



Constellation Energy

RADIOLOGICAL EMERGENCY INFORMATION

For Farmers and Food Processors
in the State of Maryland

**Please read
this brochure
thoroughly.**

This brochure contains important emergency information for farmers and food processors located within a 50-mile radius of a commercial nuclear power plant. It tells how you will be notified and what procedures you should follow in the event of an emergency at the power plant.

If an emergency results in a release of radioactive material to the environment, you could be told to take action to protect your family, farm animals, and agricultural products. You will receive instructions over the Emergency Alert System (EAS) radio or television stations or through other official sources, to help you prevent or minimize the agricultural effects of a radiological emergency.

The instructions in this brochure also could be used in response to other kinds of emergencies. General information on radiation and post emergency activities is included.

**Sources of
Emergency
Information**

In the event of an emergency at the nuclear power plant near you, specific instructions will be issued by state or local government officials. Information will be provided to you through at least one of the sources listed below:

- The Emergency Alert System (EAS) will provide you with emergency information broadcast over certain EAS radio and television stations.

Emergency Planning Zones

- Your County Extension Office may use local radio or television broadcasts, newspaper articles, telephone, or personal contact to provide you with important information about protecting agricultural products.
- Additional information may be made available to you by federal, state, or county government emergency organizations.

There are two types of emergency planning zones (EPZs):

The Plume Exposure Pathway EPZ

This area generally is a 10-mile radius around a commercial nuclear power plant where plans are in place for dealing with direct exposure to radioactive material during an emergency.

The Ingestion Exposure Pathway EPZ

This is the area within a 50-mile radius around a commercial nuclear power plant where emergency plans are in place to deal with the potential for indirect exposure to radiation caused by eating food or drinking water, milk, or other liquids that are contaminated by radioactive material released during an emergency.

Protective Actions

The safety of the food supply is the focus of emergency plans for the 50-mile EPZ. If radioactive material were released during an accident, both water and land could become contaminated. Eating contaminated foods and drinking contaminated milk and water could have a harmful, long-term effect on your health.

State and county government emergency response organizations will tell the agricultural community what actions to take if a radiological emergency occurs. The decision to recommend protective actions will be based on the emergency conditions at the power plant and other information.

There are two types of protective actions that will help to prevent or lessen the possibility that people will eat or drink contaminated food or water:

Preventive Protective Actions

Preventive Protective Actions are measures taken to prevent or minimize contamination of food products.

You may be told to put your animals, especially dairy cows, on protected or stored feed and water. Grain stored in a permanent bin, hay in a barn or ensilage in a covered silo can be considered protected. A haystack in an open field can be protected with a tarpaulin or similar covering but this must be done before a radioactive release occurs.

Large rolled bales of hay unprotected by plastic sleeves or covers that are stored outside should not be used unless absolutely necessary. Even then, they should be used only when the outer layers have been removed and discarded. If no protected or stored feed is available for use during an emergency, animals could survive for a time on water alone.

Water from a covered or deep well, tank, cistern or freely running spring would be safe for livestock. Water in an open pond could be contaminated, and should be tested before it is used.

Emergency Protective Actions

Emergency Protective Actions are measures taken to isolate or contain food that has already been contaminated and prevent its release into commerce. An example would be to restrict or withhold (embargo) agricultural and dairy products from the marketplace by keeping them from being shipped out of the affected areas.

The following are examples of protective actions that may be recommended if a release of radioactive materials occurs and contamination of agricultural products is verified by State officials:

- When you go outside, wear clothing that covers all portions of the body, similar to what you would wear when applying pesticides; for example: coveralls or long-sleeved shirt, long pants, boots, gloves, etc.

- Wear a respirator, protective mask, or place a folded (preferably dampened) cloth over your mouth and nose when working outside to prevent inhalation of radioactive materials.
- Remove outer clothing before going indoors.
- Wash hands thoroughly before preparing or eating food.
- Delay the slaughter of animals until advised it is safe to do so by appropriate health or agriculture officials.
- Do not use fresh milk from dairy animals, fresh garden vegetables, or eggs from within the Ingestion Exposure Pathway EPZ until you are told it is safe to do so by health or agricultural officials.
- Do not engage in dust-producing activities such as cultivating, disking, baling, or harvesting.
- Do not process or distribute agricultural products until they have been sampled by state officials and found to be free of contamination.
- Do not transport or market food products from the Ingestion Exposure Pathway EPZ surrounding the nuclear plant until advised it is safe to do so by health officials. Follow the advice these officials provide via Emergency Alert System messages.
- Fish and game should not be taken for food until further notice.

Specific instructions will depend on where your farm or facility is located in respect to the nuclear power plant and on the existing weather conditions.

Protective Actions for the Food Supply

Here are some examples of emergency actions and information that may be issued to the agricultural community by state government officials. Protective action recommendations specific to your area will be issued by officials in the event of an actual emergency.

Milk

Remove all dairy animals from pasture, shelter them if possible, and provide them with protected feed and water. It is more important to protect the animal feed and water than to protect the animal itself. If necessary, put the feed in the barn and the animals in the barnyard.

State officials may come to your farm to take milk, feed, and water samples for laboratory analysis. If dairy products are found to be contaminated, you may be told to withhold your milk and milk products from the market. State and county officials will recommend specific methods to deal with this problem.

Fruits and Vegetables

Wash, scrub, peel, or shell locally grown fruits and vegetables, including roots and tubers, to remove surface contamination. If you are told it is safe to do so, some fruits or vegetables can be preserved by canning, freezing, or dehydration and stored for later use.

Meat and Meat Products

Following a release of radioactive material, you may be advised to place meat animals on protected feed and water and, if possible, provide them with

shelter. If livestock consume contaminated feed and water, 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 tested by state officials. Poultry raised indoors and given protected feed and water are not likely to be affected. If contamination is verified, state or county officials may recommend that the poultry and eggs not be eaten.

Fish and Aquatic Life

Fish and other aquatics raised in ponds should not be harvested unless State officials have tested samples and found that they are safe. Samples of water, fish, and aquatic life from other bodies of water also should be tested to ensure that they are safe.

Soils

If state officials find that the soil is contaminated, corrective soil management procedures can be implemented. "Idling", the nonuse of the land for a specific period of time, may be necessary in some cases. However, for small spots of highly contaminated soil, removal and disposal of the soil may be more appropriate.

State or county officials will let you know what actions are appropriate.

Grains

If grains are permitted to grow to maturity, most contamination will probably be removed by the wind and rain. Laboratory tests will determine if the grain is safe to use. When harvested, contaminated and uncontaminated grains should be stored separately to prevent cross contamination.

Water

Open sources of water should be protected. Cover open rain barrels and tanks to prevent contamination. Do not collect rainfall from the roof of a building. Covered wells and other covered or underground sources of water probably will not become 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 pipe 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 the use of contaminated water.

Honey

Honey and bee hives will need to be tested by state officials if radioactive contamination is detected in the area. You will be instructed by state or county officials on how to handle the hives and honey.

Food Processors and Distributors

Radioactive contamination of milk or food products in an affected area can occur **during processing, or during transportation.** This can result from exposure to radioactive materials on the ground or in the air, and from contact with contaminated products.

Following a radiological emergency, state officials may restrict the movement of food products and withhold them from the marketplace if they are found to be contaminated. These products should not be released until they are safe for consumption, or until a decision is made to dispose of them. You will be told how to safely handle and dispose of contaminated food products.

Post Emergency Action

If you have been evacuated from your area, you may be allowed to return temporarily to your farm when conditions permit. State or county officials will advise you through the Emergency Alert System (EAS) or other official channels if a decision to permit reentry is made. You will receive specific instructions on routes to use and safety precautions to take. Reentry will allow you to perform such vital activities as milking, watering, and feeding farm animals.

Following the emergency, state officials will identify the types and levels of contamination. They may need to take samples of air, water, soil, crops, and animal products from your farm or business. They will provide you with

instructions and assist you in decontaminating your animals, food, and property if such actions are necessary. Contaminated food will be isolated to prevent its introduction into the marketplace. State and county officials will decide whether condemnation and disposal are appropriate.

Radiation and Our Environment

Radiation and some 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 even in our bodies. The level of radiation naturally existing in our environment is called “background radiation.” It may vary greatly from one location to another depending on related factors such as solar radiation, geographic elevation, soil composition, and the presence of radon gases from the soil and building materials. We are also exposed to radiation from other sources, such as X-ray machines and color televisions.

The effect of radiation on people depends on the amount and duration of exposure, how much of the body is exposed, how much radioactive material stays in the body, and the general health and age of the person. The effects of radiation can be decreased by reducing the exposure time and increasing the distance from the source of the radiation.

Effects of Contamination of Human Food and Water Supplies

The amount of radioactive materials released into the atmosphere, the duration of the release, and weather conditions, all can affect the accident's impact on people, animals, crops, land, and water near the site of the emergency. An initial concern would be the condition of fresh milk from dairy animals grazing on pasture and drinking from open sources of water. Testing could be performed at the farm, the transfer station, or the processing plant. If fresh milk and processed milk products are shown to be contaminated, state officials will decide whether to dispose of them or to hold them until safe for consumption.

Another concern would be the possible contamination of vegetables, grains, fruits, and nuts. The severity would depend on the time of year the emergency occurred. The time just before or during harvest is the most critical period. Crops will be sampled and analyzed by state officials to determine if they are safe to eat.

An additional concern would be the possible impact of the contamination on livestock and poultry. Pasture, feed, and water sources, as well as meat and poultry products, will be sampled and analyzed to determine if the meat and poultry products are safe to eat.

Contamination of drinking water supplies is not likely to be a problem. If it occurs, it probably will affect only surface water supplies and not ground wells or underground water sources. The safety of water would be determined by sampling public and private sources. If land becomes contaminated, proper soil management techniques can reduce contamination of crops grown on the land. The procedures to be used would depend on the severity of contamination and the specific crops to be grown.

A Summary

While it is unlikely that a serious radiological emergency will occur, it is important to be prepared for such an event. The information in this brochure may help you to more effectively respond to such an emergency if it should happen.

If a radiological emergency occurs in your area, you may be alerted by the sounding of a siren, an emergency vehicle equipped with a loudspeaker, or other means. You should take the following actions:

- Turn on your radio or television and tune it to a station that carries Emergency Alert System (EAS) information.

- Follow the directions of the state or local emergency management officials. You may be advised to take protective actions such as:
 - Protect feed and water. Cover outside feed supplies with a tarpaulin or other appropriate material. Cover open water sources.
 - Remove dairy animals from pasture, shelter them 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.
- If you live within the 10-mile Plume Exposure Pathway Emergency Planning Zone for a plant where an emergency is taking place, you may be advised to take shelter (go inside) or evacuate. Ingestion of potassium iodide (KI) may also be advised to protect your thyroid glands. (this would help protect you and your family from potentially harmful levels of radiation.)

Table 1

Animals can survive on the following rations and water for several months.

ANIMALS	WATER/DAY	FEED/DAY
Dairy Cows		
Milk Cows	5–10 gallons	20–30 pounds hay and grain
Dry cows	5–10 gallons	20 pounds hay
Weaning cows	6 gallons summer 3 gallons winter	8-12 pounds hay
Cow (pregnant)	7 gallons summer 6 gallons winter	10-15 pounds of hay
Cow with calf	9 gallons summer 8 gallons winter	12-18 pounds of hay
Calf (400 pounds)	6 gallons summer 4 gallons winter	8-12 pounds of hay

ANIMALS	WATER/DAY	FEED/DAY
Swine		
Brood sow	4 gallons summer with litter	8 pounds grain 3 gallons winter
Brood sow (pregnant)	1-2 gallons summer 1 gallon winter	2 pounds grain
150 pound gilt or board	1 gallon	3 pounds grain
Sheep		
Ewe with lamb	4 quarts	5 pounds hay
Ewe, dry	3 quarts	3 pounds hay
Weaning lamb	2 quarts	3 pounds hay
Poultry		
Layers	5 gallons/100 birds	17 lbs/100 birds
Broilers	5 gallons/100 birds	10 lbs/100 birds
Turkeys	12 gallons/100 birds	40 lbs/100 birds



Table 2

Maryland Jurisdictions within Nuclear Power Plant Ingestion Exposure Pathway Emergency Planning Zones.

CALVERT CLIFFS NUCLEAR POWER PLANT Lusby, MD

Annapolis	Prince George's
Anne Arundel	Queen Anne's
Calvert	Somerset
Caroline	St. Mary's
Charles	Talbot
Dorchester	Wicomico
Kent	Worcester

PEACH BOTTOM ATOMIC POWER STATION Delta, PA

Anne Arundel	Harford
Baltimore	Howard
Baltimore City	Kent
Carroll	Queen Anne's
Cecil	

SALEM/HOPE CREEK GENERATING STATIONS

Hancocks's Bridge, NJ

Caroline	Kent
Cecil	Queen Anne's
Harford	

THREE MILE ISLAND NUCLEAR STATIONS

Londonderry Township, PA

Baltimore	Frederick
Carroll	Harford
Cecil	Washington

LIMERICK GENERATING STATION Limerick Township, PA

Cecil

NORTH ANNA POWER STATION Mineral, VA

Charles



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