



RADIOLOGICAL EMERGENCY

FARMER INFORMATION BOOKLET



INTRODUCTION

Agriculture in Indiana accounts for more than \$31 billion in annual economic activity. Four nuclear power plants surround northern Indiana, and farmers across the region could consider a radiation emergency as a real possibility.

Although a nuclear threat is unlikely, this booklet is intended to act as a resource to Indiana farmers who need to quickly understand how to protect their farms during a radiological emergency.



EMERGENCY CLASSIFICATION SYSTEM

The Emergency Classification System is a standard emergency alert system distributed by nuclear power plant operators to notify the public that something unusual is happening at the power plant. The system is designed for a rapid and coordinated local, state and federal response. The agency that responds to the emergency alert system will depend on the type of emergency situation that is occurring. The four emergency classification “levels” are as follows:

Notification of Unusual Event (Lowest Severity)

Alert

Site Area Emergency

General Emergency (Highest Severity)

Notification of Unusual Event (Lowest Severity)

A Notification of Unusual Event (NOUE) can be triggered by any problem within the plant that potentially could lead to a decrease in safety. In this emergency level, no releases of radioactive material requiring offsite response or monitoring are expected, and the situation does not pose any threat to public safety.

Some examples of Unusual Events:

- Some leakage of reactor coolant water
- The loss of off-site power for more than 15 minutes
- On-site or off-site communications equipment becoming unavailable

Alert

An Alert emergency level is triggered by any type of event that causes a reduction in plant safety. A radiation release from the power plant is possible, but only in small amounts that are within the U.S. Environmental Protection Agency (EPA) protection action guideline exposure levels. Alerts are not considered a threat to the public, although state agencies are able to choose what precautionary actions should be taken (i.e. activation of Emergency Operations Center).

Some examples of Alerts:

- An on-site fire that could potentially cause failure of plant safety systems
- Natural or man-made events that threaten the stability of vital plant equipment
- Radiation levels becoming high in certain areas of the plant, which causes an unsafe environment for plant operators

Site Area Emergency

Site Area Emergencies (SAE) are triggered when events that cause a serious safety condition occur at the plant. In this emergency level, a radiation release is possible, but it is not expected to exceed the U.S. EPA protective action guideline exposure levels or leave the boundaries of the plant itself. The purpose of a Site Area Emergency is to adequately staff emergency response centers and to ensure the public is prepared if the situation worsens.

Some examples of Site Area Emergencies:

- The reactor losing large amounts of cooling water
- The actual or potential loss of two of three power plant safety barriers
- Power plant security becomes compromised

General Emergency (Highest Severity)

A General Emergency (GE) is the highest emergency level, and is triggered when the reactor core becomes or is expected to become damaged. During General Emergencies, radiation release is expected to be above the U.S. EPA protective guidelines, and exposure levels are expected to go beyond plant boundaries. Members of the public living within a 50 mile radius of the power plant will immediately be notified and provided with protective action information.

Some examples of General Emergencies:

- Plant operators have lost control of the facility
- Two of three safety barriers have been lost, and the third barrier is expected to be lost
- The reactor core has experienced severe damage

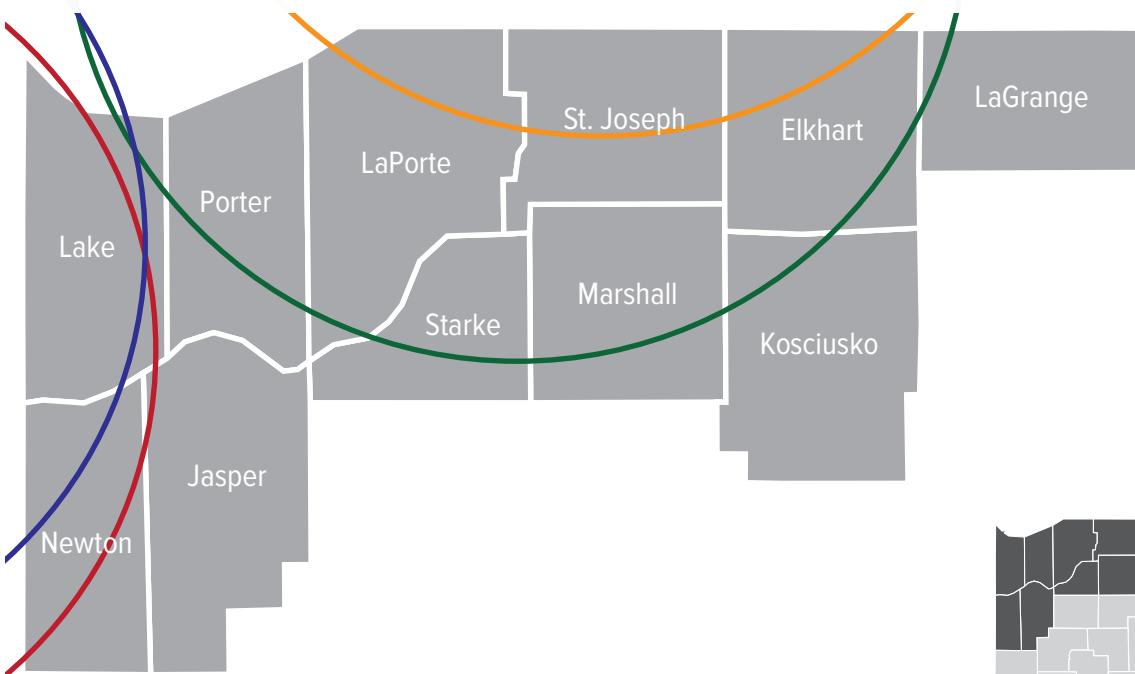
INGESTION PATHWAY ZONE

During a General Emergency situation, land within a 50 mile circle of the plant is known as the Ingestion Pathway Zone. Following a large-scale incident, experts anticipate that food and water found outdoors within this area may become contaminated with radioactive material. Any food or water found outdoors within the Ingestion Pathway Zone should not be consumed, as it may be a threat to the health and safety of the general public. Wild game that is hunted in the Ingestion Pathway zone during the events of a General Emergency should not be consumed, as there is a possibility it could be contaminated with radiation.

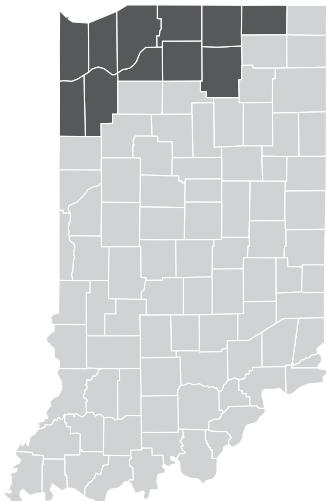
Following an incident, radiation and food specialists will work to test food, water and other items that may have been impacted. As these specialists learn more, they will work with local and state officials to provide additional safety instructions to citizens.

There are **11** Indiana counties that in an Ingestion Pathway Zone:

- Elkhart
- Jasper
- Kosciusko
- LaGrange
- Lake
- LaPorte
- Marshall
- Newton
- Porter
- St. Joseph
- Starke



- Braidwood Nuclear Generating Station
- Dresden Nuclear Generating Station
- DC Cook Nuclear Plant
- Palisades Nuclear Plant



WATER SUPPLY

During a General Emergency, all open water sources within the Ingestion Pathway Zone radius will become contaminated with radiation. In order to prevent the contamination of open water sources, farmers should cover all exposed wells, rain barrels and water tanks. Radiation also is capable of penetrating aquifers and contaminating ground water sources, and lakes and rivers are capable of carrying radiation many miles in just a few hours. Radiological specialists will work diligently to get the best safety information to area residents as quickly as possible.

CROPS

Crops located within the Ingestion Pathway Zone are susceptible to radiation contamination during a General Emergency. All fruit and vegetable crops found outdoors during the time of a General Emergency situation should not be consumed until cleared by officials conducting radiological inspections. The amount of time crops will remain contaminated will depend on the type of radiation being emitted from the power plant.



LIVESTOCK

During a General Emergency, livestock within the Ingestion Pathway Zone also are at risk of becoming contaminated with radiation. In order to reduce the risk of contamination, farmers should shelter all livestock and place them on stored feed and water. Any milk or meat products harvested from livestock animals during a General Emergency should not be consumed until otherwise informed by officials conducting radiological inspections. As it is with crops, the amount of time livestock will remain contaminated depends on the type of radiation that is being emitted from the power plant.



FARMING ACTIVITY DURING RADIOLOGICAL EMERGENCY

During the events of a General Emergency, farmers still are able to perform certain outdoor farming activities, but extra precaution is needed.

When performing outdoor farming activities, farmers should wear outer clothing that covers all portions of the body (similar to clothing worn when spraying pesticide). By wearing outer clothing that covers all of the body, farmers will reduce the chances of their bodies becoming contaminated with radiation. A dust mask should also be used in order to prevent the inhalation of contaminated dust particles in the air.

Any farming activities that produce dust, such as cultivating, disk ing, bailing or harvesting, is discouraged. The dispersal of dust increases the chances of spreading radiation contamination through the air. Crops, dairy and meat products that are harvested during General Emergencies are to not be sold or distributed until cleared by officials conducting radiological inspections.

Once outdoor farming activities are complete, farmers should leave all outer clothing materials outside, take shelter indoors and wash thoroughly with soap and water in order to remove any potential radiation contamination that might be on the body.

ADDITIONAL RESOURCES

To learn more about the Indiana Department of Homeland Security's Radiological Emergency Preparedness program, visit <https://www.in.gov/dhs/3523.htm>.

To learn more about nuclear power plants and their safety guidelines, visit the U.S. Nuclear Regulatory Commission's website at <https://www.nrc.gov>.

For more information on radiation emergency preparedness, visit the Center for Disease Control and Prevention's website at <https://emergency.cdc.gov/radiation/>.