

Radiological Emergency Information

FOR MISSISSIPPI FARMERS, FOOD
PROCESSORS, AND DISTRIBUTORS



Radiological Emergency Information

For Mississippi Farmers,
Food Processors
and Distributors

IMPORTANT INFORMATION

Please read and save the brochure

This booklet has been prepared by the Mississippi Emergency Management Agency to provide guidance to members of the agricultural community with farms, food processing facilities and distributing facilities within 50 miles of a Nuclear Power Station. It explains the actions which you may be advised to take in order to protect your livestock and crops in the event of a radiological emergency. It also provides some tips to help you be prepared for a radiological incident. Please read and become familiar with the information in this booklet. Keep it in a convenient place for future reference.

Introduction

While it is unlikely that a serious radiological emergency will occur, it is important that we be prepared for such an event. The State of Mississippi is affected by two commercial nuclear power stations, Grand Gulf nuclear Station located in Claiborne County, MS and River Bend Station located in St. Francisville, LA. The information in this brochure may help you effectively respond to such an emergency.

This booklet provides emergency information for the agricultural community within the 50-mile radius of a nuclear power plant station. It contains information concerning how you will be notified and what procedures you should follow in the unlikely event of a radiological emergency.

If an emergency results in a release of radioactive material to the environment, you may be advised to take actions to protect your family, farm animals, and agricultural products. This information, along with specific instruction you will receive over the Emergency Alert System (EAS) or through other official news releases, will help you to prevent or minimize the effects of a radiological emergency on food and agriculture.

The instructions in this brochure may also be used in response to any other radiological emergency. General information on radiation and post-emergency activities are provided at the end of this booklet.

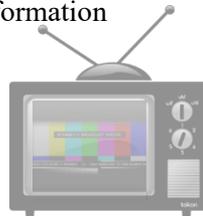
General Information on Radiation

Radiation and radioactive materials are a natural part of our environment. They are in the air we breathe, in the food we eat, in the soil, in our homes, and in our bodies. The level of the radiation naturally existing in our environment is called “background radiation”. Background radiation may vary greatly from one location to another depending on the related factors such as solar radiation and geographic location. We are exposed to sources of the manmade radiation such as X-ray machines and color televisions. Nuclear Power stations may release small non-harmful amounts of radioactive materials to the environment under controlled conditions and during routine operations.

Sources of Emergency Information

If a radiological emergency occurs within the 10-mile radius of a nuclear power station, people will be alerted by the sounding of a siren, an emergency vehicle equipped with a loudspeaker, a tone alert radio, or other appropriate means, you should take the following actions:

- 1** Turn on your radio or television and tune it to a station or channel that carries the Emergency Alert System (EAS) information or listen to the message on your tone alert radio. Here is a listing of stations/ channels will give you the most up-to-date information



RADIO

Jackson/ Vicksburg WMSI	@ FM102.9
Jackson WJMI	@ FM99.7
Jackson WJDS	@AM 620
Jackson WMPN	@FM 91.3
Natchez WQNZ	@ 95.1
McComb WAKK	@ FM105.7

TELEVISION

✓ WAPT 16 (Jackson)
✓ WLBT 3 (Jackson)
✓ WJBT 12 (Jackson)
✓ WDBD 40 (Jackson)

2 Follow the directions of the State or local government response officials as provided by the media sources. You may be advised to take protective actions such as:

- Arrange for the safety of you and your family.
- Protect animal feed and water.
- Cover outside feed supplies with tarps or other material
- Cover open water sources
- Remove dairy animals from the pasture, shelter if possible, and provide them with protected feed and water.
- Protect other livestock and poultry by sheltering them if possible and providing them with protected feed and water.
- Delay Grazing of animals on contaminated pasture.
- If you live within 10 miles of the plant, you may be advised to take shelter or to evacuate. This would help protect you and your family from potentially harmful levels of radiation.

Emergency Planning Zones

Two types of Emergency Planning Zones (EPZ) may be referred in a radiological emergency:

The Plume Exposure Pathway EPZ is the area within a 10-mile radius around the nuclear power station in which people may be directly exposed to radiation.

The Ingestion Exposure Pathway EPZ is the area within a 50-mile radius of a nuclear power station in which people may be in-directly exposed to radiation by eating or drinking contaminated food, milk, and water.

The safety of the food supply within the 50-mile ingestion exposure pathway EPZ could be a concern to members of the agricultural community if a radiological release to the atmosphere occurred. During such a release, both water and land could become contaminated. Eating contaminated foods and drinking contaminated milk or water could have a harmful, long-term effect on your health. Federal, State, and local government emergency response organizations are prepared to quickly notify you and advise the agricultural community on what protective actions to take in the event of the radiological emergency. The decision to issue protective actions will be based on the emergency conditions at the nuclear power station, available information on the amount of radiation that has been released to the environment and the consideration of the health, economic, and social impacts of the proposed protective actions.

MS Counties in Grand Gulf Nuclear Station

50-mile EPZ

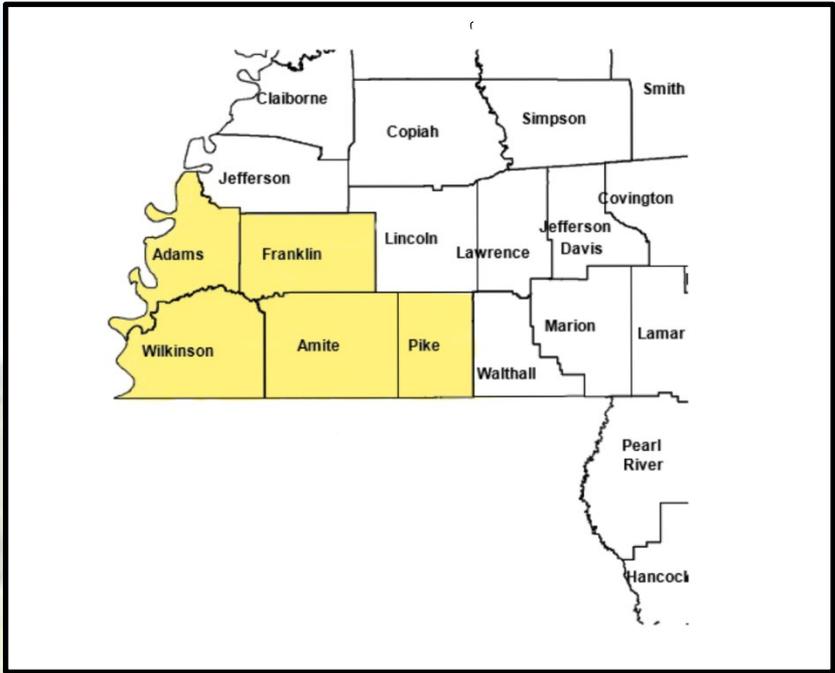
Adams, Amite, Claiborne, Copiah, Franklin, Hinds, Issaquena, Jefferson, Lincoln, Madison, Rankin, Sharkey, Simpson, Warren, Wilkinson, Yazoo



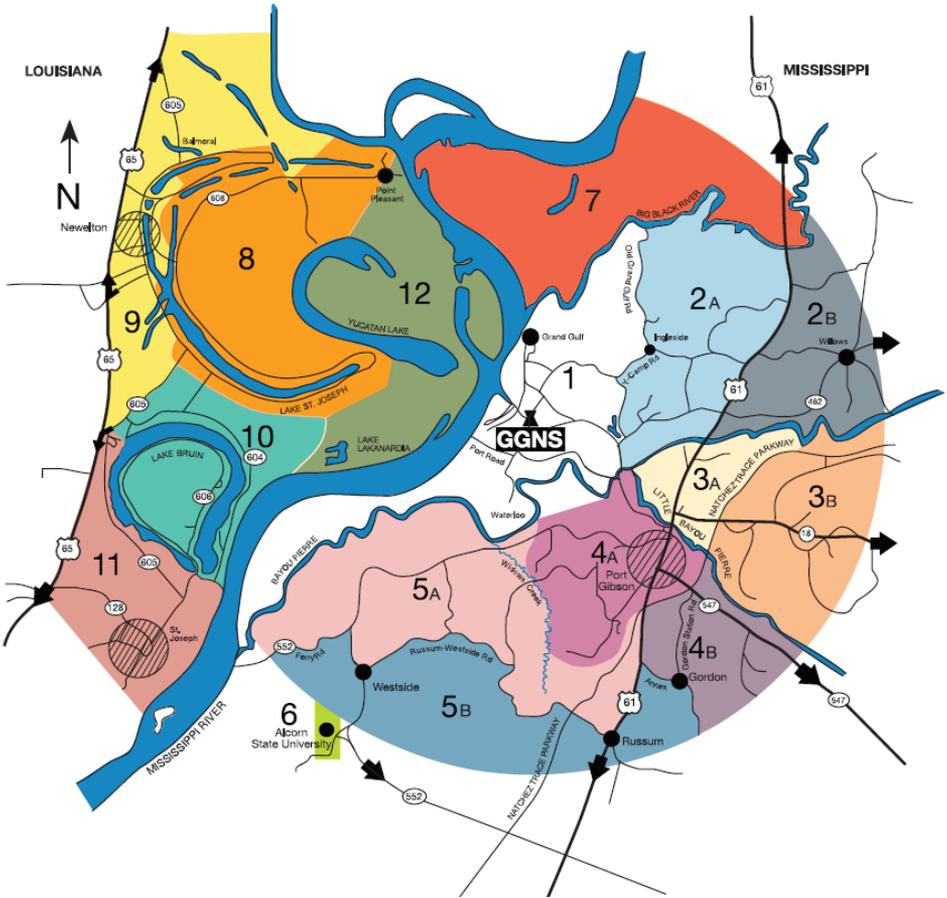
MS Counties in River Bend Nuclear Station

50-mile EPZ

Adams, Amite, Wilkinson, Franklin, Pike



GGNS 10-MILE EMERGENCY PLANNING ZONE



What to do in a Radiological Emergency

If a release of radioactive materials occurs, appropriate Federal, State, and local government officials will verify contamination of agricultural products within a 50-mile radius of a nuclear power station. Specific instructions will depend on the distance of your farm or facility from the from the nuclear station and the prevailing wind conditions. The following are examples of protective actions that may be issued.

- ✓ When you go outside, wear outer clothing that covers all portions of the body, like what you would wear when applying pesticides, for example, boots, gloves, coveralls, or long-sleeved shirts, and long pants.
- ✓ Wear a protective mask or place a folded (preferably dampened) cloth over your mouth and nose when working outside to prevent inhalation of radioactive materials.
- ✓ Wash your hands thoroughly before prepping or eating food.
- ✓ Wash, scrub, peel, or shell fresh fruits and vegetables before eating them.
- ✓ Do not slaughter any animal.
- ✓ Do not use fresh milk from your dairy animals or eggs from your chickens.
- ✓ Do not engage in dust-producing activities such as cultivating, disking, baking, or harvesting.
- ✓ Do not process or distribute agricultural products until they have been sampled by appropriate government officials and found to be free of contamination.
- ✓ Do not transport or market contaminated food products
- ✓ Do not hunt or fish

Protective Actions

Protective Action Guidelines (PAGs) are guides used in planning for protective actions to safeguard public health. The actions are taken to limit the radiation dose from ingestion by avoiding or reducing the contamination in or on human food and animal feeds following the release of radionuclides. To ensure public safety, Derived Intervention Levels (DILs) have been recommended by the US Food and Drug Administration (FDA) to protect food, milk, and water from radioactive contamination. Each DIL is a set point where protective measures should be considered. For example, if levels of radioactive cesium in milk approach the preventive “response level,” surveillance and protective actions for dairy animals may be recommended (e.g., placing dairy animals on uncontaminated feed and water).

There are two types of **Protective Actions** that will help prevent or lessen the possibility of persons eating or drinking contaminated food and water:

1. **Preventive Protection Actions** prevent or minimize contamination of milk and food products.
2. **Emergency Protective Actions** isolate or contain food and prevent its introduction into commerce and to determine whether condemnation or other action is appropriate. An example would be to restrict or withhold agricultural products from the marketplace by prohibiting transportation from the affected areas.

Protective Actions for Farm Products and Animals

The following are the examples of preventative and emergency protective actions related information that may be recommended to the agricultural community by the appropriate government officials. These officials will issue location-specific protective actions in the event of an actual emergency.

✓ Milk

Remove all dairy animals from the pasture, shelter if possible, and provide them with protected feed and water, Government officials may come to your farm to take milk, feed, and water samples for laboratory analysis to determine whether any of the products are contaminated.

If there is a possibility that dairy products could be contaminated, it may be necessary that milk and milk products be withheld from the market. However, it may be possible for milk products contaminated with certain radioactive materials to be safe for human consumption after proper storage over a period. This will allow for decay of the radioactive material. The decay may be achieved by freezing and storing the fresh milk, concentrated milks, or concentrated milk products. Storage of milk for prolonged periods of time at reduced temperature is also possible provided ultra-high temperature pasteurization techniques are used during processing. Using fluid milk to produce butter, cheese, dry milk, or evaporated milk may also be possible. (note that based on the public's perception and product marketability, it may be necessary to dispose of contaminated milk.) You will be advised by government officials as to what protective actions are appropriate.

✓ **Water**

Open sources of water should be protected. Cover open rain barrels and tanks to prevent contamination. Covered wells and other underground sources of water will probably not be contaminated. Radiation contaminants deposited on the ground will travel very slowly unless soils are sandy. It is unlikely that underground water supplies will be affected.

Filler pipes should be disconnected from storage containers that are supplied by runoff from roofs or other surface drain fields. This will prevent contaminants from entering the storage containers. Close water intake valves from any contaminated water sources to prevent distribution (e.g. irrigation) of contaminated water.

✓ **Land**

If emergency management finds that the soil is contaminated, proper soil management procedures can be implemented to reduce contamination to safe levels. Idling, the nonuse of the land for specific period, may be necessary in some cases. However, in situations involving highly contaminated soil, removal and disposal of the soil may be appropriate.

✓ **Grains**

If grains are permitted to grow to maturity, the wind and rain will probably remove most contamination. 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.

✓ **Fruits and Vegetables**

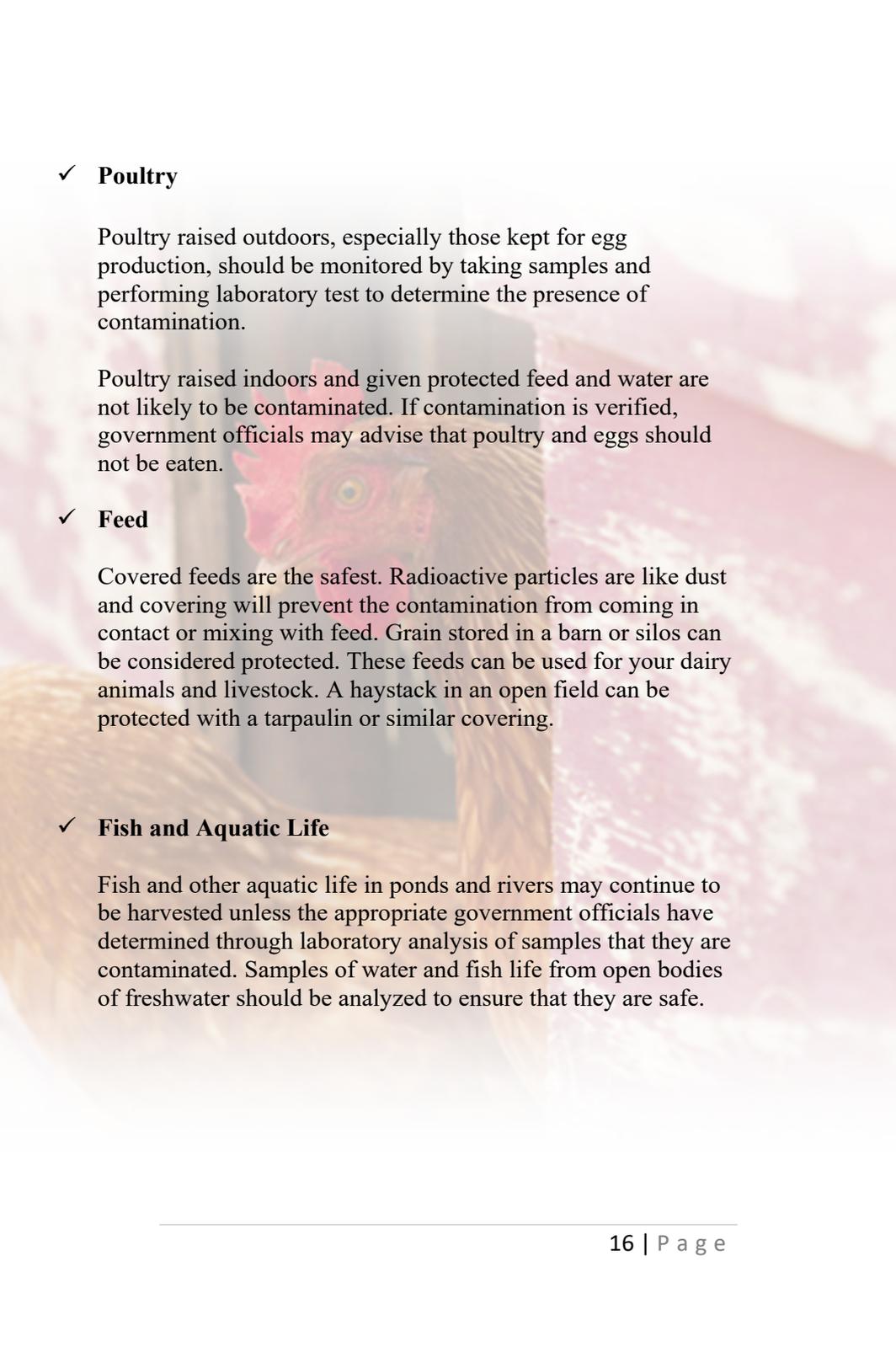
Wash, scrub, peel, or shell locally grown fruits and vegetables, including roots and tubers, to remove any surface contamination. If they are contaminated by short-lived radionuclides (e.g., Iodine 131), preserve by canning, freezing, or dehydration, and store to allow time for the radioactive materials to decay. Fruits that are ripe at the time of the radiological incident may be lost due to a personal contamination hazard to pickers. Fruits that do not have to be picked immediately can be saved and picked later, after the radioactive materials have decayed. Fruits and vegetables should not be consumed or sold until it has been deemed safe to do so.

✓ **Honey**

Honey and beehives will need to be sampled and analyzed by the appropriate 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.

✓ **Meat and Meat Products**

If there is a release of radioactive material to 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 potentially enter the human food supply through meat and meat products.



✓ **Poultry**

Poultry raised outdoors, especially those kept for egg production, should be monitored by taking samples and performing laboratory test to determine the presence of contamination.

Poultry raised indoors and given protected feed and water are not likely to be contaminated. If contamination is verified, government officials may advise that poultry and eggs should not be eaten.

✓ **Feed**

Covered feeds are the safest. Radioactive particles are like dust and covering will prevent the contamination from coming in contact or mixing with feed. Grain stored in a barn or silos can be considered protected. These feeds can be used for your dairy animals and livestock. A haystack in an open field can be protected with a tarpaulin or similar covering.

✓ **Fish and Aquatic Life**

Fish and other aquatic life in ponds and rivers may continue to be harvested unless the appropriate government officials have determined through laboratory analysis of samples that they are contaminated. Samples of water and fish life from open bodies of freshwater should be analyzed to ensure that they are safe.

Economic Productivity

Radiological emergency conditions resulting in dispersal of radioactive contamination could reduce the economic productivity of your farm. You may suffer the loss of some farm/agricultural assets during a radiological incident. Following an accident, radioactive contamination might reduce the competitive economic value of your farm products. This would be due to public reluctance to purchase farm products that are suspected of having been grown in an area that has been affected by a radioactive release from a nuclear power station.

Government officials will advise you on the contamination level that your farm experienced and the marketability of your farm products. An insurance pool has been established to help individuals recover from losses sustained during a radiological incident.

Food Processors and Distributors

Radioactive contamination of agricultural products in an affected area can occur **during processing or during transportation.**

During and following a radiological incident, agricultural government officials may restrict the movement of food products and withhold them from marketplaces if they are contaminated. These products should not be released until they have been inspected and analyzed. They may be deemed safe or may need to be disposed of. You will be instructed how to safely handle and dispose of radioactive contaminated food products.

Recovery and Post Emergency Actions

Recovery is the overall process of reducing radiation in the environment to acceptable levels for normal daily living. Following the emergency, government officials will identify the types and levels of radioactive contamination. They may need to take air, water, soil, crops, and animal products from your farm. They will provide you with instructions and assist you in decontaminating your property if such actions are deemed necessary. Contaminated food will be isolated to prevent its introduction into the marketplace. A coordinated effort by the Mississippi Department of Agricultural and Commerce and the USDA will determine whether condemnation and/or disposal are appropriate. Recovery may involve any of the following protective actions:

- **Reentry**
Reentry is the temporary entry (under controlled conditions) into a restricted area. If you have been evacuated from the area you may be allowed temporary return to perform vital activities at your farm or agricultural land. You will be alerted to this process through the Emergency Alert System and/or local news media, including specific instructions on routes to use and what radiation safety precautions you should adhere to.
- **Return**
Return refers to those areas where previously evacuated persons will be allowed to reoccupy/ -return based upon State and Federal environmental sampling teams having identified that there is **NO** radioactive contamination present.
- **Relocation**
It is possible that after an incident that the land within the EPZ will not be suitable for human habitation and consumption of foodstuffs grown/raised within it. The State (under guidance from the EPA and USDA) will announce these areas and help coordinate your removal.

Feeding/ Spacing Requirement for Livestock

ANIMAL	WATER/DAY	FEED/DAY	SPACE/HEAD
CATTLE			
Milk cows	20-25 gallons/per head/per day	20-30 pounds of hay and grain	20 square feet
Bulls	20-25 gallons/per head/per day	20-30 pounds of hay	20 square feet
Dry cows	10-15 gallons/per head/day	12-20 pounds of hay	20 square feet
Cow with calf	20-25 gallons/per day	12-18 pounds of hay	150 square feet
Calf (less than 500 lb)	5-10 gallons	8-12 pounds of hay	15 square feet/calf
SWINE			
Lactating sow	4 gallons	8 pounds grain	5 square feet per head/ 40 per sow and litter
Pregnant brood sow	3 gallons	4 pounds grain	7 square feet
Gilt or boar	1 gallon	3 pounds grain	5 square feet
SHEEP and GOATS			
Ewe with lamb	4 quarts	5 pounds hay	10 square feet/pair
Dry ewe	3 quarts	3 pounds hay	8 square feet
Weaning lamb	2 quarts	3 pounds hay	8 square feet
POULTRY			
Layers	5 gallons/100 birds	17 pounds/100 birds	0.8 square feet/bird
Broilers	5 gallons/100 birds	10 pounds/100 birds	0.6 square feet/bird
Turkeys	12 gallons/100 birds	40 pounds/100 birds	2 square feet/bird

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Animals in Disasters, Module A, Awareness and Preparedness, FEMA, IS-010, May 1998

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The Disaster Handbook, 1998 National Edition, University of Florida/Insttute of Food and Agricultural Sciences SP 2431

The Merck Manual, Nutritional Requirements of Pigs, March 2015

