



Protecting Arizona Agriculture

**Radiological Emergency Information for Farmers, Ranchers,
Nursery Stock Producers, Food Processors and Distributors**

Facts and Instructions in Case of an Emergency at the Palo Verde
Nuclear Generating Station

Important Information • Keep This Booklet



PREPARE FOR AN EMERGENCY

Farms located within the 50-mile area around the Palo Verde Nuclear Generating Station need to be prepared to take the following actions during an incident at the plant:

- Use your farm emergency response plan
- Listen to local radio stations for emergency instructions and updates
- Provide enough food and water for farm animals to last several days in the event you are instructed to either evacuate or shelter-in-place
- Move animals into barns or covered areas, if possible
- Cover outdoor feed and water, including tanks and troughs
- Discontinue harvesting or shipping crops or products until instructed it is safe to do so
- Follow all directions provided by emergency response officials
- Do not risk personal or employee safety trying to protect animals, crops or food products

EMERGENCY CONTACT INFORMATION

Arizona Department of Agriculture

(602) 542-4293

www.agriculture.az.gov

Maricopa County Department of Emergency Management

(602) 273-1639

www.maricopa.gov/999/Emergency-Management

Arizona Department of Emergency and Military Affairs

(602) 244-0504

<https://ein.az.gov>

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Prepared by:

- Arizona Department of Agriculture
- Arizona Radiation Regulatory Agency
- Arizona Department of Health Services
- Arizona Department of Emergency and Military Affairs
- Maricopa County Department of Emergency Management
- Maricopa County Cooperative Extension
- Palo Verde Nuclear Generating Station

INTRODUCTION

This booklet is intended for farmers, ranchers, nursery stock producers, food processors and distributors and others involved with the growing, transporting, processing and selling of agricultural products. Specifically, this brochure provides emergency information for the agricultural community within a 50-mile radius of the Palo Verde Nuclear Generating Station (PVNGS).

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

Agriculture in Arizona contributes more than \$17 billion to the state's economy and creates more than 88,000 jobs. The abundance and diversity of agricultural production is evident in the fields and on farms surrounding PVNGS. Crops, from alfalfa to cotton to wheat, as well as fruits, vegetables, nuts, fish, milk, eggs and meat are all farmed in this fertile area.

The mission of the Arizona Department of Agriculture (ADA) is to support and promote Arizona agriculture in a way that encourages farming, ranching and agribusiness, protects the well-being of people, plants, animals and the environment while safeguarding commerce, consumers and natural resources.

Please read this brochure thoroughly

PALO VERDE NUCLEAR GENERATING STATION

PVNGS is under strict regulations to ensure its safe operation and that redundant safety systems are in place. These safety systems are designed to safely shut down the reactors, keeping radioactive materials contained inside the reactor building should a problem exist. Though unlikely, if a radiological emergency occurs, plans are in place to prevent or limit exposure to the public, emergency workers as well as nearby farms and fields.

The following two types of planning zones may be referred to in an emergency:

The Plume Exposure Pathway EPZ

This is the area within a 10-mile radius around PVNGS in which emergency actions may be necessary to prevent direct radiation exposure to people.

The post-plume phase or Ingestion Exposure Pathway EPZ

This is the area within a 50-mile radius around PVNGS in which emergency actions may be necessary to prevent the consumption and marketing of contaminated food, milk and water.

These areas represent where pre-planning has occurred, the same pre-planned actions can be extended to other areas as needed beyond 10 and 50 miles



GENERAL INFORMATION ABOUT RADIATION

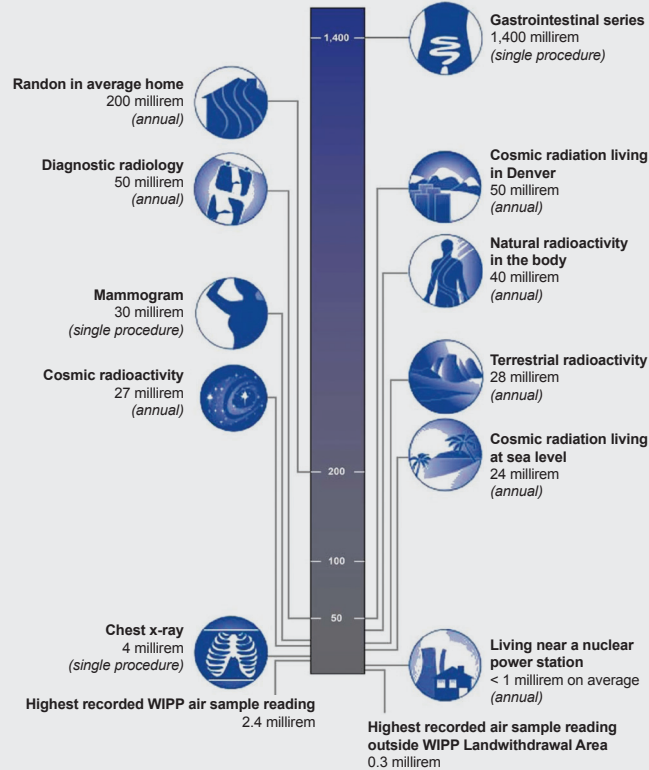
Radiation and radioactive materials are a natural part of our environment. They are in the air we breathe, in the food we eat, in the soil, in our homes and even in our bodies. The level of radiation naturally existing in our environment is called “background radiation.” We are also exposed to sources of man-made radiation such as X-ray machines and televisions. Commercial nuclear generating stations may release small, non-harmful amounts of radioactive materials to the environment under controlled conditions and during routine operations.

Radiation exposures received from both environmental (natural) and man-made sources of radioactivity are usually measured in units called millirems. The National Council on Radiation Protection and Measurements estimated the average annual exposure in the U.S. to be about 620 millirems excluding exposure from tobacco use. Persons living near a commercial nuclear power station receive less than one additional millirem per year.

The following chart provides the relative doses from different radiation sources you might be exposed to and which can contribute to your annual exposure.

RELATIVE DOSES FROM RADIATION SOURCES

Millirem Doses



GOVERNMENT RESPONSE

For agricultural areas within 50 miles of PVNGS, the main goals of government officials and producers alike will be to prevent contamination of the food supply and to keep contaminated products from going to market. Emergency response organizations are prepared to quickly notify and advise the agricultural community on what actions to take in the event of a radiological emergency.

Pursuant to A.R.S. §3-107(B)(6), the ADA Director has authority to restrict or destroy any agricultural product or foodstuff that is adulterated or contaminated as the result of an accident at a commercial nuclear generating station.

Several of the actions which may be taken to our food supply include:

- Embargo of foodstuffs, animals and other agricultural commodities
- Temporary or permanent restriction of agricultural activity
- Recommendation that animals be given stored feed only
- Restricting the movement of commodities and animals until they have been determined to be in compliance with health standards
- Requiring the decontamination or special handling of contaminated animals and other commodities
- Temporary holding of commodities from the quarantine area for testing. Only safe commodities will receive a permit for harvest and distribution. Contaminated commodities will be held on the farm
- Allowing farmers and other workers temporary access to restricted zones to provide feed and care for animals
- Inspecting vehicles coming from or passing through designated areas

The decision to recommend these protective actions will be based on the emergency conditions at PVNGS, available information about the amount of radiation that has been released into the environment and consideration of the health, economic and social impact of the proposed actions. In all cases, public health and safety will be the first priority.

ALERT AND NOTIFICATION OF A RADIOLOGICAL EMERGENCY

If an incident occurs at PVNGS involving the actual or potential release of radiation into the atmosphere, the Siren Alerting System within the 10-mile area around the plant will sound for approximately three minutes with a steady, high pitched sound. In the event of an emergency at PVNGS, information to prevent or minimize radiation exposure and contamination of food products will be provided through at least one of the sources listed below:

If the siren sounds, the Emergency Alert System (EAS) will provide you with emergency information over the following radio stations: KTAR (620 AM), KMVP (98.7 FM) and KTAR (92.3 FM). Farms within 10-miles of the plant are encouraged to listen for further instructions and prepare to evacuate if necessary.

National Oceanic and Atmospheric Administration (NOAA) weather radio broadcasts may provide you with up-to-date weather information as well as emergency instructions on protective measures.

Web sites <https://ein.az.gov> or www.agriculture.az.gov may also provide important emergency information.

EMERGENCY PLANNING

State and county officials have developed comprehensive plans to respond in the unlikely event of a radiological emergency at PVNGS.

The following four Emergency Classification Levels are used to describe the severity of an incident at PVNGS:

Notice of Unusual Event	Lowest severity	No radioactive release is expected	No public actions necessary
Alert	Low severity	Small amounts of radiation released inside the plant	No public actions necessary
Site Area Emergency	Moderate severity	Small amounts of radiation released near the plant	Sirens may sound indicating need to take protective actions
General Emergency	Highest severity	Radioactive material could be released outside of the plant site	Protective actions will be necessary

The ADA Director may issue protective action orders that will impact agricultural interests in the 50-mile Ingestion Pathway Zone:

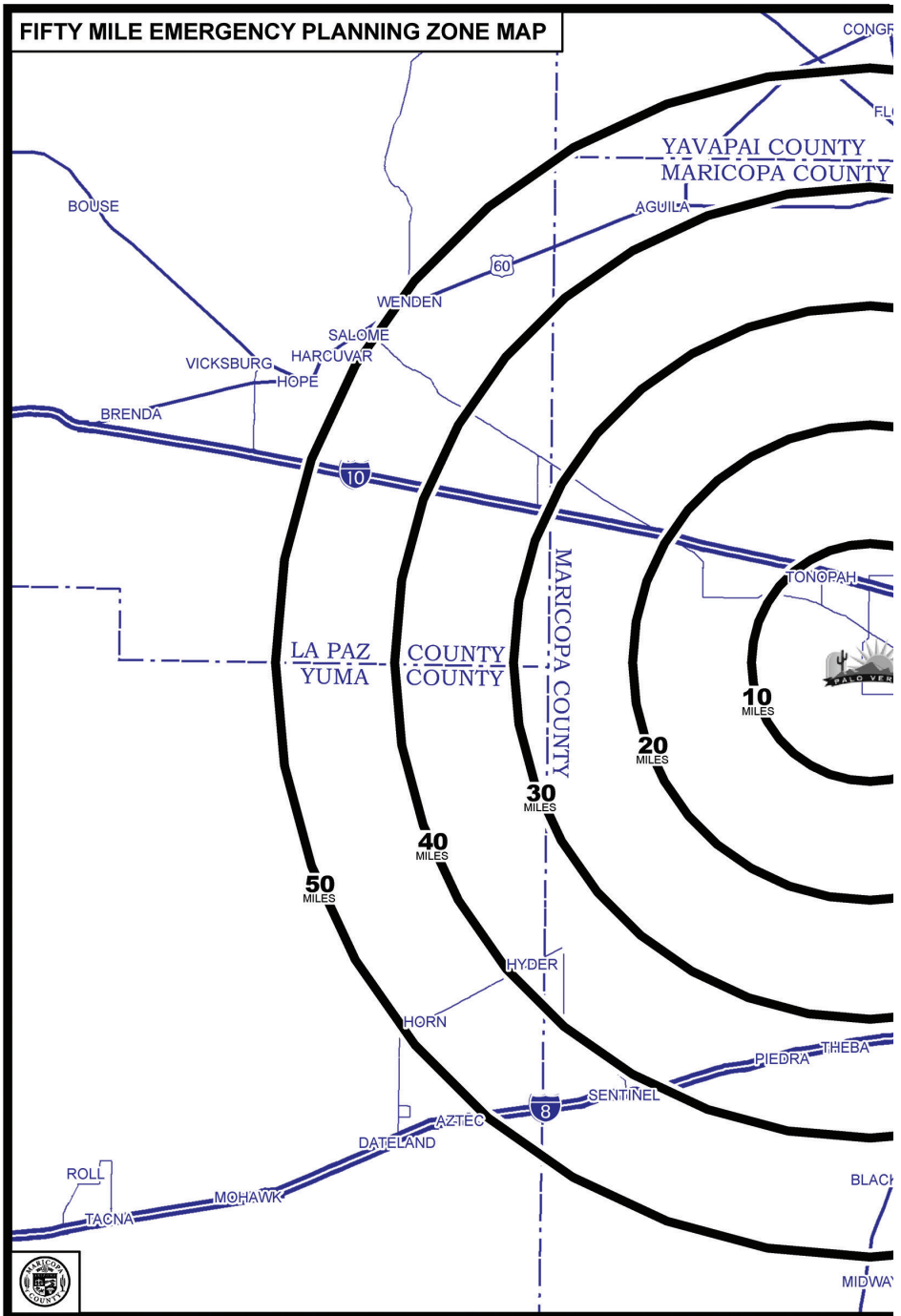
- Agricultural Advisory will be issued to alert residents and producers to the PVNGS event and the potential for imminent evacuation or other protective actions
- Protective Hold will be issued for all producers in evacuated areas to prevent the movement of agricultural products during the emergency. All agricultural transport should be redirected to avoid the restricted area
- Food Embargo will be issued for all producers in areas with radioactive contamination and will remain in effect until the food products or commodities are safe

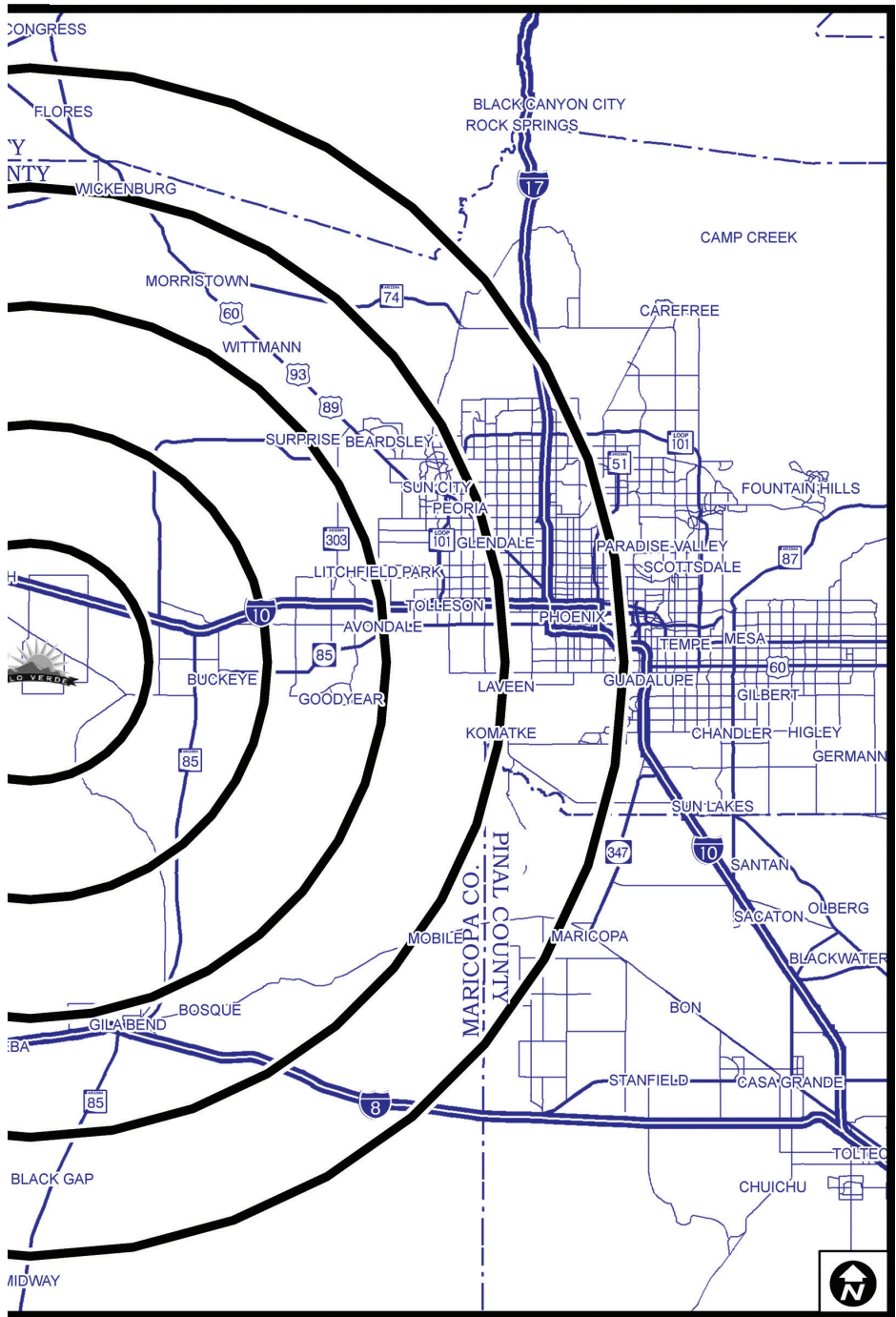
All farms, ranches, nurseries, food processors and distributors within the 50-mile Ingestion Pathway Zone around PVNGS need to develop an emergency plan for their operation. www.Prepare4AgThreats.org, a product of Iowa State University, provides information and guides for planning for all hazards that could occur on a farm. Personal and employee safety should take priority before plans or efforts to protect animals, crops or food products.

Because locations with food producing livestock or poultry may require advance notice and additional time to prepare for shelter-in-place or evacuation orders, the ADA will issue an Agricultural Advisory for areas that might need to take action during an emergency at PVNGS.

- Farmers with food producing livestock and poultry need to include the following steps in their emergency plan:
 - Procedures to shut down milking, egg collection, harvesting and other agricultural operations in case a precautionary hold, shelter-in-place or evacuation order is given
- Locations with any livestock, including horses, or poultry need to include the following steps in their emergency plan:
 - Livestock, including horses, and poultry are not allowed at evacuation centers and must shelter-in-place on the farm
 - Protect horses, livestock and poultry in barns or covered sheds, if possible
 - Provide feed and water to last for a few days
 - Restrict feed and water to protected sources
 - Cover outdoor feed and water, including tanks and troughs

50-MILE INGESTION PATHWAY EMERGENCY PLANNING ZONE MAP





AFTER A RADIOLOGICAL EMERGENCY

Radioactive materials released during an emergency at a nuclear power plant may be dispersed by wind and deposited on land, crops, animals, food and water supplies causing contamination. Contamination is the presence of radioactive materials where they are not wanted.

If your area was evacuated, it is essential to follow instructions provided by officials to ensure your safety, the integrity of the food supply and prevent the spread of contamination. Instructions following a radiological emergency may include:

- Do not use ponds or other uncovered water supplies for animals or crops until officials provide instruction that they are safe
- Do not cultivate or conduct any activities which disturb the soil or generate dust
- Do not harvest or move crops, livestock or any other agricultural commodity offsite until officials provide direction for your area
- Do not move or sell any harvested crops, crops in the field, milk or other food or agricultural products until they have been tested and deemed safe for consumption
- Do not attempt to wash or clean crops unless directed to do so by officials. In certain cases, crops that have not yet been harvested may be safe by harvest time
- Do not provide or eat products potentially exposed to radiological contamination until health officials advise that it is safe to do so. Consumption of produce in backyard gardens and other non-commercial sources should be avoided

During the post-emergency phase, officials will sample the air, water, soil, crops, milk and animals in affected areas to determine if contamination is present. All contaminated milk and other foodstuffs will be withheld from the food supply.



Eating contaminated foods and drinking contaminated milk and water could have a harmful, long-term effect on your health. The ADA and other emergency response agencies are committed to protecting Arizonans and ensuring the safety of all Arizona grown fruits, vegetables, nuts, meats, eggs and dairy products.

PROTECTIVE ACTIONS FOR THE HUMAN FOOD SUPPLY

The following are examples of protective actions and related information that may be recommended to the agricultural community located within the Ingestion Pathway Zone by appropriate government officials. Location-specific protective action recommendations will be issued by these officials in the event of an actual emergency.

Any food that has radioactive contamination will be excluded from the food supply.

Milk

Shelter all dairy animals, 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 these products are contaminated.

Reentry is the temporary entry, under controlled conditions, into a restricted, contaminated area. If you have been evacuated from your area, you may be allowed to return temporarily to your farm when conditions permit. Officials will advise you 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 animals.

You may be told to put your animals, especially dairy animals, on protected or stored feed and water. Grain stored in a permanent bin, hay in a barn or silage 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 any radioactive material passes over your area. Large bales of hay 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.



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

Reentry is the temporary entry, under controlled conditions, into a restricted, contaminated area. If you have been evacuated from your area, you may be allowed to return temporarily to your farm when conditions permit. Officials will advise you 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 watering and feeding poultry.

Meat and Meat Products

Shelter all meat-producing animals, if possible, and provide them with protected feed and water. Government officials may come to your farm to take feed and water samples for laboratory analysis to determine whether any of these products are contaminated. Meat-producing animals that consume contaminated feed should not be slaughtered until you are told by authorities that it is safe to do so. Instructions would be given on a case-by-case basis.

Livestock exposed to external contamination only could be used for food if they are adequately washed and monitored by officials before slaughtering. You will be advised by government officials about appropriate decontamination procedures.

Reentry is the temporary entry, under controlled conditions, into a restricted, contaminated area. If you have been evacuated from your area, you may be allowed to return temporarily to your farm when conditions permit. Officials will advise you 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 watering and feeding animals.

Aquaculture

Farmed fish should not be harvested or consumed until determinations can be made as to the extent of contamination, appropriate precautions and protective actions. In open pond operations, the water may become contaminated, which could, in turn, contaminate the fish. Location-specific protective actions will be provided by the appropriate government officials in the event of an actual emergency.

Crops – Harvested and Unharvested

Cease harvesting activities. Potentially affected areas will need to be tested to determine if products are safe for consumption. In certain cases, crops that have not been harvested may be safe by harvest time. All agriculture products in the affected area will need to be found safe by officials prior to movement or sale.

Nursery Plants and Trees

Cease transport and delivery of nursery plants and trees. Potentially affected nursery stock will need to be tested for contamination. All agriculture products in the affected area will need to be found safe by officials prior to movement or sale.

Soil

Do not perform dust producing activities such as cultivation, disking, planting, mowing and harvesting until instructed, as these activities may spread radioactive contamination. Potentially affected fields will need to be tested for contamination.

Water

Open sources of water, like ponds or tanks, should be covered to prevent contamination. Covered or underground sources of water probably will not become contaminated. Close water intake valves from any contaminated sources to prevent distribution (i.e. irrigation) of contaminated water. Filler pipes should be disconnected from storage containers that are supplied by runoff. This will prevent contaminants from entering the storage containers.

PROTECTIVE ACTIONS FOR FOOD PROCESSORS AND DISTRIBUTORS

During the emergency, distributors should close all doors and windows and shut off ventilation systems in buildings that contain food, agricultural or other products.

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 considered to be 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.

LOSS REIMBURSEMENT

The Price-Anderson Act of 1957 requires the operators of nuclear power plants to provide financial protection against public liability caused by a nuclear incident. This applies to losses within the agricultural sector as well.

In 1956, stock insurance companies created an insurance “pool”, now known as American Nuclear Insurers (ANI), to respond to the needs of the nuclear power industry. The pooling concept provides a mechanism to gather the large amounts of insurance capacity needed to insure the nuclear risk. Each operator of a nuclear power plant in the U.S. has liability coverage of \$300 million, plus an additional \$10.5 billion of secondary financial protection.

If a nuclear power plant radiological emergency were to occur, American Nuclear Insurers would set up local claim centers in coordination with state and local agencies. It is important to keep a record of any losses attributed to the incident.



COUNTY EMERGENCY CONTACT INFORMATION

Maricopa County Department of Emergency Management

(602) 273-1639

www.maricopa.gov/999/Emergency-Management

La Paz County

(928) 667-4310

www.co.la-paz.az.us/emergency_services.html

Pinal County

(520) 866-6684

www.pinalcountyz.gov/emergencymanagement/pages/home.aspx

Yavapai County

(928) 771-3183

www.yavapai.us/publicworks/emergency-management

Yuma County

(928) 317-4681

www.yumacountyz.gov/government/county-administrator/emergency-management

ADDITIONAL EMERGENCY PHONE NUMBERS

Arizona Department of Agriculture

(602) 542-4293

PVNGS Emergency Preparedness

(623) 393-6128

Maricopa County Sheriff's Office

(800) 352-4553

Arizona Department of Health Services

(602) 542-1000

Arizona Radiation Regulatory Agency

(602) 255-4845

Maricopa County Cooperative Extension

(602) 255-4456

American Nuclear Insurers

(860) 682-1391

www.amnucins.com

FEDERAL EMERGENCY CONTACT INFORMATION

United States Department of Agriculture

(800) 535-4555

www.usda.gov

United States Nuclear Regulatory Commission

(800) 368-5642

www.nrc.gov

IMPORTANT THINGS TO REMEMBER

If an emergency occurs at PVNGS, keep informed by listening to local radio stations or by visiting <https://ein.az.gov>.

Follow official directions you are provided.

Do not risk personal or employee safety trying to protect animals, crops or food products.

If a release occurs, do not harvest or move your crops or other food products unless officials provide clear direction and/or written certification for your area.

NOTES

For more information or additional copies of this booklet contact:
Arizona Department of Agriculture
 1688 W. Adams St.
 Phoenix, AZ 85007
 (602) 542-4293
www.agriculture.az.gov.



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