



# **Radiological Emergency Information for Farmers, Food Processors, and Distributors**



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## Introduction

This booklet contains information to help farmers, ranchers, home gardeners, nursery stock producers, food processors and distributors, and others involved with the growing, transport, processing, and sale of food products 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 facilities 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 Plant** 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 due to 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.**

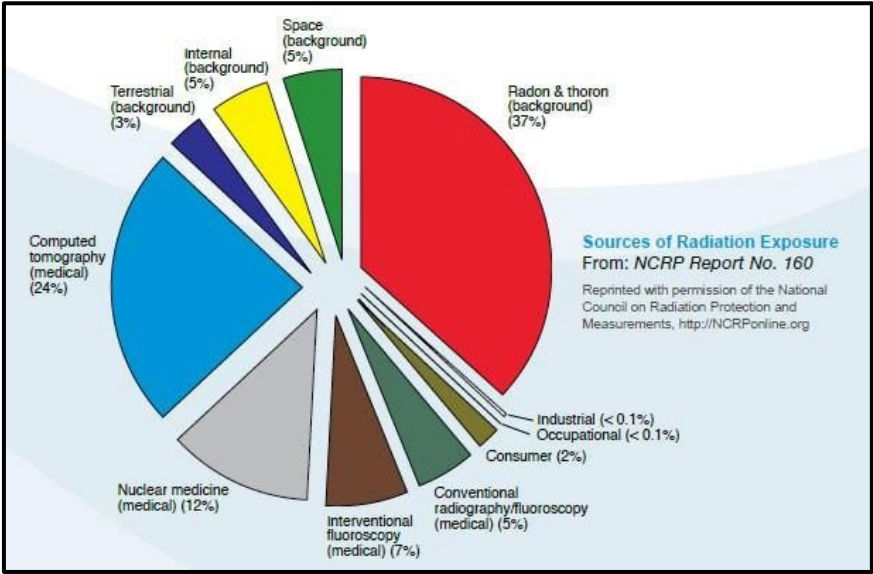
## General Information on Radiation

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. Radiation is also present in consumer products such as tobacco products, smoke detectors, lantern mantels, and building supplies. 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 be exposed to radiation through medical and dental x-rays. Examples of radiation dose comparisons are:

Protective Action Guide for Nuclear Power Plant Evacuations	1,000 millirem
Chest X-ray (posterior/anterior)	2 millirem
Panoramix Dental X-ray	1 millirem
Abdominal X-ray	7 millirem
CT of Abdomen	800 millirem
PET Scan for Cancer Staging	1,410 millirem
Cardiac Stress Test with Thallium 201	4,070 millirem
PET CT	4,500 millirem

*Source for typical medical doses: 2008-2009 annual Report of the President's Cancer Panel, U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute.*

The health effects of radiation exposure to people are measured in units called millirem. On average, Americans receive a radiation dose of about 620 millirem each year. Half of this dose comes from natural background radiation. Most of this background exposure comes from radon in the air, with smaller amounts from cosmic rays and the Earth itself. The other half of 310 millirem comes from man-made sources of radiation which includes medical, commercial, and industrial sources. In general, a yearly dose of 620 millirem from all radiation sources has not been shown to cause humans any harm.



## **Radiation Contamination**

An individual can be exposed to radiation and not become contaminated. Contamination occurs when radioactive particles become attached to surfaces including those of people, animals, water, food, plants, soil, equipment, and other objects.

- Being contaminated, however, does not mean a dangerous exposure to radiation has occurred.
- Contamination does not guarantee acute or chronic illness lead to ill effects.
- Contaminated surfaces may be able to undergo decontamination processes.
- External contamination may be easier to remove than internal contamination.

If external contamination is found on an individual, most of the material can be easily removed from the body by removing the clothing and gently washing with room temperature water, mild soap, and shampoo. General preventive and emergency protective actions and guidance will be provided to farmers, food producers, distributors, and home gardeners on decontaminating food crops, etc. (See page 10: Protection Actions for the Food Supply.)

People can become internally contaminated by breathing in radioactive materials from the air or by ingesting contaminated food and water. The human body may be successful at eliminating and expelling some inhaled radioactive particles, but if these materials persist, lung and other sensitive surrounding tissues could be damaged.

In the event of a release from a nuclear facility, radioactive materials are carried by wind and deposited on land, crops, livestock, food, and water supplies. Protective actions help to prevent contaminated food from entering the market. Animals that are produced for food can become internally contaminated in the same way as humans by eating or drinking radioactively contaminated foodstuffs. If radioactive material is absorbed into their bodies, it could be passed along the food chain through eggs, meat, or dairy products, such as milk. Plants produced for food can also be internally contaminated by absorbing radioactive materials from soil or water.

## Radiation & Health

A primary concern is that radiation will collect in our bodies and potentially cause injury and illness. It is important to remember that neither exposure nor contamination necessarily increases the risk of damaging health effects.

Minor damage to cells caused by inhalation or ingestion of small and infrequent amounts of radiation would likely be repaired by normal cell repair processes that take place all the time. A large radiation dose may damage too many cells too fast for the body to repair or replace them.

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

- 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

Radiation cannot be eliminated from our environment, but the risk can be reduced by controlling our exposure to it. Effects from radiation can be reduced by decreasing exposure time, by increasing the distance from the source of radiation, or by placing shielding material between the source of radiation and the individual.



## 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, which is why all levels of government work together to assess the impacts of radioactive materials that may cause contamination.

Contamination is the presence of radioactive materials in unwanted locations. The deposition

of radioactive materials could contaminate crops, livestock, uncovered water supplies, land, and exposed surfaces above established safety levels. When this level is exceeded, the food is considered “contaminated”. Eating contaminated foods and drinking contaminated milk or water can have harmful, long-term effects on your health.



State and local government officials are prepared to notify the agricultural community quickly during a radiological emergency by distributing emergency information through contact points such as the Georgia Department of Agriculture (GDA) Communications Office via the GDA website, GA Farmer and Consumer Market Bulletin, and GDA social media outlets, local Cooperative Extension Office networks, Georgia Farm Bureau networks, Georgia Commodity Group organizations, Georgia Food Safety Task Force, and Emergency Support Function (ESF) 11 distribution networks. State and local government officials will recommend actions to reduce contamination and restrict the public consumption of contaminated food and feed, milk, and water. Decisions or recommended actions will be based on a variety of factors, including, but not limited to:

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



## Sources of Emergency Information

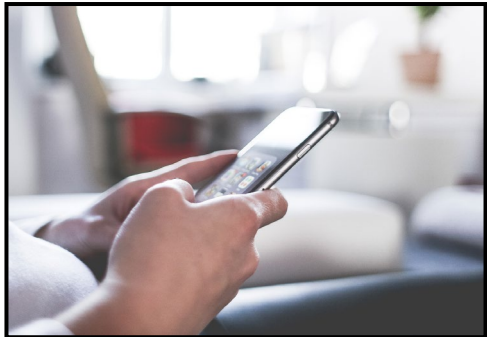
Your best source of information during an emergency depends on where you live or work. For example, people near the nuclear facility experiencing an emergency will receive initial information via Sirens, Wireless Emergency Alerts, the Emergency Alert System (EAS), and/or a reverse-911 calling system. People in adjacent areas will receive information from the media or other means. Local farmers or major food processors and distributors may also receive information directly from the Georgia Department of Agriculture or their local county extension agent.

### News Media

Local and state government officials will provide information to the news media using information published through the Joint Information Center (JIC) and/or directly from the Agency Communications Office. These reports will appear on radio and television, as well as in print and social media sources.

### Personal Contact

The Georgia Department of Agriculture staff or the local office of the University of Georgia Cooperative Extension Service or Fort Valley State University will provide information directly to food producers.



## Protective Actions

Protective actions are intended to prevent or minimize the possibility of consuming contaminated food or minimize the contamination of food products.

Two types of protective actions exist that will help prevent or lessen the likelihood of persons consuming contaminated food, feed, or water:

- **Preventive Protective Actions** prevent or minimize contamination of milk and food products. Example: Sheltering livestock and placing them on stored feed and covered water.
- **Emergency Protective Actions** isolate or contain food and feed to prevent its introduction into the marketplace and to enable testing to determine whether top-movement or other action is appropriate. Example: Restricting or withholding (embargoing) agricultural and dairy products from sale by prohibiting transportation to and from the affected areas.



## Protective Actions for Farm Workers/Home Gardeners

People who continue to work their farms or gardens and those who have been allowed to re-enter will be advised on how to further reduce the possibility of being contaminated by radioactive materials. To minimize inhalation or ingestion of radioactive materials deposited on vegetation or in the soil and to avoid bringing contamination into living spaces, you will be asked to take some, or all, of the following steps:

- Stay indoors as much as practical.
- Keep doors and windows closed as much as possible.
- Do not operate window fans or other devices that pull outdoor air and dust into homes.
- Avoid stirring up dust.
- Designated shoes (preferably boots) or shoe covers should be worn when outside, removed, and properly disposed of to avoid spreading contamination inside or into vehicles that will leave the restricted area.
- Coveralls, gloves, hats, and other clothing may be worn if available to reduce the potential for skin contamination. Such clothing should be removed when going indoors to avoid spreading contamination inside. Dust masks may also be used if readily available.
- Do not harvest or consume garden vegetables, fruits, or other food products that may have been exposed to radioactive material.
- Do not drink or use water from open ponds, reservoirs, or cisterns that have been exposed to the radioactive material until directed the water is safe to consume. If available, city or rural water, district water, or well water may be used as long it is taken from a closed distribution system. Guidance will be provided by local authorities on water consumption status.
- Do not harvest any fish or seafood from contaminated waters until advised that it is safe to consume.
- Do not eat, drink, smoke, or chew in contaminated areas. If you must eat or drink, ensure you wash your hands and face with mild soap and water before doing so. Avoid hot water, and gently wash your skin.
- As soon as practical, after completing work in contaminated areas (outdoors), wash or take a shower with mild soap and water.
- Contaminated clothing should be carefully removed and placed in plastic trash bags until they can be washed. Such clothing should be washed as a separate load or with other potentially contaminated clothing.

- Decontaminate household animals that may have come into contact with radiological material prior to bringing into home. Wear waterproof clothes and a dust mask when cleaning animals.
- Wash animals with shampoo or Dawn dish soap and water then rinse completely.
  - Pay extra attention to paw pads, under belly, and hard to reach areas when washing. Re-wash hands, face, and parts of your body that were exposed/uncovered once the animal has been cleaned.

## Protective Actions for the Food Supply

Location-specific protective actions are issued during emergencies. The following are examples of general preventive and emergency protective actions.

### Milk

Remove all dairy animals from pasture, shelter if possible, and provide them with protected feed and covered water. Government officials may come to your farm to take milk, feed, and water samples for laboratory analysis to determine whether any of these products are contaminated. Do not drink milk or consume any dairy product from cows, goats, or any other lactating animals until laboratory results are available.

If dairy products are found to be contaminated, it may be recommended that milk and dairy products be withheld from the market and are advised not to be consumed by the owner.

### Fruits and Vegetables

Farms and Home Gardeners: Locally grown fruits and vegetables, including roots, tubers, and legumes, that may have been exposed to radioactive material should not be eaten.



#### FOR HOME GARDENERS ONLY:

If the above is not an option, these items should be lightly washed and gently scrubbed first and then peeled or shelled to remove surface contamination. The waste should then be disposed of in a container outside of the home. **Do not compost these items.**

### Water

Government officials will check open sources of water to determine if they are safe for use. You may be advised to provide animals with covered sources of water or water that has not been exposed to radioactive contamination.

*Covered sources-* Covered wells and other covered or underground sources of water will most likely not become contaminated.

*Underground sources-* Radiation contaminants deposited on the ground will travel very slowly unless soils are sandy. It is unlikely that underground water supplies will be affected.

*Open sources-* Open water troughs should be drained, rinsed, and refilled after notification that radioactive materials have settled to the ground. Actions listed in the previous sentence should be done after each windy weather event in which dust spreads in the area.

Open water sources such as rain barrels and tanks should be covered to prevent contamination. Filler pipes should be disconnected from storage containers supplied by runoff from roofs or other surface drain fields. This will prevent contamination from entering storage containers. Water intake valves from any contaminated water source should be closed to prevent distribution of contaminated water by irrigation or other processes. Discard any contaminated water that entered prior to these means being established and flush lines with uncontaminated sources of water.

## **Meat and Meat Products**

If livestock consume feed and water contaminated with radioactive materials, contamination will be absorbed into their bodies and could enter the human supply through consumption of meat and meat products. Animals should be segregated and placed under stop movement that are deemed contaminated or in an unknown status and should not be consumed or sold/move/transferred until monitored by taking samples and performing laboratory tests to determine the presence or rule out radioactive contamination. Contact Georgia DNR-Environmental Radiation Protection for information regarding sampling.

## **Poultry and Poultry Products**

Poultry raised outdoors, especially those kept for egg production, should be monitored by taking samples and performing laboratory tests to determine the presence or rule out radioactive contamination. Poultry raised indoors and given protected food and water are not likely to be contaminated. If contamination is verified, state or local government officials may advise that poultry and eggs not be consumed or marketed. Contact Georgia DNR - Environmental Radiation Protection for information regarding sampling.

## Soils

If soil is contaminated, government officials will recommend soil management procedures to reduce contamination to safe levels. Idling, the non-use of land for a specific period of time, may be necessary in some cases. However, in situations involving highly contaminated soil, removal and disposal may be more appropriate.

Planting alternative crops may be recommended in some situations. Deep plowing the soil can remove 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. Government officials may provide guidance regarding appropriate steps to take for land usage.



## Grains

Most contamination on standing crops can be removed by wind and rain, depending on the stage of growth and whether grains are permitted to grow to maturity. Sampling and laboratory analysis will determine if the grain is safe to use. Contaminated and uncontaminated grains should be stored separately when harvested. Government officials may provide guidance on appropriate steps to address contaminated grain.

## Fish and Marine Life

Fish may continue to be harvested unless officials determine through laboratory analysis of samples that they are contaminated. Samples of water and fish from open bodies of water will be analyzed to ensure they are safe. Government officials will provide updates on the status of fish and marine life. Contact Georgia DNR - Environmental Radiation Protection for information regarding sampling.



## Honey

Honey and beehives will need to be sampled and analyzed by state or local government officials if radioactive contamination is detected in the area. You will be instructed by these officials on how to handle the hives and honey.

Listed below are some protective actions for beekeepers, if notified of a radiation release:

- Close off the hive to prevent bees from foraging and causing contamination of the entire hive,
- Feed uncontaminated sugar water, honey, pollen, and nutritional supplements, as needed, and
- Move hives and beekeeping equipment to sheltered areas such as barns, garages, or outside areas of dense vegetation.



## Shelter Animals

There will likely be many types of livestock, including poultry, on farms. You may be asked to shelter your animals and give them protected feed and water. Sheltering livestock will help prevent contamination from harming your animals and potentially entering the human food supply. It is unlikely a radiation release will directly cause the illness or death of any animals, but illness and death could possibly occur due to sudden feeding and husbandry changes imposed on animals because of the event. If you have a large number of deceased animals in your custody, please





contact the Georgia Department of Agriculture to discuss disposal actions. Disposal activities must be pre-approved by the GDA in advance to ensure all legal requirements are followed.

Farmers will need to evaluate their egg-producing poultry, breeding stock, and other animals to prioritize shelter decisions. If you are advised to shelter animals, remove them from pasture and house them in a farm building, if possible. (See chart on page 20: Guidance for Spacing Requirements for Farm Animals in Sheltering during Disasters.)

An ideal indoor shelter site would have these characteristics:

- Constructed at least partly of heavy materials that provide shielding,
- Doors, windows, and curtains that close,
- Enough space to prevent overcrowding, and
- Adequate ventilation.

Although open buildings such as pole barns or loafing sheds would provide less protection, any sheltering is better than none. Open areas could be blocked off with concrete blocks, earth, hay, sacks, plastic sheeting, or other materials.

You may not have enough shelter available for all your animals, so priority should be given to your most valuable livestock. Government officials will provide more information and advice for decontaminating farm animals.

## **Animals on Protected Feed**

You may be advised to place animals on protected feed meaning feed that has not been stored in the open or exposed to radioactive contamination or has been acquired from a source outside the contaminated area. Types of protected feed include:

- Grains stored in grain elevators, covered bins, or other containers,
- Hay stored in a barn or covered shed,
- Feed that had been stored in a building,
- Feed in a protected self-feeder,



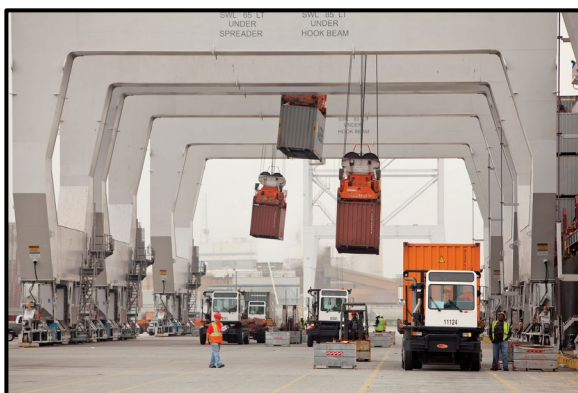
- Ensilage stored in a covered silo or trench, and
- Hay bales covered by a tarp or barrier plastic or bales with the outer layers discarded.

If hay bales stored in the open must be used, use hay from the side away from the wind direction first. Being sure to wear protective equipment to avoid inhalation of re-suspended radioactive material, remove the outer layer of the bales, and use the inner layers. (You can continue to store the outer layers until they have been monitored for radioactivity, then discard them if determined to be contaminated.) (See chart on page 21: Guidance for Short-Term Dietary Requirements for Farm Animals during Disasters.)

## Food Processors and Distributors

Following a radiological emergency, government officials may restrict the movement of food products and withhold them from the marketplace (embargo). These products may not be released for use or distribution until they are determined safe for consumption or until a decision is made to dispose of them.

If disposal is necessary, you will receive instructions on safe handling and disposal. State and/or federal government officials will meet with you to determine a disposal plan that will also include timeframes for implementation.



Food processors and distributors may act to minimize exposure at their facilities by:

- Shutting down the air intake system,
- Closing windows and doors, and
- Implementing procedures to monitor incoming food ingredients.

Food processors and distributors should ensure appropriate personnel are advised on how to implement these measures.

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. Individuals should wash their hands following removal of outer packaging, double bag, and dispose of waste outside of the building. Government officials will provide further advice to avoid any contamination from exterior packaging.

## **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, feed and milk products from the area, and
- Prevent potentially contaminated food and feed products from being moved to outside establishments, locations, marketplaces, or other individuals.

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 at checkpoints along the boundary of the Food Control Area. Cargo enroute to processors is to be returned to its point of origin. Early field monitoring and laboratory testing will focus on three 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 the 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.
3. Fish or aquaculture identified in an area or body of water that has high levels of radiological contamination in the waterway.

Fresh food and milk products will be disposed of if lab testing shows they are contaminated. The Georgia Department of Agriculture, the Food and Drug Administration (FDA), and/or USDA, in consultation with the producer, and EPA

will establish a disposal plan addressing the disposition of condemned food and milk products.

Food and milk products shown by lab testing to be safe for consumption by the public can be moved to market. Public notifications will be made available by the JIC and Agency Communications Office indicating products that are identified as safe to consume.

### **Lifting Food Controls**

The boundary of the Food Control Area will be revised as information 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.

## **Emergency/Post-Emergency Actions**

A release of radiological material can trigger action limits which require relocation or evacuation of the affected area. If this is the case, guidance will be provided for re-entry, re-occupancy, and return to the affected area. The following sections describe post-emergency actions that will occur if contamination is verified.

### **Relocation**

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, as described below.

### **Re-entry**

Re-entry is the temporary entry, under controlled conditions, into a restricted zone. If you are relocated, you may be allowed, when conditions permit, to re-enter the restricted zone temporarily to perform essential tasks. Re-entry will allow you to perform vital activities such as milking, watering, and feeding farm animals. The amount of time and frequency allowed for re-entry will be determined based upon radiation levels in the area. Individual or group dosimetry may be provided to ensure that radiation doses to the public are not exceeded. More information will be provided at the access control points. Individuals will be required to enter and leave the restricted area through designated access control points where further instructions will be provided. Individuals who are allowed to re-enter the restricted zone temporarily will be provided with guidance to minimize their exposure and contamination level. Guidance to minimize radiation exposure may include the following, note that this list is not exhaustive and additional guidance may be recommended:

- Limit outside activities to only those that are necessary (non-recreational).

- When working outside, wear outer clothing that covers all portions of the body (example: boots, gloves, coveralls, or long-sleeved shirts and long pants).
- Porches, walkways, vehicles, etc., may be washed off with a garden hose if practical to do so. Avoid contact with the wash water and do not permit its consumption by pets.
- Keep doors and windows closed as much as possible. Do not operate window fans or other devices that pull outdoor air and dust into your home.
- Do not conduct outdoor burning.
- If pets are, or may have been exposed, bathe them and dispose of wash water and rinse in a sanitary sewer.

## **Re-occupancy**

Re-occupancy is the process of allowing individuals to return to their homes in areas previously evacuated during the initial phase of emergency response. This occurs when health officials have determined radiation levels do not pose immediate concern to public health and safety and are below the safe allowable limit established by the Environmental Protection Agency (EPA) and are acceptable to the community. To minimize exposure to people, property, pets, and livestock, individuals who are allowed to return to their homes permanently will be provided with guidance to minimize their exposure level.

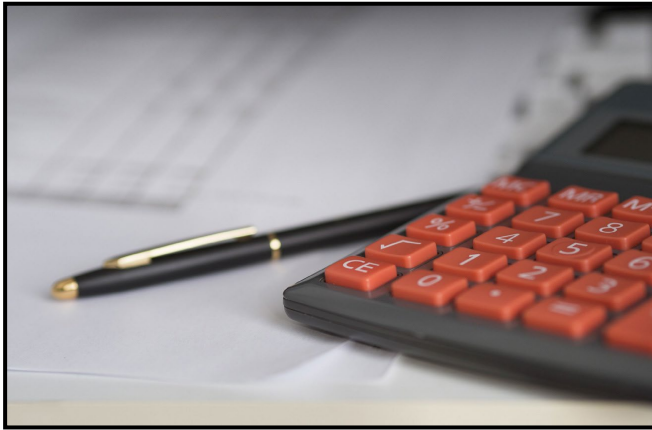
## **Return**

Return is the process of allowing people to return to the affected area when it is safe to do so and to return to daily life and activities. Unrestricted activity at your home, farm, processing facility, or distribution center may resume after concentrations of radioactive materials are reduced below limits set by the federal government.

## Reimbursement for Damages, Losses, and Expenses

American Nuclear Insurers (ANI) is a joint underwriting association created by U.S. insurance companies that pool their assets to share the loss potential represented by nuclear power stations. ANI provides its customers with insurance coverage for claims of “bodily injury” and “property damage” (terms defined in ANI’s insurance policies) sustained by people who live or work or own homes and businesses near insured nuclear facilities due to the release or threatened releases of nuclear material from one of those facilities.

Source: *Some Answers to Frequently Asked Questions*, American Nuclear Insurers (ANI). Find out more at <http://www.amnucins.com/>.





# Guidance for Spacing Requirements for Farm Animals in Shelters during Disasters

Estimates to assist planning for temporary sheltering of animals indoors in emergency situations

Animals	Square feet for short (24-36 hour) period	Square feet for long (2-10 days) period
<b>Cattle</b>		
~400 pound calf	15/animal	25/animal
~1200 pound adult	20/animal	35/animal
Cow with calf	40/unit	70/unit
<b>Swine</b>		
~150 pound hog	5/animal	8/animal
~450 pound sow or boar	14/animal	18/animal
Sow with litter	30/unit	35/unit
<b>Sheep</b>		
Ewe	8/animal	12/animal
Ewe with lambs	10/unit	15/unit
<b>Poultry</b>		
Broilers	0.8/animal	1.5/animal
Laying Hens	0.6/animal	1/animal
Turkeys	2/animal	5/animal

Adapted from *Guide for the Care and Use of Agricultural Animals in Research and Teaching*, Federation of Animal Science Societies, 3<sup>rd</sup> Edition, January, 2010.

# Guidance for Short-Term Dietary Requirements for Farm Animals during Disasters

Rations for maintenance (not production)\*

Animals	Amount of water per day (higher amounts apply to summer months)	Amount of feed per day
<b>Dairy Cows</b>		
In Production	7-9 gal	20 lbs hay
Dry cows	7-9 gal	8-12 lbs hay
Heifers	3-6 gal	8-12 lbs hay
Cow with calf	8-9 gal	12-18 legume hay**
Calf (~400 lbs)	4-6 gal	8-12 legume hay**
<b>Swine</b>		
Brood sow with litter	4 gal	8 lbs grain
Brood sow (pregnant)	3 gal	2 lbs grain
Gilt or boar	1 gal	3 lbs grain
<b>Sheep</b>		
Ewe with lamb	1 gal	5 lbs hay
Ewe (dry)	3 qt	3 lbs hay
Weaning lamb	2 qt	3 lbs hay
<b>Poultry</b>		
Layers	5 gal/100 birds	17 lbs/100 birds
Broilers	5 gal/100 birds	10 lbs/100 birds
Turkeys	12 gal/100 birds	40 lbs/100 birds
<b>Horses</b>		
All	1 qt/animal	As needed dry food

\*For specific amount and type of feeds, consult your veterinarian.

\*\* Placing animals on an alfalfa or clover hay rich diet that are not used to it can cause serious health issues for the animal, including death. Consult your veterinarian for more information.

Adapted from Emergency Management Institute, IS-010, Animal Disasters, Module A, Unit 8- May 1998.

**Georgia Nuclear Facilities and Ingestion Pathway Zone (IPZ) Counties**

Legend:

- IPZ Counties
- Nuclear Facilities
- Emergency Planning Zone
- 50 Mile IPZ

Map Labels:

- Watts Bar
- Sequoyah
- Oconee
- Savannah River Site
- Vogtle
- Hatch
- Farley

Neighboring States:

- Tennessee
- North Carolina
- South Carolina
- Alabama
- Florida

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