

**STATE OF IOWA  
RADIOLOGICAL EMERGENCY  
INFORMATION**

**FOR FARMERS, FOOD PROCESSORS, AND  
DISTRIBUTORS**



**IMPORTANT INFORMATION  
PLEASE READ AND SAVE THIS BROCHURE**

**January 2014**

# **RADIOLOGICAL EMERGENCY INFORMATION**

## **For Farmers, Food Processors, and Distributors**

This booklet provides emergency information for farmers, food processors, and food distributors located within 50 miles of Cooper Nuclear Power Station, Fort Calhoun Nuclear Power Station, Duane Arnold Energy Center, or the Quad Cities Nuclear Power Station.

This booklet contains information on actions you should take if there were accident with a release of radiation. The Information and emergency response procedures found in this booklet should be followed to protect your family, farm animals, and food products. In case of a radiological accident you will receive instructions from local, state, and federal authorities.

Please read this booklet carefully and note the emergency information.

### **Issued by**

**Iowa Department of Homeland Security and Emergency Management  
Iowa State University Extension and Outreach**

### **SAVE THIS BOOKLET FOR FUTURE REFERENCE**

Issued January 2014

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**DUANE ARNOLD ENERGY CENTER  
EMERGENCY PLANNING ZONE**  
Emergency Information for this Area

**Linn County Agricultural Extension Service**

Telephone: (319) 377-9839

**Benton County Agricultural Extension Service**

Telephone (319) 472-4739

**Linn County Emergency Management Coordinator**

Telephone: (319) 363-2671

**Benton County Emergency Management Coordinator**

Telephone: (319) 472-4519

**Local Emergency Alert System (EAS)**

EAS Radio Frequency: WMT -600 AM or 96.5 FM

**Other**

Linn County Sheriff (319) 892-6100

Benton County Sheriff (319) 472-2337

**Commercial Nuclear Licensee**

Duane Arnold Energy Center

NextEra Energy

(319) 398-4406

In any public emergency, important news and instructions for your safety will be given over the Emergency Alert System (EAS). Keep your radio tuned to the EAS station and follow the emergency recommendations.

**FORT CALHOUN NUCLEAR POWER STATION  
EMERGENCY PLANNING ZONE**  
Emergency Information for this Area

**Harrison County Extension Service**

Telephone: (712) 644-2105

**East Pottawattamie County Extension Service**

Telephone: (712)-482-6449

**West Pottawattamie County Extension Service**

Telephone: (712) 366-7070

**Harrison County Emergency Management**

Telephone: (712) 644-2353

**Pottawattamie County Emergency Management**

Telephone (712) 328-5777

**Local Emergency Alert System (EAS)**

EAS Radio Frequency: KFAB - 1110 AM

**Other**

Harrison County Sheriff (712) 644-2244

Pottawattamie County Sheriff (712) 890-2200

**Commercial Nuclear Licensee**

Fort Calhoun Nuclear Power Station

Omaha Public Power District

(402)636-3755

In any public emergency, important news and instructions for your safety will be given over the Emergency Alert System (EAS). Keep your radio tuned to the EAS station and follow the emergency recommendations.

**QUAD CITIES NUCLEAR POWER STATION  
EMERGENCY PLANNING ZONE**

Emergency Information for this Area

**Scott County Extension Service**

Telephone: (563) 359-7577

**Clinton County Extension Service**

Telephone: (563) 659-5125

**Scott County Emergency Management**

Telephone: (563) 326-8663

**Clinton County Emergency Management**

Telephone: (563) 242-5712

**Local Emergency Alert System (EAS)**

EAS Radio Frequency: WOC 1420 AM or KROS 1340 AM

**Other**

Scott County Sheriff (563) 326-8625

Clinton County Sheriff (563) 242-9211

**Commercial Nuclear Licensee**

Quad Cities Nuclear Power Station

Exelon Generation

(309)-654-2241

In any public emergency, important news and instructions for your safety will be given over the Emergency Alert System (EAS). Keep your radio tuned to the EAS station and follow the emergency recommendations.

**COOPER NUCLEAR POWER STATION  
INGESTION PATHWAY ZONE**

Emergency Information for this Area

**Page County Extension Service**

Telephone: (712) 542-5171

**Taylor County Extension Service**

Telephone (712) 523-2137

**Mills County Extension Service**

Telephone: (712) 624-8616

**Montgomery County Extension Service**

Telephone: (712) 623-2592

**Fremont County Extension Service**

Telephone (712) 374-2351

**Local Emergency Alert System (EAS)**

EAS Radio Frequency: KFAB 1110 AM or KFEQ 680 AM

**Commercial Nuclear Licensee**

Cooper Nuclear Station

Nebraska Public Power District

(402) 825-3811

In any public emergency, important news and instructions for your safety will be given over the Emergency Alert System (EAS). Keep your radio tuned to the EAS station and follow the emergency recommendations.

## INTRODUCTION

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

If the 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 instructions you will receive over the Emergency Alert System (EAS), NOAA Weather Radio, 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 other kinds of radiological emergencies. General information on radiation and post emergency activities is provided at the end.

## SOURCES OF EMERGENCY INFORMATION

In the event of an emergency at the nuclear power station near you, specific protective action recommendations will be issued by appropriate State or local government officials. Information to prevent or minimize radiation contamination of food products 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 over designated radio and television stations. These stations will also provide additional emergency-related information.
- Your County Extension Office may provide you with information on the protection of agricultural products through local radio or television Alerts, newspaper articles, or by telephone.
- Broadcasts over weather band radios will provide you with up-to-date weather information. The broadcasts may also provide you with emergency instructions on protective measures.
- Additional emergency agricultural information may be available to you through Federal, State, or local government emergency organizations.

## EMERGENCY PLANNING ZONES AND PROTECTIVE ACTIONS

Two types of emergency planning zones (EPZ) may be referred to in an emergency:

### The Plume Exposure Pathway EPZ

This is the area generally within a 10-mile radius around a commercial nuclear power generating facility where emergency planning is required for members of the general public and in place to deal with the potential of direct exposure to radiation.

### The Ingestion Exposure Pathway EPZ

This is the area within a 50-mile radius around a commercial nuclear power generating facility where emergency planning is required and in place to deal with the potential of indirect exposure to radiation due to eating contaminated food or drinking contaminated water, milk, or other liquids.

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 and water could have a harmful, long-term effect on your health.

Federal, State, and local government emergency response organizations will notify and advise the agricultural community on what actions to take in the event of a radiological emergency. The decision to recommend protective actions will be based on the emergency conditions at the power station, available information on the amount of radiation that may be and/or has been released to the environment, meteorological considerations, etc. There are two types of protective actions that will help to prevent or lessen the possibility of persons eating or drinking contaminated food or water:

## Emergency Protective Actions

Emergency protective actions are intended to prevent or minimize the possibility of consuming radioactive contaminated products into commerce.

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 appropriate State or local government 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.
- Remove dairy animals from pasture, shelter them if possible, and provide them with protected feed and water.
- Delay the slaughter of any animals until advised it is safe to do so by appropriate health officials.
- Do not use fresh milk from dairy animals, fresh garden vegetables, or eggs from within the Plume Exposure Pathway Emergency Planning Zone surrounding the nuclear facility until appropriate health officials indicate these are safe.
- Do not engage in dust-producing activities such as cultivating, disking, bailing, 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 food products from the Plume or Ingestion Exposure Pathway Emergency Planning Zone until advised it is safe to do so by appropriate health officials. Follow the advice of health officials regarding the area within the Ingestion Exposure Pathway.

- Restrict fishing to catch and release. Fish and game should not be taken for food until further notice.

Specific instructions will depend on the distance of your farm or facility from the commercial nuclear power station and the existing weather conditions.



## **Protective Actions for the Food Supply**

The following are examples of preventive and emergency protective actions and related information that may be recommended to the agricultural community by appropriate state or local government officials.

Location-specific protective action recommendations will be issued by these officials in the event of an actual emergency.

### **Milk**

Remove all dairy animals from pasture, shelter if possible, and provide them with protected feed and water. State or local 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. If dairy products are found to be contaminated, it may be recommended that milk and milk products be withheld from the market. State and local officials will assist with specific methods to deal with contamination problems.

### **Fruits and Vegetables**

Wash, scrub, peel, or shell locally grown fruits and vegetables, including roots and tubers, to remove surface contamination. If fruits or vegetables are contaminated by short-lived radionuclides they can be preserved by canning, freezing, or dehydration and stored to allow time for decay of the radioactivity.

### **Meat and Meat Products**

If there is a release of radioactive material to the environment, you 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 Federal, State, or local officials taking samples and performing laboratory tests to determine the presence of radioactive contamination. Poultry raised indoors and given protected feed and water are not likely to be contaminated. If contamination is verified, State or local government officials may advise that poultry and eggs should not be eaten.

## **Fish and Aquatic Life**

Fish and other aquatics raised in ponds should not be harvested unless appropriate State or local government officials have determined through laboratory analysis of samples that they are safe. Samples of water, fish, and aquatic life from other bodies of water should be analyzed to ensure that they are safe.

### **Soils**

If State or local government officials find 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 a specific period of time, may be necessary in some cases. However, in situations involving small spots of highly contaminated soil, removal and disposal of the soil may be more appropriate. State or local government 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. Sampling and laboratory analysis 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. Covered wells and other covered or underground sources of water will probably not become contaminated. It is unlikely that underground water supplies will be affected. Radiation contaminants deposited on the ground will travel very slowly unless soils are sandy. 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.

### **Honey**

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

## 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, government 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 instructed how to safely handle and dispose of contaminated food products.

## POST EMERGENCY ACTIONS

The following sections describe post emergency actions that will occur if contamination is verified.

### Reentry

Reentry is the temporary entry, under controlled conditions, into restricted, contaminated area, in all probability within the 10-mile radius of the commercial nuclear power station. If you have been evacuated from your area, you may be allowed to return **temporarily** to your farm when conditions permit. State or local government officials will advise you through the Emergency Alert System (EAS) or other official means if a decision to permit reentry is made. You must apply through your county emergency management office to enter a restricted area. 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.

### Recovery

Recovery is the process of reducing radiation in the environment to acceptable levels for normal daily living. Following the emergency, State and local government 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 to the market place. State and local government officials will determine whether condemnation and disposal are appropriate.

## GENERAL INFORMATION ON RADIATION

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 sources of manmade radiation such as X-rays and other medical procedures.

The effects of radiation on people depend on the amount and length of time 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 radiation.

## SUMMARY OF EFFECTS OF RADIOACTIVE DEPOSITS ON HUMAN FOOD AND WATER SUPPLIES

Depending on the amount of radioactive materials released into the atmosphere, the duration of the release, and the prevailing weather conditions, people, animals, crops, land, and water near the site of the nuclear power plant could be affected. Of initial concern would be the condition of fresh milk from dairy animals grazing on pasture and drinking from open sources of water. Sampling for contamination could be performed at the farm, the transfer station, or the processing plant. If contamination of fresh milk and processed milk products is verified, State or local government officials will determine whether to dispose of these products or to hold them until safe for consumption.

Another concern would be the possible contamination of vegetables, grains, fruits, and nuts. The severity of the impact of the contamination would depend on the time of the year the emergency occurred. The time immediately prior to or during harvest is the most critical period. Crops will be sampled and analyzed by the appropriate government officials to ensure that they are safe.



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 ensure that the meat and poultry products are safe to eat.

Contamination of drinking water supplies is not considered to present a significant problem. If it occurs, it will probably 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 be implemented to reduce contamination of crops grown on the land. The procedures recommended would depend on the severity of contamination and the specific crops to be grown.

In conclusion, while a serious radiological emergency is unlikely, it is important to be prepared for such an event. The information in this brochure may help you to more effectively cope with such an emergency.

The point of contact with reference to information contained within this publication is:

**Iowa Department of Homeland Security and Emergency Management**  
7105 NW 70<sup>th</sup> Avenue  
Camp Dodge  
Johnston, Iowa 50131  
515-725-3231  
<http://www.homelandsecurity@iowa.gov>



## A SUMMARY OF RECOMMENDATIONS

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

- Turn on your radio or television and tune to a station or channel that carries Emergency Alert System (EAS) information.
- Follow the recommendations of the state or local emergency response officials as provided by the above sources. You may be advised to take protective actions such as:
  - ➔ **Protect Feed and Water:**  
Cover outside feed and open water source supplies with a tarpaulin or other appropriate material.
  - ➔ Remove dairy animals from pasture by sheltering them if possible, and providing 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 Plume Exposure Pathway EPZ of the nuclear power plant, you may be advised to take shelter (go inside) or to evacuate. This would help protect you and your family from potentially harmful levels of radiation.