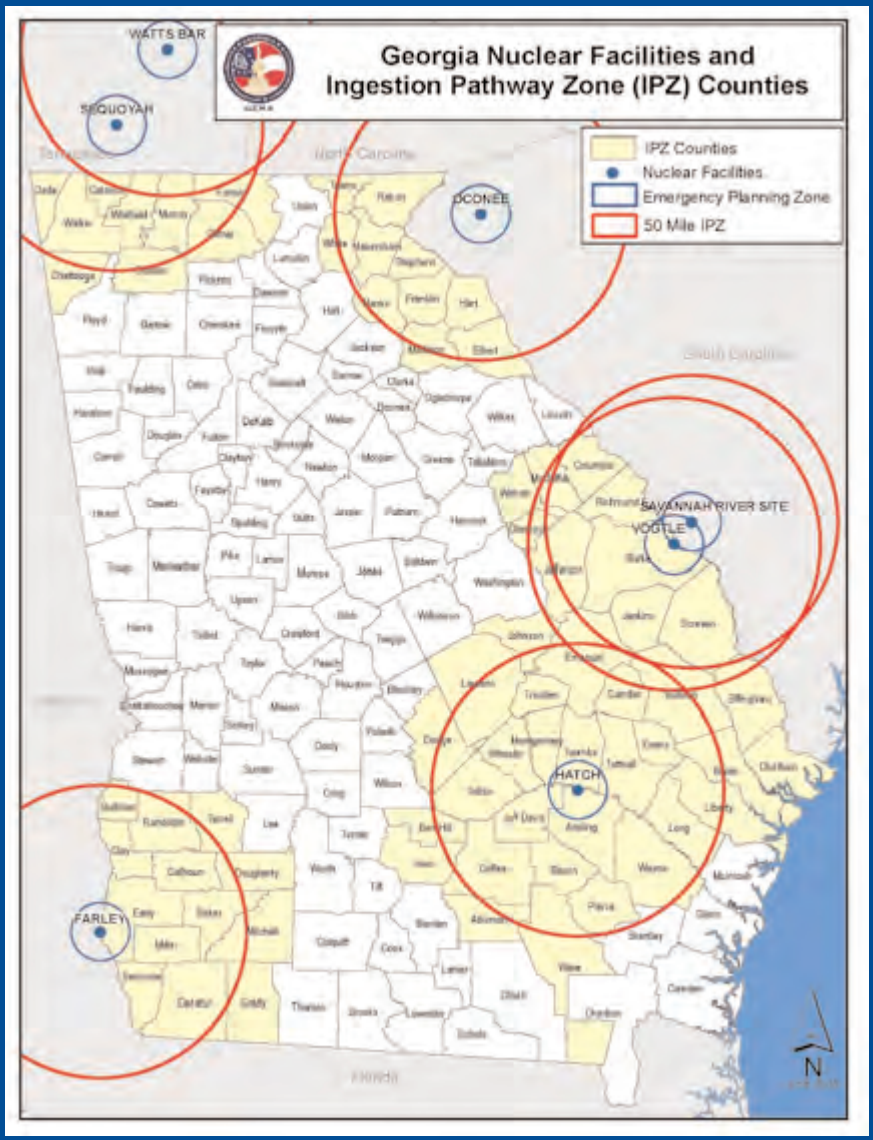
The effects of radiation can be reduced by reducing exposure time, by increasing the distance from the source of radiation, or by placing shielding material between the source of radiation and the individual.

Affected Counties

Although the possibility of an emergency involving a nuclear power plant is extremely remote, counties throughout the State of Georgia are constantly preparing for all types of emergencies, including those associated with a nuclear power plant

The following is a list of the counties associated with nuclear power plants which may impact the State of Georgia:

Hatch	Farley	Vogtle/SRS	Oconee	Sequoyah	Watts Bar
Appling	Baker	Bulloch	Banks	Catoosa	Catoosa
Atkinson	Calhoun	Burke	Elbert	Chattooga	Fannin
Bacon	Clay	Candler	Franklin	Dade	Murray
Ben Hill	Decatur	Chatham	Habersham	Fannin	Whitfield
Bryan	Dougherty	Columbia	Hart	Gilmer	
Bulloch	Early	Effingham	Madison	Gordon	
Candler	Grady	Emanuel	Rabun	Murray	
Coffee	Miller	Glascock	Stephens	Walker	
Dodge	Mitchell	Jefferson	Towns	Whitfield	
Emanuel	Quitman	Jenkins	White		
Evans	Randolph	McDuffie			
Irwin	Seminole	Richmond			
Jeff Davis	Terrell	Screven			
Johnson		Warren			
Laurens					
Liberty					
Long					
Montgomery					
Pierce					
Tattnall					
Telfair					
Toombs					
Treutlen					
Ware					
Wayne					
Wheeler					



For more information about emergency preparedness activities in your community, or additional copies of this booklet, contact the emergency management or emergency services office in your county. The booklet also can be found at the Georgia Emergency Management Agency website at http://www.gema.ga.gov/.