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***NUCLEAR GENERATING STATION PLUME AND  
POST-PLUME EXERCISES AND INCIDENTS  
LIBRARY OF PRESS RELEASES***

***NUCLEAR POWER PLANT  
FREQUENTLY ASKED QUESTIONS***

**Developed by the HS/ER-8 Task Force to Develop  
Nuclear Power Plant News Releases for Use by the States**

Approved by the Board of Directors as a Working Group Product January 2010

## **ACKNOWLEDGMENTS**

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# NUCLEAR GENERATING STATION PLUME AND POST-PLUME EXERCISES AND INCIDENTS LIBRARY OF PRESS RELEASES

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Compiled by CRCPD's HS/ER-8 Task Force  
to Develop Nuclear Power Plant News Releases

January 2010

CRCPD's HS/ER-8 Task Force was established in May 2008 and charged with the following:

**"Solicit and review examples of draft news releases addressing radiological health and environmental issues used by state radiation control programs during the plume phase, recovery & re-entry phase, and ingestion phase of a nuclear power plant radiological incident or drill/exercise."**

This Library of press releases is intended to be used as a reference source by member organizations for their own response in drills, exercises, and actual events at nuclear generating stations impacting their jurisdictions.

The Task Force solicited press release contributions from CRCPD members through CRCPD's Executive Office Manager. More than a dozen contributions were received, eight containing press releases directly pertaining to this charge. The contributions were reviewed and categorized by subject and phase of an incident. The Task Force discussed, selected and included in this Library press releases covering essential topics based on FEMA's **"Radiological Emergency Preparedness Exercise Evaluation Criteria"** (Evaluation Area 5, Sub-Element 5.b *Emergency Information and Instructions for the Public and Media*). Other press releases covering a variety of related topics pertinent to a nuclear generating station event also are included.

The particular press releases included in this Library were chosen for a variety of reasons. Besides those that directly address issues noted in FEMA's evaluation criteria, others are included that cover a wide variety of topics of public interest, which can vary from locale to locale. In some instances, more than one press release on a particular topic is included, reflecting various approaches and often spanning the spectrum from very succinct to extremely detailed and explicit. Rather than attempting to create "the perfect press release, the Task Force relied on those experienced professionals that plan and prepare for nuclear emergency response on a daily basis and their "used in real life" press release contributions. The names and actual nuclear generating station references have been left in the press releases to give credit to contributing organizations as well as to provide a contact for the user should there be a desire for further discussion.

The Library is organized into two sections: Plume Phase and Post-Plume Phase of an incident. The latter is often referred to as the "ingestion" phase or "recovery and re-entry" phase, but they are grouped together as Post-Plume

portion of the Library. Nevertheless, a wide variety of topics are covered in the included press releases.

Each Library section is loosely organized as to the order the press releases may be used during the course of an event, with all of the emergency classification level declarations grouped together in the beginning of the Plume Phase. Many of the press releases were taken from original Microsoft Word documents, but some were submitted in PDF format. The intent of the Task Force was to make the press releases immediately usable with as much ease as possible. Therefore, the Library retains the Microsoft Word format where available so that "copy and paste" can be employed to create new, customized press releases by the referencing member organization. Where Microsoft Word documents are not available, a "picture" of the original press release taken from the PDF document has been inserted instead.

The Plume Phase of the Library includes press releases addressing:

- Alert Declaration
- Site Area Emergency Declaration
- General Emergency Declaration
- State of Emergency Declaration
- Protective Action Instructions
- Sheltering Instructions
- Evacuation Instructions
- Evacuation of Schools, Special Facilities and Special Needs Populations
- Special Transportation Availability
- KI Instructions
- Water Supply Restrictions
- Notification of Sampling Activities
- Radiation Monitoring Results
- Rumor Control
- "All Clear" Notification
- Termination of Sheltering
- Precautionary Actions for Farmers and Livestock
- Precautionary Actions for Gardeners
- Precautionary Actions for Food Processors

*All of the bullets  
below are linked to  
the press releases.*

The Post-Plume Phase of the Library includes press releases addressing:

- Relocation Advised to Minimize Exposure
- Public Relocation Advisory
- Reentry Instructions
- Recovery Phase and Definitions
- Food, Water and Milk Controls
- Destruction of Contaminated Food
- Exposure and Food Control Stations
- Information for Agricultural Community
- Hunting and Fishing Restrictions
- Hunting and Fishing Restrictions Lifted
- Bee Keeper Restrictions
- Bee Keeper Restrictions Lifted

# PLUME PHASE

# ALERT DECLARATION



## News

## FOR IMMEDIATE RELEASE

20-May-08  
News Bulletin # 1  
05:01 PM

### FOR FURTHER INFORMATION

CONTACT: Rosanne Pack  
(302) 659-2210  
(302) 222-6573

## ALERT DECLARED TODAY AT HOPE CREEK NUCLEAR GENERATING STATION

On May 20, 2008 at 04:16 PM, officials at the Salem-Hope Creek Generating Stations in New Jersey declared an Alert at their Hope Creek Unit. An Alert means there is a minor problem at the plant.

Delaware Emergency workers have been activated and are monitoring the situation. Should conditions change, sirens within the ten (10) mile radius of the station will sound and be followed by an Emergency Alert System (EAS) message on local radio stations that will advise the public on what actions to take.

### Emergency Contact Information

DEMA recommends that people in the Emergency Planning Zone within 10 miles of the plant monitor the Emergency Alert System (EAS) to stay informed about the situation. The public is also encouraged to refer to their Salem-Hope Creek Generating Station Emergency Information Calendars to review emergency information and procedures. These are also available at the DEMA web site at [www.state.de.us/dema](http://www.state.de.us/dema).

### LOCAL EMERGENCY ALERT SYSTEM STATIONS INCLUDE:

WDEL-AM	1150	WKEN-AM	1600
WILM-AM	1450	WSTW-FM	93.7
WJBR-AM	1290	WDSD-FM	92.9
WDOV-AM	1410	WJBR-FM	99.5

### FOR FURTHER CLARIFICATION, THE PUBLIC MAY CALL

1-877-729-3362 (Calls within Delaware Only)  
1-302-659-3362 (Calls from outside of Delaware)

## ALERT DECLARATION



**New York State Disaster Preparedness Commission**  
**1220 Washington Avenue**  
**Building 22, Suite 101**  
Albany, NY 12226-2251

### THIS IS AN EXERCISE

**For additional information, call: 518-292-2315**

RELEASE:

TIME:

DATE:

### State Responds to Alert at Indian Point Energy Center

State Disaster Preparedness Commission (DPC) Chairman John R. Gibb announced that New York State has activated its Emergency Operations Center in Albany today following the declaration of an Alert at (time) at the Indian Point Energy Center, Unit (#), in Buchanan, NY.

“We are monitoring plant conditions,” Gibb said. “State representatives are on site at both the nuclear power plant and in the Westchester, Rockland, Orange and Putnam county emergency operations centers. New York State is ready to provide any assistance that may be required.”

He emphasized that the response to the incident has been carefully planned and tested since 1981. “We are prepared to respond to this situation. But we need the cooperation of the public, especially those within the 10-mile emergency planning zone surrounding the plant,” Gibb said. “I strongly urge them to turn on their radios and listen for Emergency Alert System (EAS) messages. These EAS messages will carry official information and instructions that the general public will be asked to take.”

State agencies currently on duty in the State Emergency Operations Center in Albany include State Emergency Management Office; Department of Health; Division of State Police; Department of Transportation; Division of Military and Naval Affairs; Office of Homeland Security; Education Department; Department of Environmental Conservation; Office of Fire Prevention and Control; Thruway Authority; and Department of Agriculture and Markets.

Federal regulations governing operations of nuclear power facilities define four emergency classifications: Unusual Event; Alert; Site Area Emergency and General Emergency.

Area residents wanting more information on plant conditions and the ongoing emergency response should call the Public Inquiry line at **1-800-639-5149**. People in Westchester County may also call **1-914-995-1111**.

#####

# SITE AREA EMERGENCY DECLARATION

## SITE EMERGENCY NOTIFICATION

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"A Site Emergency has been announced for the Callaway Nuclear Power Plant. This means there is a possibility for the release of radioactive materials within the boundaries of the plant. Such releases are not expected to exceed the levels recommended by the Environmental Protection Agency.

State and local emergency officials and Callaway Plant personnel are taking actions designed to protect the public. Please do not take any action on your own, as you may do the wrong thing and make the situation worse for yourself and others. Stay tuned to this station and carefully follow instructions."

### =====COMMISSIONER APPROVAL SECTION=====

Siren sounding approved with release of this message, if applicable.

Action approved by: \_\_\_\_\_

Date/Time approved: \_\_\_\_\_ transmitted time \_\_\_\_\_

# GENERAL EMERGENCY DECLARATION

## GENERAL EMERGENCY NOTIFICATION

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"A General Emergency has been declared at the Callaway Nuclear Power Plant. This means that abnormal operating conditions are affecting the level of safety of the Plant and could affect the level of safety outside of the Plant.

State and local emergency officials and Callaway Plant personnel are taking actions designed to protect the public. Please do not take any action on your own, as you may do the wrong thing and make the situation worse for yourself and for others. Stay tuned to this station and carefully follow instructions."

### =====COMMISSIONER APPROVAL SECTION=====

Siren sounding approved with release of this message, if applicable.

Action approved by: \_\_\_\_\_

Date/Time Approved: \_\_\_\_\_ transmitted time \_\_\_\_\_

The Task Force suggests including more of the definition of a "general emergency" in the press release. As defined by the Nuclear Regulatory Commission: "A general emergency involves actual or imminent substantial core damage or melting of reactor fuel with the potential for loss of containment integrity. Radioactive releases during a general emergency can reasonably be expected to exceed the EPA PAGs for more than the immediate site area."

# STATE OF EMERGENCY DECLARATION

## NEW JERSEY OFFICE OF EMERGENCY MANAGEMENT PRESS RELEASE

**THIS IS A DRILL... THIS IS A DRILL... THIS IS A DRILL...**  
New Jersey State Police Office of Emergency Management  
**-(Salem Unit 1, Salem Unit 2, Hope Creek)-** Nuclear Generating Station

FOR IMMEDIATE RELEASE

PRESS RELEASE NUMBER: \_

DATE: \_

TIME: \_

### STATE OF EMERGENCY DECLARED

In response to the ongoing situation at the Salem/Hope Creek Nuclear Generating Station, Governor Jon S. Corzine has issued a State of Emergency for the following count **(y/ies)**: Salem and Cumberland **-(list other applicable counties)**.

The State of Emergency was declared at **-(time)-**. It is a precautionary measure which allows the Governor to immediately assemble the public and private sector resources needed to respond to a nuclear generating station event; including New Jersey National Guard Units, if necessary.

Any protective action decision made by the Governor Jon S. Corzine, will be preceded by a siren sounding. If you hear the sirens in your area, tune immediately to your Emergency Alert System radio station for further instructions. The following are Emergency Alert System radio stations: WXKW-FM 97.3 and WJKS-FM 101.7.

For additional information, the public may look at the New Jersey Office of Emergency Management website at [www.state.nj.us/njoem](http://www.state.nj.us/njoem) or refer to your Salem/Hope Creek Calendar or call the Public Inquiry Line at 1-800-792-8314.

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Approval Signature

**THIS IS A DRILL.... THIS IS A DRILL.... THIS IS A DRILL....**

## PROTECTIVE ACTION INSTRUCTIONS



### News

### FOR IMMEDIATE RELEASE

20-May-08  
News Bulletin # 3  
07:10 PM

FOR FURTHER INFORMATION  
CONTACT: Rosanne Pack  
(302) 659-2210  
(302) 222-6573

## PROTECTIVE ACTIONS RECOMMENDED DUE TO SITE AREA EMERGENCY AT NUCLEAR GENERATING STATION

This is a follow-up to the EAS message issued at 7:05 PM concerning a radiological emergency at the Hope Creek Generating Station in Salem, NJ.

The Delaware Emergency Management Agency has issued protective actions for the public at 6:50 PM. These are as follows:

#### Shelter-in-Place

Emergency Response Planning Area(s) A

#### Evacuate Schools and Special Populations

Emergency Response Planning Area(s) A, B, C

#### Evacuate the Delaware River

Emergency Response Planning Area(s) D

## PROTECTIVE ACTION INSTRUCTIONS (continued)

Descriptions of the affected Emergency Response Planning Areas (ERPAs) follow below:

**ERPA A** – Port Penn, Odessa, East of Townsend, North Smyrna and South St. George’s areas  
(The area bounded to the west by Routes 13, 299 and 9; to the east by the Delaware River; to the north by the Chesapeake and Delaware Canal; to the south by Route 6)

**ERPA B** – Middletown, East of Townsend and North Smyrna areas (The area bounded to the west by the Norfolk Southern Railroad; to the east by Route 9; to the north by Route 299; to the south by Route 6 and Smyrna Landing Road)

**ERPA C** – Delaware City, North Middletown, St. George’s and Reybold areas  
(The area bounded to the north of Route 299 by Kirkwood St. St. George’s Road; to the east of the Norfolk Southern Railroad to Route 13; to the south of the Red Lion Creek and east of Route 9; to the south of the Norfolk Southern Railroad and east of Route 13 to the Chesapeake and Delaware Canal; to the south of Route 72 and east of McCoy Road to Route 13)

**ERPA D** – Delaware River and Bay  
(The area just north of Pea Patch Island, near Delaware City, south to Woodland Beach)

### Shelter-in-Place Instructions

Those sheltering should close outside doors and windows and turn off all fans and air conditioners. Pets should be kept inside. Farm animals should be sheltered and placed on stored feed and water. Those sheltering should not go to schools to pick up children; they will be cared for in accordance with existing emergency plans and parents will be instructed on how to reunite with their children. Phone lines should be kept open for emergency use.

Those sheltering should continue to monitor the Emergency Alert System (EAS) for updated information and instructions.

### Instructions for the Relocation of School Children and Special Populations

An order to relocate school children and daycare clients and some special populations has been issued by the Delaware Emergency Management Agency for the Emergency Planning Zone in Delaware. The order was issued by DEMA at 6:50 PM. This action is taken in response to an incident at the Hope Creek Generating Station in Salem, New Jersey.

**Do not go to the home school.** Make arrangements to pick up your child(ren) at their relocation school. These are listed below and in your Salem-Hope Creek Generating Station Emergency Information Calendar. Special population relocations follow pre-determined plans and locations. Licensed daycare providers will follow the Relocation Center instructions determined by staff, parents and caregivers.

Relocation Centers and the schools to be evacuated are as follows:

**Brandywine High School is the Relocation Center for:** Au Clair School, St. Paul’s Preschool, Southern Elementary School, Commodore MacDonough School.  
**Mount Pleasant High School is the Relocation Center for:** Gunning Bedford Middle School.

## PROTECTIVE ACTION INSTRUCTIONS (continued)

**Van Hook residence is the Relocation Center for:** Van Hook Walsh School.

**Dover High School is the Relocation Center for:** Cedar Lane Elementary School, Green Acres Preschool, Silver Lake Elementary School, Townsend Elementary School, Children's Castle Preschool, Covenant Community School.

**Caesar Rodney High School is the Relocation Center for:** Middletown High School, Middletown Middle School, M.O.T. Head Start, Redding Intermediate School, St. Andrew's School, Appoquinimink Early Childhood Center, St. Anne's Episcopal School.

### Instructions for Evacuation of the Delaware River

Due to the incident at the Hope Creek Nuclear Generating Station in Salem, NJ the Delaware River and the C&D Canal are being evacuated from Delaware City to Woodland Beach. This evacuation order was issued today at 6:50 PM.

All commercial and recreational boaters and those in state park and wildlife areas located along the river shore and bounded by Delaware City and Woodland Beach are instructed to listen to Marine Radio Channel 16 for information and directions concerning immediate river evacuation.

Delaware State Police and Delaware National Guard helicopters are flying along the river broadcasting evacuation messages to boaters and fishermen directing them to tune to Marine Radio Channel 16 or an Emergency Alert System (EAS) station for further information.

### Emergency Contact Information

DEMA recommends that people in the Emergency Planning Zone within 10 miles of the plant monitor the Emergency Alert System (EAS) to stay informed about the situation. The public is also encouraged to refer to their Salem-Hope Creek Generating Station Emergency Information Calendars to review emergency information and procedures. These are also available at the DEMA web site at [www.state.de.us/dema](http://www.state.de.us/dema).

### LOCAL EMERGENCY ALERT SYSTEM STATIONS INCLUDE:

WDEL-AM	1150	WKEN-AM	1600
WILM-AM	1450	WSTW-FM	93.7
WJBR-AM	1290	WSDS-FM	92.9
WDOV-AM	1410	WJBR-FM	99.5

### FOR FURTHER CLARIFICATION, THE PUBLIC MAY CALL

1-877-729-3362 (Calls within Delaware Only)  
1-302-659-3362 (Calls from outside of Delaware)

# PROTECTIVE ACTION INSTRUCTIONS

## GENERAL PUBLIC PROTECTIVE ACTIONS

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"Officials of Callaway, Osage, Montgomery, and Gasconade counties have determined that the situation at the Callaway Nuclear Plant is serious enough to require protective actions by the public in the vicinity of the plant.

(NOTE: INSERT INDIVIDUAL COUNTY PORTION OF MESSAGE HERE.)

"Please stay tuned to this station for further instructions."

## GENERAL PUBLIC PROTECTIVE ACTIONS FOR CALLAWAY COUNTY C-1

### =====PROTECTIVE ACTIONS=====

1.  Callaway County residents should **SHELTER** the area described as Callaway County EPZ sub-area "C-1", the area within a two-mile radius of the Callaway Plant.

2.  Callaway County residents should **EVACUATE** the area described as Callaway County EPZ sub-area "C-1", the area within a two-mile radius of the Callaway Plant.

### =====RECOMMENDED EVACUATION ROUTES AND DESTINATIONS=====

COUNTY/STATE ROAD IDENTIFICATION	DIRECTION OF TRAVEL	RECOMMENDED RECEPTION AND CARE CENTER
Route O	West	Hearnes Multipurpose Building Columbia, Missouri
Route CC	North and South	Hearnes Multipurpose Building Columbia, Missouri

### =====COMMISSIONER APPROVAL SECTION=====

Siren sounding approved with release of this message, if applicable.

Action approved by: \_\_\_\_\_

Date/Time Approved: \_\_\_\_\_ transmitted time \_\_\_\_\_

# PROTECTIVE ACTION INSTRUCTIONS (continued)

## GENERAL PUBLIC PROTECTIVE ACTIONS FOR CALLAWAY COUNTY C-1

### =====PROTECTIVE ACTIONS=====

1.  Callaway County residents should **SHELTER** the area described as Callaway County EPZ sub-area "C-1", the area within a two-mile radius of the Callaway Plant.

2.  Callaway County residents should **EVACUATE** the area described as Callaway County EPZ sub-area "C-2", the area bounded by Route UU on the north; Route AD and County Road 428 on the south; County Roads 111 and 419 on the west; and County Road 133 on the east.

### =====RECOMMENDED EVACUATION ROUTES AND DESTINATIONS=====

COUNTY/STATE ROAD IDENTIFICATION	DIRECTION OF TRAVEL	RECOMMENDED RECEPTION AND CARE CENTER
Route O	West	Hearnes Multipurpose Building Columbia, Missouri
Route UU	West	Hearnes Multipurpose Building
Route AD	West	Hearnes Multipurpose Building
Route JJ	North	Hearnes Multipurpose Building

## GENERAL PUBLIC PROTECTIVE ACTIONS FOR CALLAWAY COUNTY C-3

### =====PROTECTIVE ACTIONS=====

1.  Callaway County residents should **SHELTER** the area described as Callaway County EPZ sub-area "C-3", the area bounded by County Roads 132 and 134 on the north; Route O on the south; Route D on the east; and County Road 133 on the west.

2.  Callaway County residents should **EVACUATE** the area described as Callaway County EPZ sub-area "C-3", the area bounded by County Roads 132 and 134 on the north; Route O on the south; Route D on the east; and County Road 133 on the west.

### =====RECOMMENDED EVACUATION ROUTES AND DESTINATIONS=====

COUNTY/STATE ROAD IDENTIFICATION	DIRECTION OF TRAVEL	RECOMMENDED RECEPTION AND CARE CENTER
Route O	West	Hearnes Multipurpose Building Columbia, Missouri
Route D	North	Hearnes Multipurpose Building

## PROTECTIVE ACTION INSTRUCTIONS (continued)

### GENERAL PUBLIC PROTECTIVE ACTIONS FOR CALLAWAY COUNTY C-4

#### =====P R O T E C T I V E   A C T I O N S=====

1.  Callaway County residents should **S H E L T E R** the area described as Callaway County EPZ sub-area "C-4", the area bounded by Routes O and K on the north; the Missouri River on the south; the Montgomery County line on the east; and County Roads 469 and 448 on the west.

2.  Callaway County residents should **E V A C U A T E** the area described as Callaway County EPZ sub-area "C-4", the area bounded by Routes O and K on the north; the Missouri River on the south; the Montgomery County line on the east; and County Roads 469 and 448 on the west.

#### =====RECOMMENDED EVACUATION ROUTES AND DESTINATIONS=====

COUNTY/STATE ROAD IDENTIFICATION	DIRECTION OF TRAVEL	RECOMMENDED RECEPTION AND CARE CENTER
Route K	East	Hermann Middle School Hermann, Missouri
Route D	East	Hermann Middle School
Highway 94	East	Hermann Middle School

### GENERAL PUBLIC PROTECTIVE ACTIONS FOR CALLAWAY COUNTY C-5

#### =====P R O T E C T I V E   A C T I O N S=====

1.  Callaway County residents should **S H E L T E R** the area described as Callaway County EPZ sub-area "C-5", the area bounded by County Roads 469 and 448 on the east; County Road 459, Highway 94 and Auxvasse Creek on the west; and the Missouri River on the south; and two miles from the plant on the north.

2.  Callaway County residents should **E V A C U A T E** the area described as Callaway County EPZ sub-area "C-5", the area bounded by County Roads 469 and 448 on the east; County Road 459, Highway 94 and Auxvasse Creek on the west; and the Missouri River on the south; and two miles from the plant on the north.

#### =====RECOMMENDED EVACUATION ROUTES AND DESTINATIONS=====

COUNTY/STATE ROAD IDENTIFICATION	DIRECTION OF TRAVEL	RECOMMENDED RECEPTION AND CARE CENTER
Highway 94	East	Hermann Middle School Hermann, Missouri

Similar press releases are prepared to cover each of the EPZ sub-areas so that each is individually and specifically addressed. Only the press releases for sub-areas "C-1, C-2, C-3, C-4 and C-5 have been included in the Library to give a breadth of examples on their construction.

# SHELTERING INSTRUCTIONS

## SHELTERING AND RESPIRATORY PROTECTION INFORMATION

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"People who are sheltering should go indoors, close all doors and windows, turn off furnaces, air conditioners or ventilating fans, and stay tuned to this station for further instructions. Do not go outside, if at all possible, but if you must, then use a towel or folded piece of cloth as a breathing filter by holding or fastening it firmly over your nose and mouth. Return indoors as soon as possible.

Persons traveling to home or work should proceed to their destination in an orderly fashion, obeying all traffic regulations. Non-residents traveling in motor vehicles should clear the area in an orderly fashion. All persons traveling in motor vehicles should close windows and vents, and turn off air conditioners or heaters."

## INDOORS

SERT PIO: Julia Jarema  
(919) 546-5950  
\_\_\_\_\_ (time of release)

JOINT INFORMATION CENTER  
News Release No. \*  
January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

RALEIGH – Division of Emergency Management Director Doug Hoell has recommended that people living or working in zones \_\_\_\_\_, which include parts of \_\_\_\_\_ counties around the Harris Nuclear Power Plant, take shelter indoors. Residents of the affected area should close all windows and doors, turn off fans, air conditioners and forced-air heating units, and move to the basement or the part of the building that offers the most protection from air that may be contaminated by airborne radioactive materials from the plant.

Anyone who must be outside should cover their mouth and nose with a damp cloth and return to shelter as quickly as possible.

These actions should be continued until further notice. State, local and Progress Energy Company officials are responding to the situation. Individuals are urged to stay tuned to a local radio or television station serving their area for additional information and instructions.

###

State EOC TTY # 919-733-7024

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

# EVACUATION INSTRUCTIONS

NEW JERSEY OFFICE OF EMERGENCY MANAGEMENT  
PRESS RELEASE

**THIS IS A DRILL... THIS IS A DRILL... THIS IS A DRILL...**  
New Jersey State Police Office of Emergency Management  
**-(Salem Unit 1, Salem Unit 2, Hope Creek)- Nuclear Generating Station**

FOR IMMEDIATE RELEASE

PRESS RELEASE NUMBER: \_

DATE: \_

TIME: \_

## EVACUATION DIRECTED

In response to the **-(General Emergency or Site Area Emergency)-** at the **-(Salem Unit 1, Salem Unit 2, Hope Creek)- Nuclear Generating Station**, the New Jersey Office of Emergency Management, in conjunction with other State Department heads, has directed residents in Emergency Response Planning Area numbers **-(#)-** to evacuate immediately. The evacuation is ordered as a result of an on-site release with potential off-site ramifications.

A State of Emergency was declared by the Governor for the areas affected by the incident. A declaration of a State of Emergency permits New Jersey National Guard Units to be placed on standby, and allows the Governor to immediately assemble the public and private sector resources necessary to respond to an event at a nuclear generating station.

The Superintendent of the New Jersey State Police, in coordination with local officials, has initiated traffic control to expedite the flow of traffic in the affected areas.

The New Jersey State Police have also initiated access control measures in the affected areas, including the Delaware Bay. No persons will be allowed entrance into the affected areas.

In cooperation with county and municipal emergency management organizations, the following reception **-(centers has/have)-** been opened: **-(Salem County Vocational School, Pennsville High School, Bridgeton High School)-**

All persons being evacuated must first report to a designated reception center for registration and radiological monitoring. When you evacuate, take a change of clothing, special medication or health related items, and important papers such as deeds and insurance. Lock your home or business securely.

## EVACUATION INSTRUCTIONS (continued)

Buses will be available along major routes for residents without transportation. Handicapped, disabled, or other persons with special transportation needs should remain indoors until emergency vehicles arrive to assist with evacuation.

New Jersey Office of Emergency Management officials have also been working in conjunction with the Federal Emergency Management Agency, which is coordinating the Federal Government's response to this incident.

An announcement of any protective action decision made by the Governor, will be preceded by a siren sounding. If you hear the sirens in your area, tune immediately to your Emergency Alert System radio station for further instructions. The following are Emergency Alert System radio stations: WXKW-FM 97.3, and WJKS-FM 101.7.

For additional information, the public may look at the New Jersey Office of Emergency Management website at [www.state.nj.us/njoem](http://www.state.nj.us/njoem) or refer to your Salem/Hope Creek Calendar or call the Public Inquiry Line at 1-800-792-8314.

A description of the Emergency Response Planning Areas affected by this evacuation order is as follows: **-(delete unnecessary ERPA descriptions that follow)-**

**THIS IS A DRILL ....THIS IS A DRILL ....THIS IS A DRILL ....**

Area	Description
#1	Emergency Response Planning Area 1 is the western portion of Lower Alloways Creek Township. It consists of the area from the edge of the Delaware River along Mill Creek to Money Island Road. It then goes north on Money Island Road to Fort Elfsborg-Hancocks Bridge Road and east on Fort Elfsborg-Hancocks Bridge Road to the LAC/Elsinboro boundary line. It continues northeast to the boundary for Salem City and proceeds south down the LAC/Quinton boundary and along Salem New Bridge/Harmersville Canton Road/Main Street Canton to the county line. It then continues south on the county line to Delaware Bay.
#2	Emergency Response Planning Area 2 consists of the eastern portion of Lower Alloways Creek Township and the western portion of Quinton Township. It starts at the intersection of Quaker Neck Road and the Salem City line and goes east along Quaker Neck Road to the Mannington Township line. It continues southeast along the Quinton/Alloway Township boundary to Alloway Road (Route 581), then turns west to Burden Hill Road and south to Route 49. It then goes southeast along Route 49 to Gravely Hill Road. It then continues southwest on Gravely Hill Road to Quinton Jericho Road, then southeast to the county line. It continues west along the county line to Main Street Canton. It then goes northwest along Main Street Canton/Harmersville Canton Road/Salem New Bridge Roads and continues northwest along the Lower Alloways Creek/Quinton Township boundary to the Salem City line and then proceeds northeast along Salem City/Quinton line to Quaker Neck Road.

## EVACUATION INSTRUCTIONS (continued)

#3	Emergency Response Planning Area 3 consists of the township of Elsinboro and Salem City. It starts at the Delaware River and goes east along the Salem River to the southern edge of Mannington Marsh. It then goes east along the boundary line between Salem City and Mannington and continues south/southeast along the Salem/Quinton and Lower Alloways Creek/Elsinboro township line to Fort Elfsborg Hancocks Bridge Road. It then goes west to Money Island Road, then south to Mill Creek and west to the Delaware River.
#4	Emergency Response Planning Area 4 consists of the Southern portion of Mannington Township. It starts at the intersection of Quaker Neck Road and the Salem City line and goes east along Quaker Neck Road to the Mannington Township line. It then goes northwest to Fenwick Creek and then north to Penna Reading Railroad line and northwest to East Robert Street. It continues west past Newell Street to the Salem River. It then goes south along the river to the H.J. Heinz Company, then goes east along the Salem/Mannington boundary to intersection of Salem City line and Quaker Neck Road.
#5	Emergency Response Planning Area 5 is the southern portion of Pennsville Township. It starts at Salem Cove and goes east along the Salem River to a point near H.J. Heinz Company. It then goes north on a direct line to Old Toll Bridge Road then north and west into Lenape Drive to Route 49. It continues south on Route 49 to Lighthouse Road and then goes northwest on Lighthouse Road to Fort Mott Road, then south to the entrance to Finn's Point National Cemetery.
#6	Emergency Response Planning Area 6 is the western portion of Stow Creek. It starts at the intersection of Quinton Jericho Road and Stow Creek and continues southwest along Stow Creek across Main Street Canton and turns south along Stow Creek to Raccoon Ditch. It then goes east along Raccoon Ditch to the south shore of Davis Mill Pond. It continues east to Macanippuck Road and turns north to Buckhorn Road, then turns east to Quinton Jericho Road. It continues northwest on Quinton Jericho Road to Stow Creek.
#7	Emergency Response Planning Area 7 is the western portion of Greenwich Township. It starts at Oyster Cove and goes north along Stow Creek (county line) to Raccoon Ditch. It then goes east on Raccoon Ditch to the south shore of Davis Mill Pond and continues to the intersection of Chestnut Road (aka Causeway Road). It then turns south on Chestnut Road to Mill Road (aka Bacon's Neck-Othello Road) and goes southwest along Mill Road to the intersection of Gum Tree Corner Road. It then goes south on Gum Tree Corner Road to Bacon's Neck Road, then turns southwest to Tindall Island Road. It continues south on Tindall Island Road to the Cohansey River, then goes southwest along the Cohansey River to the Delaware Bay.
#8	Emergency Response Planning Area 8 consists of a portion of Delaware Bay south of Artificial Island. It starts at the Delaware/New Jersey line on Artificial Island and goes west one mile then south to southeast along the Delaware Bay boundary line between New Jersey and Delaware to Cohansey Point. It then goes east three miles to Cohansey Point.

\_\_\_\_\_  
Approval Signature

**THIS IS A DRILL... THIS IS A DRILL... THIS IS A DRILL...**

**EVACUATION of SCHOOLS / SPECIAL FACILITIES /  
SPECIAL NEEDS POPULATIONS**

**THIS IS A DRILL... THIS IS A DRILL... THIS IS A DRILL...  
NEW JERSEY OFFICE OF EMERGENCY MANAGEMENT**

PRESS RELEASE

New Jersey State Police Office of Emergency Management  
**-(Salem Unit 1, Salem Unit 2, Hope Creek)- Nuclear Generating Station**

FOR IMMEDIATE RELEASE

PRESS RELEASE NUMBER: \_\_\_\_

DATE: \_\_\_\_

TIME: \_\_\_\_

**EARLY SCHOOL(S) DISMISSAL / RELOCATION**

In response to the Site Area Emergency which was declared at the **-(Salem Unit 1, Salem Unit 2, Hope Creek)- Nuclear Generating Station** on **\_(date)\_** at **\_(time)\_**, the New Jersey Office of Emergency Management in conjunction with the Salem County, and Cumberland County Offices of Emergency Management has directed the following precautionary action schools are being relocated at **\_(time)\_**

**This is strictly a precautionary measure; (there is no release in progress). Relocation refers only to the schools listed below.**

Under the State program for responding to a nuclear generating station incident, children from **\_(list names of schools)\_** are taken to **\_(host schools from list of schools - on next page)\_** where they can be picked up by their parents. Parents of school children are asked NOT to go to their children's schools to pick up their children. School principals in the Emergency Planning Zone affected by the Salem/Hope Creek Nuclear Generating Station send information to parents at the beginning of the school year which describes this plan in detail.

For additional information, the public may look at the New Jersey Office of Emergency Management website at [www.state.nj.us/njoem](http://www.state.nj.us/njoem) or refer to your Salem/Hope Creek Calendar or call the Public Inquiry Line at 1-800-792-8314.

---

APPROVAL SIGNATURE

## EVACUATION of SCHOOLS / SPECIAL FACILITIES / SPECIAL NEEDS POPULATIONS (continued)

### SCHOOL LIST

#### SCHOOLS within Salem Hope Creek EPZ

ERPA	District / SCHOOL	Host School
	Salem County	
1	Lower Alloways Creek School	Arthur Shalick High School
2	Quinton Township School	Arthur Shalick High School
3	Elsinboro Township School	Mary Shoemaker School, Woodstown
3	John Fenwick School	Penns Grove Middle School
	Salem City	
3	Salem City Middle School	Penns Grove High School
3	Salem City High School	Penns Grove High School
3	Salem Day Care Center	YMCA Pennsgrove
	Cumberland County	
6	Stow Creek Township School	Cumberland Regional High School
6	Woodland Country Day School	Cumberland Regional High School
7	Morris Goodwin School	Cumberland Regional High School

**THIS IS A DRILL... THIS IS A DRILL.... THIS IS A DRILL....**

\_\_\_\_\_  
Approval Signature

Broadcast # \_\_\_\_\_

Content \_\_\_\_\_

Date \_\_\_\_\_

ERPA \_\_\_\_\_

Siren \_\_\_\_\_

**EVACUATION of SCHOOLS / SPECIAL FACILITIES /  
SPECIAL NEEDS POPULATIONS (continued)**

**THIS IS A DRILL... THIS IS A DRILL... THIS IS A DRILL...**

**NEW JERSEY OFFICE OF EMERGENCY MANAGEMENT**

**PRESS RELEASE**

New Jersey State Police Office of Emergency Management  
**-(Salem Unit 1, Salem Unit 2, Hope Creek)- Nuclear Generating Station**

**FOR IMMEDIATE RELEASE**

PRESS RELEASE NUMBER: \_\_\_\_

DATE: \_\_\_\_

TIME: \_\_\_\_

**SPECIAL NEEDS FACILITIES/ RELOCATION**

In response to the Site Area Emergency which was declared at the **-(Salem Unit 1, Salem Unit 2, Hope Creek)- Nuclear Generating Station** on **\_(date)\_** at **\_(time)\_**, the New Jersey Office of Emergency Management in conjunction with the Salem County, and Cumberland County Offices of Emergency Management has directed the following precautionary action has taken the following precautionary measure: relocating special needs facilities at **\_(time)\_**

**This is strictly a precautionary measure; (there is no release in progress).**

Under the State program for responding to a nuclear generating station incident, persons from **\_(Lindsey House, Midtown Rest Home )\_** are taken to host facilities listed on the next page).

For additional information, the public may look at the New Jersey Office of Emergency Management website at [www.state.nj.us/njoem](http://www.state.nj.us/njoem) or refer to your Salem/Hope Creek Calendar or call the Public Inquiry Line at 1-800-792-8314.

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APPROVAL SIGNATURE

**THIS IS A DRILL... THIS IS A DRILL... THIS IS A DRILL...**

**EVACUATION of SCHOOLS / SPECIAL FACILITIES /  
SPECIAL NEEDS POPULATIONS (continued)**

FACILITY LIST

Special Needs Facilities within Salem Hope Creek EPZ

ERPA	Facility	Host Facility
3	Midtown Rest Home	
5	Lindsey House	

**THIS IS A DRILL... THIS IS A DRILL.... THIS IS A DRILL....**

\_\_\_\_\_  
Approval Signature

Date \_\_\_\_\_

**EVACUATION of SCHOOLS / SPECIAL FACILITIES /  
SPECIAL NEEDS POPULATIONS (continued)**

**THIS IS A DRILL... THIS IS A DRILL... THIS IS A DRILL...  
NEW JERSEY OFFICE OF EMERGENCY MANAGEMENT**

PRESS RELEASE

New Jersey State Police Office of Emergency Management  
**-( Salem unit 1, Salem Unit 2, Hope Creek )-** Nuclear Generating Station

FOR IMMEDIATE RELEASE

PRESS RELEASE NUMBER: \_

DATE:

TIME:

**VOLUNTARY RELOCATION OF HOMEBOUND SPECIAL NEEDS POPULATIONS**

In response to the **(Alert, Site Area Emergency )** at the **-( Salem unit 1, Salem Unit 2, Hope Creek )-** Nuclear Generating Station, the State Office of Emergency Management, in conjunction with the Salem County, and Cumberland County Offices of Emergency Management has directed the following precautionary action the voluntary relocation of homebound special needs populations.

Homebound special needs persons in the following Emergency Response Planning Areas (ERPA's): **1, 2, 3, 4, 5, 6, and 7** have been requested to voluntarily relocate to a host facility.

In cooperation with county and municipal emergency management organizations, the following host facility has been opened:

New Jersey Office of Emergency Management officials have also been working in conjunction with the Federal Emergency Management Agency, which is coordinating the Federal Government's response to this incident.

An announcement of any protective action decision made by the Governor, Jon S. Corzine, will be preceded by a siren sounding. If you hear the sirens in your area, tune immediately to your Emergency Alert System radio station for further instructions. The following are Emergency Alert System radio stations: WXKW-FM 97.3 and WJKS-FM 101.7.

For additional information, the public may look at the New Jersey Office of Emergency Management website at [www.state.nj.us/njoem](http://www.state.nj.us/njoem) or refer to your Salem/Hope Creek Calendar or call the Public Inquiry Line at 1-800-792-8314.

# SPECIAL TRANSPORTATION

## PICKUP POINTS AND SPECIAL TRANSPORTATION (Pickup points are for the City of Fulton's use only)

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"Pickup points for people without personal means of transportation have been established at the following locations:"

- \_\_\_\_\_ (location)

People reporting to pickup points should observe the following rules:

- Do not bring pets or livestock.
- Do not bring more than you can conveniently hold in your lap.
- Turn off all appliances and air conditioning.
- Lock your home before you leave.
- Walk to the nearest pickup point.
- Wait there for transportation, and cooperate fully with evacuation workers and officials."

"Persons who are incapacitated and unable to walk to a pickup point should call for transportation assistance. The number is \_\_\_\_\_ (telephone number). All other people should avoid calling this number, as it is reserved for people who cannot walk to a pickup point."

## KI INSTRUCTIONS

SERT PIO: Julia Jarema  
Tel. No. 919-546-5950  
\_\_\_\_\_ (time of release)

JOINT INFORMATION CENTER  
News Release No. \*  
January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

### TAKE POTASSIUM IODIDE NOW

RALEIGH – People who live or work within 10 miles of the Harris Nuclear Power Plant in Wake County have been advised to take the potassium iodide (KI) tablets they were issued.

“There has been a release of radioactivity from the Harris plant that now makes it advisable for people who were issued potassium iodide tablets to follow the instructions that came with the pills and take only the appropriate dosage at this time,” said State Health Director Dr. Leah Devlin.

Potassium iodide is a type of salt that is added to common table salt in small amounts to “iodize” the salt so that people have sufficient iodine in their diet to maintain normal healthy thyroid function. Often identified by its chemical symbol (KI), potassium iodide is a non-prescription medication that is used to protect the thyroid in the event of a radiation emergency. If taken within the appropriate time and at the appropriate dosage, it blocks the thyroid gland’s uptake of radioactive iodine, reducing the risk of thyroid cancer.

Department of Health and Human Services officials said the public needs to remember that potassium iodide is not a magic pill. It only provides protection for the thyroid gland against one form of radiation. It does not provide protection against whole body irradiation or other radioactive elements that could result from a nuclear power plant release.

The best advice for protecting public health in the event of a threatened or actual release is to evacuate the area in an orderly and efficient manner. Potassium iodide is an additional safety measure, but does not replace evacuation.

While considered safe for most people, KI can cause minor side effects, such as gastrointestinal disturbances and rashes. Individuals who are allergic to iodine should not take KI.

Citizens who have questions can call the state’s Joint Information Center at 919-546-5950.

*State EOC TTY # 919-733-7024*

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE

## KI INSTRUCTIONS (continued)

SERT PIO: Julia Jarema  
(919) 546-5950 News Release No. \*  
\_\_\_\_\_ (time of release)

JOINT INFORMATION CENTER

January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

### **DO NOT Take Potassium Iodide Pills at This Time**

DATELINE – North Carolina Department of Health and Human Services officials are telling people who live or work within 10 miles of the Harris Nuclear Power Plant located in Wake County **not** to take potassium iodide pills at this time.

“There has been no abnormal release of radioactivity from the Harris Plant, so there is no reason for people to take potassium iodide,” said State Health Director Dr. Leah Devlin. “We will use the news media to notify people who live within that 10-mile zone if and when it is advisable for them to take the KI pills they were issued.”

Potassium iodide is a type of salt that is added to common table salt in small amounts to “iodize” the salt so that people have sufficient iodine in their diet to maintain normal healthy thyroid function. Often identified by its chemical symbol (KI), potassium iodide is considered safe for most people, but can cause minor side effects, such as gastrointestinal disturbances and rashes. Individuals who are allergic to iodine should not take KI.

The North Carolina Department of Health and Human Services worked with local health departments to distribute the KI tablets to people who live within the 10-mile Emergency Planning Zone that surrounds the Wake County plant. Potassium iodide is a non-prescription medication that is used to protect the thyroid in the event of a radiation emergency. If taken within the appropriate time and at the appropriate dosage, it blocks the thyroid gland’s uptake of radioactive iodine, reducing the risk of thyroid cancer.

Citizens who have questions can call 919-546-XXXX. (rumor control).

###

*State EOC TTY # 919-733-7024*

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE

# WATER SUPPLY RESTRICTIONS

## *THIS IS A DRILL*

### SURFACE WATER SUPPLY RESTRICTIONS

At \_\_\_\_\_ am/pm, on \_\_\_\_\_ 2001, the Kansas Department of Health and Environment notified the public water suppliers for the following cities and rural water districts (RWDs) to stop drawing water from their river or lake water supply sources:

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_, and, \_\_\_\_\_.

Officials suspect surface water may contain higher than normal levels of radiation as a result of the emergency at the Wolf Creek Nuclear Operating facility. These water supplies have a limited amount of water in storage that is safe to consume. It is recommended that residents conserve water during this period of concern. The public may wish to store water in jars, bathtubs, thermos, coolers, etc. Should supplies be depleted, County and State Emergency Management Agencies will work to provide drinking water for those affected.

The public should **not** use water from open surface supplies such as ponds and rivers until further notice. Water from enclosed groundwater well systems in the area should not be affected by the radioactive release.

## *THIS IS A DRILL*

## NOTIFICATION OF SAMPLING ACTIVITIES

Rhode Island Ingestion Exposure Pathway  
Emergency Response Procedure

### NEWS RELEASE RADIOLOGICAL MONITORING OF SAMPLES

CONTACT PERSON: \_\_\_\_\_

INQUIRY PHONE NUMBER:

**EMERGENCY DECLARED AT \_\_\_\_\_ NUCLEAR POWER STATION.**

{DATE \_\_\_\_\_) -Due to the release of radioactive materials from the accident at the \_\_\_\_\_ Nuclear Power Station, expert teams from the Rhode Island Departments of Health, Environmental Management, State Police and various federal agencies are sampling food products for radioactive contamination. Samples of milk, water, fruits, vegetables are being collected from areas potentially affected by the radioactive release. Should testing of the collected samples indicate radioactive contamination, specific protective actions may be ordered. The public is urged to listen to radio or television for the latest information from state and local officials. State and federal emergency agencies are working with the Governor at the State Emergency Operations Center in Cranston. Each agency has extensive emergency experience and procedures designed to respond to a radiological incident of this nature

**NOTICE TO MEDIA:** A Public Information Center has been established at the Rhode Island Emergency Management Agency in Cranston, to serve as the primary source of media information about the emergency. State, local and federal officials are available at the Public Information Center, for news conferences as necessary. A telephone number has also been established to answer media inquiries. The number is

Authorized by: \_\_\_\_\_

Governor/Designee \_\_\_\_\_



**RADIATION MONITORING RESULTS**  
**New York State Disaster Preparedness Commission**  
**1220 Washington Avenue**  
**Building 22, Suite 101**  
**Albany, NY 12226-2251**

**THIS IS AN EXERCISE**

**For additional information, call: 518-292-2315**

RELEASE:

TIME:

DATE:

**State Releases Initial Radiation Monitoring Results**

State Disaster Preparedness Commission (DPC) Chairman John R. Gibb announced the results of the radiological monitoring surveys conducted after the release from the Indian Point Energy Center in Buchanan, NY.

Gibb said that the data was compiled from reports from the utility and the county field monitoring teams that measured radiation levels at (#) locations within the 10 miles downwind of the plant. Of the measurements taken, the highest reported radiation reading was (#) millirem per hour at (location).

Gibb said that the monitoring would continue. “We will be very aggressive in determining the full impact of this release. We have asked the Department of Energy to conduct a flyover of the area to give us a picture of the plume’s ‘footprint,’” he said. “Once we have that, we will be sending monitoring teams into the area to get soil, vegetation and water samples. These will be analyzed at the State laboratory in Albany. Based on that scientific evidence, the New York State Health Commissioner will issue the appropriate protective action recommendations.”

Gibb asked for caution and patience on the part of those impacted by the release. “Our first concern is for your safety. We will keep you fully informed throughout the recovery process,” he said. “We aren’t accepting easy answers or taking shortcuts because there are no shortcuts when it comes to protecting your health and safety. We know you want to go home. We want that too – but only when it is safe.”

#####

# RUMOR CONTROL

## RUMOR CONTROL NOTIFICATION

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"State Officials have established a Rumor Control Center for inquiries about overall emergency information. The State Rumor Control Center telephone number is \_\_\_\_\_  
(telephone number)

Please be cautioned that this number is only to be used for urgently needed information, and its use should be restricted in order to keep the lines open. This Emergency Alert System station will continue broadcasting all available information to the general public."

# "ALL CLEAR" NOTIFICATION

## ALL CLEAR NOTIFICATION

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"The incident at the Callaway Nuclear Power Plant is now over, and there is no further need for concern.

You may return to your normal activities. The Emergency Alert System will shortly cease broadcasting messages. Any further information will be provided by means of normal news media.

Officials of \_\_\_\_\_  
(jurisdiction)

would like to take this opportunity to thank you for your cooperation during this incident."

## =====COMMISSIONER APPROVAL SECTION=====

Siren sounding approved with release of this message, if applicable.

Action approved by: \_\_\_\_\_

Date/Time Approved: \_\_\_\_\_ transmitted time \_\_\_\_\_

# TERMINATION OF SHELTERING

## TERMINATION OF SHELTERING MESSAGE

DATE RELEASED: \_\_\_\_\_

TIME RELEASED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

\*\*\*\*\*

"Due to current weather conditions and radiation level readings, local government officials have determined it is no longer necessary to take shelter as a protective action."

"People located \_\_\_\_\_  
(description of area)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

may now resume their normal activities and do not need to stay indoors."

## =====COMMISSIONER APPROVAL SECTION=====

Siren sounding approved with release of this message, if applicable.

Action approved by: \_\_\_\_\_

Date/Time Approved: \_\_\_\_\_ transmitted time \_\_\_\_\_

# PRECAUTIONARY ACTIONS for FARMERS AND LIVESTOCK

For more information contact:

**Public Information Organization:** Topeka: 1-800-354-3831

Web site: <http://www.kansas.gov/ksadjutantgeneral/>

or: <http://www.wcnoc.com>

No.

10:55 a.m.

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For immediate distribution: January 27, 2010

## **This is a drill** **Protective actions advised for animals**

The Kansas Department of Agriculture and the Kansas Animal Health Department are advising animal owners who live within about 10 miles of the Wolf Creek Nuclear Operating Facility to shelter their animals, if possible, and to provide them with sheltered feed and water.

These are precautionary measures only, meant to protect animals in the event the situation at the Wolf Creek facility worsens. Farm animals, including poultry, should be provided several days' worth of feed and water in the event the area is evacuated.

Even if protected feed is not readily available during a radiological emergency, animals can live for several days on water alone. Water from enclosed wells or other covered or underground sources will normally be safe for animals.

Open sources of water, such as rain barrels and tanks, should be covered, and filler pipes should be disconnected from storage containers supplied by runoff from roofs or other surface drain fields.

Types of protected feed for farm animals include grain stored in covered bins, hay stored in a barn or covered shed and cribs with open sides, ensilage stored in a covered silo, and hay bales covered by a tarp or barrier plastic.

Commercial companion animal operations should cover their animals. If there isn't enough cover for all animal enclosures, operators should consider putting animals together to cover as many as possible. They also should store food and water under cover, whether it's inside a building or covered outside. Animals should be given enough food and water to last several days, in the event the area is evacuated.

Residents are advised to take their companion animals with them if they are evacuated. Companion animal care facilities will be located close to sites set up to receive residents of evacuated areas. Owners may want bring pet food with them, if they can, and especially if their pet is on a special diet.

These recommendations should only be followed by residents who have not already been directed to take shelter or evacuate. If animal owners have started taking protective actions for animals and are then directed to take shelter or evacuate, they should stop the earlier actions and immediately take shelter or evacuate.

**PRECAUTIONARY ACTIONS for FARMERS AND LIVESTOCK  
(continued)**



**New York State Disaster Preparedness Commission  
1220 Washington Avenue  
Building 22, Suite 101  
Albany, NY 12226-2251**

**THIS IS AN EXERCISE**

**For additional information, call: 518-292-2315**

RELEASE:

TIME:

DATE:

**State Urges Precautionary Actions for Indian Point Area Farmers**

Based on the recommendations of New York State Department of Agriculture and Markets, the New York State Disaster Preparedness Commission (DPC) advises farmers within the 10-mile emergency planning zone surrounding the Indian Point Energy Center in Buchanan, NY to take the following precautionary actions:

- To shelter all dairy animals and place them on stored feed and water.
- To place other livestock on stored feed and water and shelter them if possible.
- To cover feed if stored outdoors.
- Store as much water as possible and cover wells, rain barrels, and water tanks.
- To cover any harvested produce or place it inside.
- All milk, soil, and crops within the affected area will be monitored and sampled for possible contamination.

Area residents wanting more information on plant conditions and the ongoing emergency response should call the Public Inquiry line at **1-800-639-5149**. People in Westchester County may also call **1-914-995-1111**.

#####

## PRECAUTIONARY ACTIONS for FARMERS AND LIVESTOCK (continued)

SERT PIO: Julia Jarema  
(919) 546-5950  
\_\_\_\_\_ (Time of release)

JOINT INFORMATION CENTER  
News Release No. \*  
January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

RALEIGH – Due to the incident at the Harris Nuclear Power Plant in southern Wake County, livestock owners in \_\_\_\_\_ counties are advised to start the actions outlined below. **While there is no immediate danger of contamination, owners need to take these precautionary steps** to ensure the safety of their livestock should there be a release of radioactive materials from the Progress Energy Company facility.

The recommended actions are:

1. Structures which would be sufficient to shelter livestock should be identified. Barns and equipment sheds provide effective protection.
2. These shelters should be as structurally sound as possible. Doors and windows of shelters should be closed and other openings in walls and roofs need to be covered. However, special care should be taken to allow for some air circulation for the sheltered animals.
3. Large openings in structures should be blocked with bagged feed or other materials stacked on the exterior side of the openings.
4. If manmade shelters are not available, natural shelters, such as woods and ravines, should be used.
5. Livestock should be moved near the identified shelters, to expedite the process if there is a need to shelter.

There is currently no danger to residents or livestock from radioactive material. State and local authorities are responding to the situation. Residents should stay tuned to a local radio or television station serving the area for additional information and instructions.

###

*State EOC TTY # 919-733-7024*

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

## PRECAUTIONARY ACTIONS for FARMERS AND LIVESTOCK (continued)

SERT PIO: Julia Jarema  
(919) 546-5950  
\_\_\_\_\_ (Time of release)

JOINT INFORMATION CENTER  
News Release No. \*  
January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

RALEIGH -- The State Emergency Response Team (SERT) has advised farmers being evacuated from the 10-mile Emergency Planning Zone (EPZ) of the Harris Nuclear Power Plant to keep livestock, dairy cattle and poultry under shelter and to use stored feed and water during the period of evacuation.

Farmers who plan to leave their animals on the farm should contact their county agricultural extension agents. Farmers can make provisions through the extension agents to allow for brief visits to their farms during the evacuation period. However, it is essential for farmers who plan to return to remain in contact with county agents to obtain further advice and assistance.

Before leaving, farmers should provide water for the animals. Animals can be sheltered for several days if necessary, but water is essential for their wellbeing. Also feed and water supplies should be covered with plastic sheeting or canvas to protect them from contamination.

Farmers should avoid overcrowding animals. Animals need adequate space and ventilation, but ventilating fans should not be used. As much space as possible should be allowed for the animals' comfort.

Farmers needing more information should contact their county agricultural extension agent.

###

*State EOC TTY # 919-733-7024*

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

## PRECAUTIONARY ACTIONS for GARDENERS

SERT PIO: Julia Jarema  
(919) 546-5950  
\_\_\_\_\_ (Time of release)

JOINT INFORMATION CENTER  
News Release No. \*  
January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

RALEIGH -- Residents of the area affected by the situation at the Harris Nuclear Power Plant should exercise extreme caution when eating fresh fruits and vegetables from private gardens and farms within the affected area. Due to the potential for contamination, all produce should be washed thoroughly before being eaten. Vegetables that grow underground, such as carrots and potatoes, will be safe after normal washing and peeling.

To reduce the risk of contaminating foods that have not been contaminated, cleaning of fresh fruits and vegetables should be done outside kitchen and/or food storage areas. Authorities will continue to monitor the area and will advise residents if further actions are necessary.

These precautions apply to produce from private gardens and farms within the affected area.

# # #

*State EOC TTY # 919-733-7024*

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

## PRECAUTIONARY ACTIONS for GARDENERS (continued)

### DO NOT HANDLE OR EAT FRESH HOME-GROWN PRODUCE

---

CONTACT PERSON:

INQUIRY PHONE NUMBER: \_\_\_\_\_ (MEDIA ONLY)

Officials from the Rhode Island Department of Environmental Management recommend that home gardeners and small-scale farmers in the following areas of Rhode Island:

(Describe affected counties/towns)

**Wait for further information before handling or eating any fresh home-grown produce. This will avoid potential radiation exposure from food products which may have been contaminated by the accident at the \_\_\_\_\_ Nuclear Power Station in \_\_\_\_\_ (town, state). Residents may consume fresh home-grown produce and milk which was harvested **before** \_\_\_\_\_ (date) as it was unaffected by the accident. Canned, prepackaged or frozen food stored in the home is also safe to eat. Covered water supplies, wells, bottled water and canned beverages are safe for consumption. Persons should **not** drink water directly from open sources such as streams or lakes.**

Sampling Teams from the Rhode Island Departments of Health and Environmental Management are currently collecting samples of farm produce, milk and water in the affected areas. The Sample Teams are not available to test the safety of fresh home-grown produce at this time. Additional information and instructions will be made available as state officials complete sample testing.

Home gardeners and small-scale farmers are those persons who raise produce only for their own consumption and do not sell or give away their produce.

## PRECAUTIONARY ACTIONS for FOOD PROCESSORS

SERT PIO: Julia Jarema  
(919) 546-5950  
\_\_\_\_\_ (Time of release)

JOINT INFORMATION CENTER  
News Release No. \*  
January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

RALEIGH -- The State Emergency Response Team (SERT) is notifying all food processors and packagers in the 50-mile radius of the Harris Nuclear Power Plant to take precautions against contamination of their products.

Of particular interest is surface contamination of foods. Foods stored in enclosed areas prior to the accident would not have been affected. Food products packaged in airtight or dust-proof containers prior to the accident should also be safe. However, if there is any doubt about food supplies, the products could be decontaminated by thoroughly washing and drying the surfaces or by vacuuming.

All unpackaged, stored products will be safe if air containing radioactive particles has been excluded from the storage area.

Officials will continue working with the food industry to ensure proper protective actions are being taken. Presently, all foods packaged prior to the accident on (give date) are safe for consumption. Residents needing more information should call 919-546-XXXX.

###

*State EOC TTY # 919-733-7024*

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

# POST-PLUME PHASE

# RELOCATION ADVISED TO MINIMIZE EXPOSURE

For more information contact:

**Public Information Organization:** Topeka: 1-800-354-3831

Web site: <http://www.kansas.gov/ksadjutantgeneral/>

or: <http://www.wcnoc.com>

No.

a.m./p.m.

For immediate distribution: January 27, 2010

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## **This is a drill Relocation advised**

*(to be issued as soon as deposition is confirmed)*

During the events at Wolf Creek Generating Station, winds were generally blowing in a \_\_\_\_\_ direction. Sampling teams have confirmed radioactive contamination in water and soil (deposition) downwind from the plant. Although the public was evacuated from areas where concentrations of airborne radioactive contamination could be high enough to pose immediate concerns for public health and safety, radioactive contamination has been deposited over a larger area. Levels of radioactive contamination in these areas do not pose immediate concern for public health and safety, however, until further notice, the Kansas Department of Health and Environment (KDHE) is advising individuals in these areas to take the following precautions to minimize contamination and exposure to people, property, pets and livestock:

- Limit outside activities to only those that are necessary (non-recreational).
- When going outside, wear outer clothing that covers all portions of the body (example: boots, gloves, coveralls or long-sleeved shirts and long pants).
- Wear a protective mask or placed a folded, dampened cloth over the mouth and nose when working outside to prevent inhalation of radioactive material. This is more important in dusty situations).
- Wash hands thoroughly before preparing or eating food or smoking.
- Keep doors and windows closed as much as possible. Do not operate window fans or other devices that pull outdoor air and dust into your home.
- Do not collect or use honey from beehives.
- Do not use eggs from poultry.
- Do not slaughter, transport or market livestock or poultry.
- Do not use dairy products from animals in the affected area.
- Do not conduct outdoor burning.
- Place pets indoors or in restricted, uncontaminated areas and provide them with uncontaminated food and water. If pets are, or may have been exposed, bathe them and dispose of wash water and rinse water in a sanitary sewer.
- Do not hunt or fish in the affected area.
- Do not conduct farming activities such as harvesting, haying, or tilling.
- Protect already harvested crops that have not been contaminated.
- Thoroughly wash fruits, vegetables or other garden produce before consumption. Do not market these items.
- Do not use water from unprotected, open storage such as ponds or open wells.
- If practical, remove all livestock from pasture. Confine them in uncontaminated areas if possible, and provide them with uncontaminated feed and water.
- Dairy producers should make arrangements to protect uncontaminated feed supplies.
- Poultry producers should provide uncontaminated feed and water and place poultry in uncontaminated confinement.
- As soon as practical after completing work in contaminated areas (outdoors), wash or take a shower with soap and water.
- After completing work outdoors, carefully remove clothing and place in plastic trash bags until they can be washed. Such clothing should be washed as a separate load or with other potentially contaminated clothing.

KDHE, the Kansas Department of Agriculture and the Kansas Department of Wildlife and Parks, in cooperation with appropriate federal agencies are continuing to collect samples for analysis and will issue further advisories as circumstances warrant.

# PUBLIC RELOCATION ADVISORY

For more information contact:

**Public Information Organization:** Topeka: 1-800-354-3831

No.

Web site: <http://www.kansas.gov/ksadjutantgeneral/>

or: <http://www.wcnoc.com>

a.m./p.m.

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For immediate distribution: January 27, 2010

## **This is a drill** **Public relocation advisory issued**

A relocation advisory has been issued by the Kansas Department of Health and Environment for people in the following areas:

Residents are being asked to relocate from homes to minimize exposure to radioactive material that has been deposited on the ground and other surfaces from the plume of materials released from Wolf Creek Generating Station. This decision was based on estimates of radiation exposures over the next year, five years, and fifty years. Residents will be advised when radiation levels are reduced to acceptable levels through decay and weather.

Residents should plan to be away from home for a period of weeks to months. Individuals may be allowed to reenter the restricted area temporarily or periodically for recovery activities, retrieval of property, operation of vital services, care and feeding of farm and other animals, and other justifiable activities. Information will be provided regarding reentry into restricted areas. Such individuals will be required to operate under controlled conditions normally used for occupational radiation workers.

Relocation should be accomplished as soon as practical. This is not an evacuation. However, the sooner you are relocated, the less radiation exposure you will receive. Each day you remain in the area may add a few percent to your normal background radiation exposure. You will be advised of time limits for preparation for relocation and vacating your residence.

Those people previously evacuated may temporarily return (under controlled conditions) to homes to prepare for relocation.

Guidelines to minimize radiation exposure and contamination:

- During preparation to relocate, stay indoors as much as practical.
- Keep doors and windows closed as much as possible.
- Do not operate window fans or other devices that pull outdoor air and dust into your home.
- Porches, walkways, vehicles, etc., may be washed off with a garden hose if practical to do so. Avoid contact with the wash water and do not permit its consumption by pets.
- Every effort should be made to avoid stirring up dust.
- Designated shoes (preferably boots) or shoe covers should be worn when outside and removed to avoid spreading contamination inside or into vehicles that will leave the restricted area.
- Coveralls, gloves, hats and other such clothing may be worn if available to reduce the potential for skin contamination. Such clothing should be removed when going indoors to avoid spreading contamination inside. Dust masks may also be used if readily available. For individuals reentering restricted areas, protective clothing may be issued at area access points.
- Do not harvest and consume garden vegetables, fruit, or other such food products that may have been exposed to the plume.

- Do not drink or use water from open ponds, reservoirs, or cisterns that may have been exposed to the plume. If available, city or rural water district water or well water may be used as long as it is taken from a closed distribution system.
- Do not eat, drink or smoke or chew in the contaminated areas. If you must eat or drink, ensure you wash hands and face with soap and water before doing so.
- Do not eat, drink or smoke or chew in the contaminated areas. If you must eat or drink, ensure you wash hands and face with soap and water before doing so.
- As soon as practical after completing work in contaminated areas (outdoors), wash or take a shower with soap and water.
- Residents may be required to exit the restricted area through a designated access control point where further instructions will be provided.

A telephone team has also been established to provide information on the situation. Members of the public who have questions can call 1-800-354-3831. These phone lines have been set up to provide accurate information and prevent the spread of rumors.

# REENTRY INSTRUCTIONS

For more information contact:

**Public Information Organization:** Topeka: 1-800-354-3831

No.

Web site: <http://www.kansas.gov/ksadjutantgeneral/>

or: <http://www.wcnoc.com>

a.m./p.m.

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For immediate distribution: January 27, 2010

## **This is a drill** **Instructions for reentry into restricted zone**

Certain individuals who have been relocated may need to return to the restricted area temporarily or periodically for recovery activities, retrieval of property, operation of vital services, care and feeding of farm and other animals, and other justifiable activities. Guidance and information on how to accomplish this reentry and to minimize exposure to radiation and potential radioactive contamination is provided.

- Individuals will be required to enter the restricted area through a designated access control point where further instructions will be provided to you.
- Stay indoors as much as practical.
- Keep doors and windows closed as much as possible.
- Do not operate window fans or other devices that pull outdoor air and dust into homes.
- Porches, walkways, vehicles, etc., may be washed off with a garden hose if practical to do so. Avoid contact with the wash water and do not permit its consumption by pets.
- Avoid stirring up dust.
- Designated shoes (preferably boots) or shoe covers should be worn when outside and removed to avoid spreading contamination inside or into vehicles that will leave the restricted area.
- Coveralls, gloves, hats and other such clothing may be worn if available to reduce the potential for skin contamination. Such clothing should be removed when going indoors to avoid spreading contamination inside. Dust masks may also be used if readily available.
- Do not harvest and consume garden vegetables, fruits, or other such food products that may have been exposed to the plume.
- Do not drink or use water from open ponds, reservoirs, or cisterns that may have been exposed to the plume. If available, city or rural water district water or well water may be used as long as it is taken from a closed distribution system.
- Do not eat, drink or smoke or chew in the contaminated areas. If you must eat or drink, ensure you wash hands and face with soap and water before doing so.
- Do not eat, drink or smoke or chew in the contaminated areas. If you must eat or drink, ensure you wash hands and face with soap and water before doing so.
- As soon as practical after completing work in contaminated areas (outdoors), wash or take a shower with soap and water.
- Contaminated clothing should be carefully removed and placed in plastic trash bags until they can be washed. Such clothing should be washed as a separate load or with other potentially contaminated clothing.
- Residents may be required to exit the restricted area through a designated access control point where further instructions will be provided.

A telephone team has also been established to provide information on the situation. Members of the public who have questions can call 1-800-354-3831. These phone lines have been set up to provide accurate information and prevent the spread of rumors.

# RECOVERY PHASE and DEFINITIONS

For more information contact:

**Public Information Organization:** Topeka: 1-800-354-3831

No.

Web site: <http://www.kansas.gov/ksadjutantgeneral/>

or: <http://www.wcnoc.com>

a.m./p.m.

For immediate distribution: [January 27, 2010](#)

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## **This is a drill** **Wolf Creek event moves into recovery; no additional threat to the** **public**

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The State of Kansas reported today, that the event at Wolf Creek Generating Station is over. Conditions at the plant no longer represent a threat to public health and safety.

Recovery is both a short-term and long-term process. Short-term operations seek to restore vital services to the community and provide for the basic needs of the public. Examples of this can include allowing residents to return to their homes, restoring water service and trash pickup. Long-term recovery focuses on restoring the community to its normal, or improved state of affairs. Examples of this include returning children to school, reopening the local hospital and care facilities and reuniting pets with their owners. The recovery period is also an opportune time to institute mitigation measures, particularly those related to the recent emergency.

### **Definitions of Recovery and Associated Terms**

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**Recovery** is both a short-term and long-term process. Short-term operations seek to restore vital services to the community and provide for the basic needs of the public. Long-term recovery focuses on restoring the community to its normal, or improved, state of affairs. The recovery period is also an opportune time to institute mitigation measures, particularly those related to the recent emergency.

Other terms used during Recovery are defined as:

**Re-entry** allows temporary access for essential people inside the evacuated area. Access is gained through access control points where radiation monitoring equipment (dosimetry) will be issued. Essential people may include farmers who need to feed livestock, individuals needing to pick up medicine from their homes, or others with a legitimate need to enter the evacuated area.

**Relocation** is protective action taken in the post-emergency phase through which individuals who may or may not have been evacuated during the emergency phase of the event are asked to relocate from a contaminated area to avoid chronic radiation exposure from deposited radioactive material.

**Return** allows a previously evacuated population to return to their homes when the Governor has determined that is safe.

A **Restricted Zone** is any area which has controlled access, and from which the population either has been evacuated or will be relocated.

# FOOD, WATER and MILK CONTROLS

SERT PIO: Julia Jarema  
(919) 546-5950  
\_\_\_\_\_ (time of release)

JOINT INFORMATION CENTER  
News Release No. \*  
January 27, 2010

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE.

RALEIGH -- A primary concern for state, local and federal officials responding to the situation at the Harris Nuclear Plant is the potential impact of the radiation on the human food chain. In addition to immediate, full-body exposure to the radiation, residents within 50 miles of the plant can be exposed to radiation by consuming contaminated food and liquids.

Officials focus their concerns on the ingestion pathway, which is the area where radioactive materials are deposited. In the pathway, special care must be taken to limit the intake of foodstuffs and water contaminated by the release of radiation.

The ingestion pathway for the Harris situation is a tract of land approximately \_\_\_ miles wide, expanding to a width of \_\_\_ miles and extending approximately \_\_\_ miles (*direction*) of the Harris Nuclear Plant.

Officials continue to monitor the water, fresh fruits, vegetables and other foodstuffs as well as the food supplies for animals used to produce meat and dairy products for human consumption. At this time, there is no evidence that any radiation has entered the human food chain.

###

*State EOC TTY # 919-733-7024*

THIS IS AN EXERCISE. THIS IS ONLY AN EXERCISE

**DESTRUCTION of CONTAMINATED FOODS**  
**DESTRUCTION OF CONTAMINATED FOOD PRODUCTS ORDERED**

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CONTACT PERSON: \_\_\_\_\_

INQUIRY PHONE NUMBER: (MEDIA ONLY)

Officials from the Rhode Island departments of Environmental Management and Health have ordered the destruction of certain agricultural commodities contaminated by radioactive materials released as a result of the accident at the \_\_\_\_\_ Nuclear Power Station on \_\_\_\_\_ (date), located in \_\_\_\_\_ (town, state).

Destruction of commodities is being ordered and carried out on a case-by-case or farm-by-farm basis, inside the Exposure Control Arm in order to prevent the public from consuming milk, fresh food ~~products and meat animals~~ that laboratory testing has shown to be contaminated above federal health guidelines.

Destruction and disposal of contaminated commodities will be completed under the guidance of the Rhode Island Department of Health and the Rhode Island Department of Environmental Management. Such actions might include packaging and disposing of fresh milk and produce as low-level nuclear waste; slaughtering and disposing of farm animals as low-level nuclear waste. Commercial farms, dairies, food processors and others who are to destroy contaminated milk or fresh food products will be personally contacted by representatives of the Rhode Island Department of Environmental Management and Rhode Island Department of Health. Information on the types and quantities of commodities being destroyed will be provided as complete information is available.

Additionally, persons within these areas who use "open water" sources of drinking water for their domestic supply should instead use bottled water, well and covered water supplies or consume other bottled or canned beverages. Laboratory tests have shown the "open water" in the following areas contaminated above federal public health guidelines: (Describe affected counties/towns)

\_\_\_\_\_  
\_\_\_\_\_

# EXPOSURE and FOOD CONTROL STATIONS

## NEWS RELEASE

### EXPOSURE CONTROL AREA AND FOOD CONTROL STATIONS ESTABLISHED

**CONTACT:** \_\_\_\_\_

**PHONE:** \_\_\_\_\_

**EMERGENCY DECLARED AT \_\_\_\_\_ NUCLEAR POWER STATION**

The Exposure Control Area and Food Control Stations will be established beginning (dateltime) and remain in place until further notice.

State officials will establish an **Exposure Control Area** (ECA) within the State of Rhode Island to prevent milk, fresh food products and water supplies, which may have been contaminated by radioactive materials released during the accident at the Nuclear Power Station, from getting outside the affected area and being consumed by the public or introduced into commerce.

All agricultural products in the Exposure Control Area must be inspected before leaving the area. Food stuffs that are determined to be safe will be so certified. No uncertified products from this area should be accepted at the wholesale or retail level or otherwise purchased or consumed.

State inspection teams will go directly to commercial operations including dairies, farms and processing plants. Food stuffs not inspected at these locations must pass through the Food Control Stations where on-the-spot inspections will occur. Food stuffs that are determined to be safe will be so certified. No uncertified products from the Food Control Area should be accepted at the wholesale or retail level or otherwise purchased or consumed.

Home gardeners and small-scale farmers (those persons who raise produce only for their own consumption) within the Exposure Control Area should not harvest, consume, sell or give away produce from their garden until further *notice*. Sample *Teams* are not available to test the safety of fresh home-grown produce at this time.

The **Exposure** Control Area is located (describe boundaries)

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**Food Control Stations** will be established at several locations along borders with adjacent states. At these stations, staff from the Rhode Island Department of Health will ensure that contaminated milk and fresh food products do not enter the state. Rhode Island Department of Health staff will check the safety of products through monitoring and ordering lab tests of samples.

**Food Control Stations will be established at:**

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Any contaminated food stuffs will be embargoed by the state officials and proper disposition will be arranged in accordance with state law.

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Authorized by: \_\_\_\_\_

Governor/Designee

# INFORMATION for AGRICULTURAL COMMUNITY

## INFORMATIONAL LETTER

### TO THE

## AGRICULTURAL COMMUNITY

Officials *from the Rhode* Island Department of Environmental Management recommend that home gardeners, and small-scale, commercial and dairy farmers in the following areas of Rhode Island take certain actions to protect themselves while working in their fields and from consuming potentially contaminated food, milk and water.

Describe area by counties/towns affected

The recommended actions are to:

- Wash, scrub, peel or shell, fresh fruits and vegetables including roots and tubers before eating, to remove surface contamination.
- Wash hands before preparing or eating fresh home-grown food products.
- Drink only water from protected sources such as, covered water supplies, wells or bottled water and other bottled or canned beverages.
- Consume home-grown fresh produce and milk harvested and stored before (date) *since it was* unaffected by the accident. Additionally, canned or prepackaged foods in the home are safe to eat.
- Remove dairy and meat animals from pasture and shelter them if possible. Provide animals with protected feed and water from covered sources.

Hay or silage stored outside without cover may be used for feed provided the top twelve inches of the loose stack or layer from the bale is removed. Mist the stack with a light spray of water to reduce dust, then lay the top layer aside from the feed to be used. Care should be exercised in removing the top layer to avoid contaminating the underlying stack. After using the stack or bale, cover it with a non-contaminated or new tarp or plastic cover to avoid further contamination.

- Farmers who do not have stored feed should contact:
  - Do not consume fresh milk or eggs if you suspect dairy animals or poultry have consumed contaminated feed. Poultry raised indoors and given protected feed and water from covered supplies are not likely to be contaminated or produce contaminated eggs.
  - Do not slaughter any animals.

- When outside, wear outer clothing that covers legs, arms, hands, and head. Clothing used for the application of pesticides is recommended and will provide adequate protection.
- Do not engage in any dust-producing activities such as cultivating, disking, baling or harvesting.
- Milk producing animals should be placed on stored feed and covered water.
- Place livestock on stored feed and covered water.
- Cover and store all harvested crops inside.
- Milk transporters and processors should pick up all milk currently held in farm bulk tanks, if possible. Close *water cisterns* and other surface waters, if possible.
- Additional instructions:

The **Exposure Control Area** and **Food Control Stations** will be established beginning (date/time) and remain in place until further notice.

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State officials have established an **Exposure Control Area** (ECA) within the State of Rhode Island to prevent milk, fresh food products and water supplies, which may have been contaminated by radioactive materials released during the accident at the Nuclear Power Station, from getting outside the affected area and being consumed by the public or introduced into commerce.

All agricultural products in the **Exposure Control Area** must be inspected before leaving the area. Food stuffs that are determined to be safe will be so certified. No uncertified products from this area should be accepted at the wholesale or retail level or otherwise purchased or consumed. Any contaminated food stuffs will be embargoed by the state officials and proper disposition will be arranged in accordance with state law.

State inspection teams will go directly to commercial operations including dairies, farms and processing plants within the **Exposure Control Area**. Food stuffs not inspected at these locations must pass through Food Control Stations where on-the-spot inspections will occur. Food stuffs that are determined to be safe will be so certified. No uncertified products from the Food Control Area should be accepted at the wholesale or retail level or otherwise purchased or consumed.

**Food Control Stations** will be established at several locations along borders with adjacent states. At these stations, staff from the Rhode Island Department of Health will ensure that contaminated milk and fresh food products do not leave the area. Rhode Island Department of Health staff will check the safety of products through monitoring and ordering lab tests of samples.

# HUNTING and FISHING RESTRICTIONS

THIS IS AN EXERCISE MESSAGE

NEWS RELEASE  
FOR IMMEDIATE RELEASE  
CONTACT:  
RELEASE #

Fishing and hunting season closed

Fishing and hunting has been suspended until further notice in the following areas due to a release of radioactive materials from \_\_\_\_\_ on \_\_\_\_\_.

List of affected areas

State emergency preparedness officials will notify the public when hunting and fishing activities can resume.

Call \_\_\_\_\_ for more information.

####

THIS IS AN EXERCISE MESSAGE

# HUNTING and FISHING RESTRICTIONS LIFTED

THIS IS AN EXERCISE MESSAGE

## NEWS RELEASE

FOR IMMEDIATE RELEASE

CONTACT:

RELEASE #

### Restrictions lifted on hunting and fishing

State emergency management officials have announced that restrictions on hunting and fishing have been lifted in the following areas: \_\_\_\_\_.

The restrictions had been put in place on \_\_\_\_\_ after \*\*\*\* an accident\*\*\* or \*\*\*a release of radioactive materials\*\*\* from \_\_\_\_\_.

Environmental monitoring has shown \*\*\*no radioactive contamination in the areas listed above\*\*\* or \*\*\*that any radioactive contamination is below acceptable levels.\*\*\*

Hunting and fishing in the areas listed above may resume in accordance with South Carolina state law.

For more information, call \_\_\_\_\_.

####

THIS IS AN EXERCISE MESSAGE

## BEE KEEPER RESTRICTIONS

### THIS IS AN EXERCISE MESSAGE

NEWS RELEASE  
FOR IMMEDIATE RELEASE  
CONTACT:  
RELEASE #

#### Bee keepers should refrain from using or selling honey

Bee keepers in the following areas should refrain from using or selling honey from their hives until further notice: \_\_\_\_\_.

This action is being recommended following a release of radioactive materials from \_\_\_\_\_.

Honey and bee hives will be analyzed by officials to determine if any radioactive contamination has occurred.

Call \_\_\_\_\_ for more information.

####

### THIS IS AN EXERCISE MESSAGE

# BEE KEEPER RESTRICTIONS LIFTED

THIS IS AN EXERCISE MESSAGE

## NEWS RELEASE

FOR IMMEDIATE RELEASE

CONTACT:

RELEASE #

### Bee keeper restrictions lifted

State emergency management officials have announced that restrictions on the use or sale of honey in hives from areas near \_\_\_\_\_ have been lifted.

The restrictions had been put in place on \_\_\_\_\_ after \*\*\*\* an accident\*\*\* or \*\*\*a release of radioactive materials\*\*\* from \_\_\_\_\_.

Environmental monitoring has shown \*\*\*no radioactive contamination in the areas listed above\*\*\* or \*\*\*that any radioactive contamination is below acceptable levels.\*\*\*

For more information, call \_\_\_\_\_.

####

THIS IS AN EXERCISE MESSAGE

# NUCLEAR POWER PLANT FREQUENTLY ASKED QUESTIONS

Compiled by CRCPD's HS/ER-8 Task Force  
to Develop Nuclear Power Plant News Releases

January 2010

<b>From Pennsylvania</b>	
<b>Can a nuclear power plant explode like an atom bomb?</b>	<i>Absolutely not. A nuclear explosion is impossible in a commercial nuclear power plant. A power plant does not contain the type of fuel in the amount that is needed to make atomic bombs.</i>
<b>What are the major isotopes that may contaminate crops in the event of a radioactivity release from a nuclear power plant?</b>	<p>The three major isotopes which may be crop contaminants are:</p> <ul style="list-style-type: none"> <li>• Iodine-131</li> <li>• Cesium- 137</li> <li>• Strontium- 90</li> </ul> <p><b><i>Iodine-131</i></b></p> <p>The most easily detectable fallout product in humans and other animals is Iodine-131. The thyroid gland uses iodine to produce thyroid hormones and cannot distinguish between radioactive iodine and stable (nonradioactive) iodine. If I-131 were released into the atmosphere, people could ingest it in food products or water, or breathe it in. In addition, if dairy animals consume grass contaminated with I-131, the radioactive iodine will be incorporated into their milk. Consequently, people can receive internal exposure from drinking the milk or eating dairy products made from contaminated milk.</p> <p>Because of its relatively short half-life (eight days), iodine-131 is not the most hazardous fallout isotope; Potassium Iodide (KI) tablets are available as thyroid blocking agents; a countermeasure to internal contamination.</p> <p><b><i>Cesium-137</i></b></p> <p>Cs-137 is produced by <a href="#">nuclear fission</a> for use in medical devices and gauges. Cs-137 also is one of the byproducts of nuclear fission processes in nuclear reactors and nuclear weapons testing. Small amounts of Cs-137 are present in the environment from weapons testing in the 1950s and 1960s, so people are exposed to some Cs-137 every day. Internal exposure to Cs-137, through ingestion or inhalation, allows the radioactive material to be distributed in the soft tissues, especially muscle tissue, exposing these tissues to the beta particles and gamma radiation and potentially increasing cancer risk.</p> <p><b><i>Strontium-90</i></b></p> <p>Sr-90 is produced commercially through <a href="#">nuclear fission</a> for use in medicine and industry. It also is found in the environment from</p>

	<p>nuclear testing that occurred in the 1950s and 1960s and in nuclear reactor waste and can contaminate reactor parts and fluids. It can be present in dust from nuclear fission after detonation of nuclear weapons or a nuclear power plant accident. Sr-90 can be inhaled, but ingestion in food and water is the greatest health concern. Once in the body, Sr-90 acts like calcium and is readily incorporated into bones and teeth, where it can cause cancers of the bone, bone marrow, and soft tissues around the bone.</p>
<p><b>In the event of a power plant release of radioactivity, should KI (potassium iodide) pills be given to animals?</b></p>	<p>There have been no studies concerning animals and the administration of Potassium Iodide for radiation emergencies. In the event of an incident/release, Emergency Services will <u>not</u> issue KI pills for animals. The distribution of KI, if applicable, will be for the human population only. Like humans, animals do not normally have any allergic reaction to limited doses of Potassium Iodide. For animals with no known iodine allergies it is a relatively safe drug. If you wish to administer potassium iodide to your pet, you must give the appropriate dosage based upon weight. For instance, the dosage for a 2-year-old child would be 32 mg (1/4 tablet). If an average 2-year-old weighs 25 -30 lbs., a dog weighing the same would take the same dosage, 32 mg (1/4 tablet). If a 2-week-old infant weighs on average 9 lbs., then you would give a 9 pound cat/dog 16 mg (1/8 tablet). Crush it up and put it in their food. Please consult with a vet in advance to make sure your pet can safely take Potassium Iodide. Note: Iodine is found in table salt, fish oil, kelp, daily vitamins, etc.)</p>
<p><b>What are the radiation effects on food and water?</b></p>	<p>A release of airborne radioactive materials is possible during an emergency at a nuclear power plant. These materials may not be visible and could fall to the surface and settle on land and water surfaces. This is called deposition. Depending on the amount of radioactive materials released into the atmosphere and the prevailing weather conditions, people, animals, crops, land, and water near the 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 water sources. If contamination of fresh milk and processed milk is verified, the Pennsylvania Department of Agriculture will determine whether to dispose of these products or to hold them until safe for consumption.</p> <p>A later concern involves vegetables, grains, fruits, and nuts, and their possible contamination caused by deposition. The impact of contamination will depend on the time of year the emergency occurred. The period immediately prior to or during harvest is most critical. Crops will be sampled by the appropriate state agency and analyzed to ensure that they are safe to eat.</p> <p>Another concern is the potential contamination on livestock and poultry. Pasture, feed, and water sources may be subjected to the settling of radioactive materials. Meat and poultry products will be sampled by the appropriate state agency and analyzed to</p>

	<p>ensure that they are safe for consumption.</p> <p>Significant contamination of drinking water supplies is not likely. If contamination does occur, it will probably affect only surface water supplies and not drilled wells or underground water sources. Water supplies will be sampled by the appropriate state agencies and analyzed to ensure that they are safe for consumption.</p> <p>If land becomes contaminated, proper soil management techniques can be used to reduce contamination of crops. Procedures that may be recommended will depend on the severity of contamination and the specific crops to be grown. Soils will be sampled by the appropriate state agency and analyzed for use.</p>
<p><b>What are some protective measures that can be taken?</b></p>	<p>You may be advised to take the following protective measures:</p> <ul style="list-style-type: none"> <li>◆ Use stored feed and protected water supplies for your livestock and poultry.</li> <li>◆ Remove animals from pasture and shelter them.</li> </ul> <p>State and local officials may recommend additional protective actions. Specific instructions will depend on weather conditions and the distance of your farm and facility from the nuclear power plant. The following lists some examples:</p> <ul style="list-style-type: none"> <li>◆ When you go outside, wear outer clothing that covers all areas of the body, similar to what you would wear when applying chemicals: hat, gloves, boots, coveralls or long shirts and long pants.</li> <li>◆ Wear a protective mask similar to when applying chemicals, or place a folded, dampened cloth over your mouth and nose to prevent inhaling radioactive materials.</li> <li>◆ Remove outer clothing before going indoors. Once inside wash your hands and face immediately.</li> <li>◆ Do not use fresh milk, eggs, fruits, or vegetables from your farm until they are sampled and are determined to be safe for consumption.</li> <li>◆ Do not produce dust from activities such as cultivating, baling, disking, or harvesting.</li> <li>◆ Do not fish or hunt.</li> <li>◆ Do not slaughter any animals.</li> <li>◆ Do not process or distribute agricultural products or food products until they are sampled by the appropriate state agency. The Pennsylvania Department of Agriculture in partnership with the Pennsylvania Department of Environmental Protection will determine if the products are safe for consumption. This process may take several days.</li> <li>◆ Do not destroy agricultural products unless advised to do so.</li> </ul>

**How do I prevent my farm animals from consuming contaminated food and water?**

**Milk and Dairy Products**

There are a number of actions you can take to prevent your farm animals from consuming contaminated feed and water. These actions include:

1. Remove all dairy animals from pasture and shelter them.
2. Give dairy animals feed from enclosed barns, sheds, granaries, and silos. Feed stored outside, which is directly exposed to air and rain, may be contaminated. This includes feed stored in sheds and cribs with open sides, uncovered hay stacks or bales, trench silos, and upright silos without doors.
3. Give your animals water protected from direct contact with air and rain. State inspectors may visit your farm to take samples of milk, feed, and water to test for contamination. The Pennsylvania Department of Agriculture may recommend that milk and dairy products be withheld from the market. Time will reduce the amount of radioactive materials that may be present in milk. Fluid milk may be kept for long periods of time using ultra-high temperature pasteurization. In addition, producing cheese, dry milk, butter, and evaporated milk using fluid milk may be a possibility to reduce the radioactive contamination.

**Fruits and Vegetables**

The Pennsylvania Department of Agriculture may recommend that you wash, scrub, peel, and/or shell all locally grown fruits and vegetables, roots (such as carrots), and tubers (such as potatoes) to remove any surface contamination.

**Meats and Meat Products**

Shelter meat animals and provide them with protected feed and water. If livestock consume contaminated feed and water, contamination can be absorbed into their bodies and enter our food chain through meats and meat products.

*Do not destroy, market, or slaughter animals unless directed by the Pennsylvania Department of Agriculture.*

**Poultry and Egg Production**

Poultry raised outdoors or kept in open pens should be sampled to determine radioactive contamination. Poultry raised indoors and kept on stored feed and water should not become contaminated. If there is contamination, the Pennsylvania Department of Agriculture may advise that poultry and eggs not be eaten or distributed. Samples collected by appropriate state agencies may be analyzed for contamination.

**Soil Management**

The Pennsylvania Environmental Protection Agency will take soil samples to determine contamination. If the soil is found to be contaminated, state officials will advise how to reduce or remove this contamination.

	<p><b>Grains</b> If your crops are in the field and are permitted to grow to maturity, wind and rain will remove most of the contamination from the grains. If your crops are at maturity, milling and polishing will remove the contamination from the grain. Upon harvesting, contaminated and uncontaminated grains should be stored separately. Samples may be taken by the appropriate state agency.</p> <p><b>Water</b> Protect open rain barrels, tanks, and open wells by covering them with tarpaulins or plywood. Covered or underground water sources are unlikely to be contaminated.</p> <p>Disconnect filler pipes from roof runoffs to water storage containers. This prevents contaminants from entering the water storage. Do the same for other surface to water supplies. Close water intake valves from any contaminated water source to irrigation systems. This will prevent further spread of contaminated water. Samples will be taken by the appropriate state agency to test public water systems and supplies and will issue advisories as needed.</p>
<p><b>What actions do food processors and distributors need to take?</b></p>	<p>Milk and food products in an affected area can become contaminated during collection and processing. This can result from contact with radioactive materials that were deposited on the ground or from mixing with contaminated products. After a radiological emergency, state agencies may restrict shipment of food products if they are contaminated.</p> <ul style="list-style-type: none"> <li>• Processors – The Pennsylvania Department of Agriculture in partnership with the Pennsylvania Department of Environmental Protection will take samples of food, produce, and final products for radioactive contamination analysis. After testing, they will determine if products are safe for processing and distribution. <i>Do not process foods or release products until they are determined to be safe.</i></li> <li>• Distributors – The Pennsylvania Department of Agriculture in partnership with the Pennsylvania Department of Environmental Protection will inspect shipments to check for radioactive contamination. After testing, they will determine if the shipment is safe for distribution. This testing may take several days. <i>Do not release products until they are determined to be safe.</i></li> </ul> <p>If a decision is made to dispose of any products, state agency representatives will advise you on proper disposal.</p>

<b>From New York:</b>	
<b>Do I need to worry about health effects?</b>	<p>The release did not result in any radiation levels that could cause health effects. Officials continue to take steps to further minimize risk by limiting consumption of potentially contaminated food products. For this reason, a general agricultural quarantine is in effect for an approximately 30-mile area southwest of the plant. This restricts the movement of any food product, including livestock, out of the quarantined area.</p> <p>Within this area, livestock, forage, and fresh food may not be transported or sold. Livestock should remain on stored feed and water. Fruits and vegetables should not be harvested or eaten. This includes all fresh food, whether from commercial farm operations, farm stands or backyard gardens, and unharvested forage.</p> <p>In addition, the New York State Department of Environmental Conservation (DEC) will assess the impact of the release on fish and wildlife in this same area. DEC has issued a temporary ban on fishing in the area until the assessment is complete. Potential impacts on hunting seasons later this year will be evaluated.</p> <p><b>This area includes: .....</b></p> <p>We are confident that the Protective Actions taken during the release minimized residents' exposure to radiation as the plume passed over the area. Our current actions are directed at limiting potential contamination through consumption of foods that may have been affected by deposition of radioactive materials on the ground.</p>
<b>What was released from the plant?</b>	<p>The materials released from the plant were radioactive gases and radioactive dusts. The materials travel a "plume." Weather conditions and geography affect where the plume goes.</p> <p>The gases released were mainly Xenon and Krypton. These gases are known as "noble" or "inert" gases because they do not react chemically. They do not deposit on surfaces and dissipate fairly quickly.</p> <p>The other major gas released was radioactive iodine. Even though it is released as a gas, the radioactive iodine will settle out onto surfaces. If inhaled or ingested (consumed), radioactive iodine deposits in the thyroid gland. It can damage the thyroid and increase the risk of developing thyroid cancer. Because of this, people who were evacuated were also told to take Potassium Iodide (KI). KI fills the thyroid with stable iodine so radioactive iodine is eliminated from the body.</p> <p>The dusts include many different materials, but radioactive strontium and cesium are of most concern. These dusts also</p>

<p><b>How can someone be exposed to radiation from a power plant release?</b></p>	<p>deposit on the ground and other surfaces.</p> <p>There are two important concepts that help in understanding radiation: exposure and contamination. Both can occur when radioactive materials are released in a power plant emergency.</p> <p>Exposure: Radioactive materials give off a form of energy that travels in waves or particles. This energy is similar to an x-ray, and can penetrate the body. This exposure ends when the radioactive material is no longer present, for example, after the noble gases disperse. Some of the radioactive material deposited on the ground may also contribute to external exposure. You may hear this referred to as “groundshine.”</p> <p>Contamination: Contamination occurs when radioactive materials (dusts) are deposited on or in an object or person. External contamination occurs when radioactive material or dust comes into contact with a person’s skin hair or clothing.</p> <p>People who are externally contaminated can become internally contaminated if radioactive materials get into their bodies. This could happen if people swallow or breathe in radioactive materials. Some types of radioactive materials stay in the body and are deposited in different body organs. Other types are eliminated from the body in blood, sweat, urine, and feces.</p> <p>Limiting skin contamination: Both external and internal contamination can cause exposure to radioactive materials. Removing contaminated clothing and washing off the radioactive materials will minimize exposure from external contamination.</p> <p>If you think you have been contaminated, you should:</p> <ul style="list-style-type: none"> <li>• Remove the outer layer of your clothing.</li> <li>• Place the clothing in a plastic bag.</li> <li>• Wash all of the exposed parts of your body, as you would normally, with soap and warm water. There is no need to scrub.</li> </ul> <p>Do not eat, drink or smoke until you have removed contamination as described above.</p>
<p><b>What was done to prevent exposure to the public, and how will I know if I was exposed?</b></p>	<p>To prevent or minimize exposure to the public, residents close to the plant were evacuated. Evacuated residents were also instructed to take potassium iodide (KI) tablets if they had them available. KI fills the thyroid with stable iodine so radioactive iodine is eliminated from the body. KI was provided at the reception centers to residents who had not already taken KI.</p> <p>Both our evacuation and potassium iodine administration measures were taken to minimize risk to residents close to the plant, who had the greatest potential for exposure.</p>

	<p>In general, radiation decreases as you move further away from the plant. When the cloud of dusts and gases was released, it was fairly concentrated. As the cloud moved along with the wind, it spread out and became diluted. The dusts and radioactive iodine settled out and the noble gases dissipated.</p>
<p><b>What was done to prevent exposure to the public, and how will I know if I was exposed?</b></p>	<p>Risk of exposure is higher, the closer you are to the plant. When the cloud of dusts and gases is released, it is fairly concentrated. As the cloud moves along with the wind, it spreads out and becomes more dilute. The dusts and radioactive iodine settle out and the noble gases dissipate. More radioactive materials are deposited close to the plant and the radiation decreases as you move further out.</p> <p>We evacuated residents close to the plant to prevent immediate effects from radiation exposure. Evacuated residents were also instructed to ingest potassium iodide (KI) tablets if they had them accessible. KI was made available at the reception centers to residents who had not already taken KI. KI protects the thyroid gland from radioactive iodine by filling it up with stable iodine.</p> <p>We have established personnel monitoring stations at the reception centers, to find and immediately take care of anyone who has been contaminated with dusts. We can remove external contamination on the body by simple methods such as changing clothes and washing.</p> <p>People who were not evacuated, but live in areas downwind of the plant will be instructed not to eat locally grown produce or drink locally produced milk until it can be determined whether these foods have been contaminated by the settling dusts.</p> <p>Both our evacuation and potassium iodine administration measures should minimize exposures to residents close to the plant, who are most likely to be exposed.</p> <p>Please stay tuned to area news for more information on what you can do, as we gather more data to address these concerns</p>
<p><b>I heard there were hotspots—what does this mean?</b></p>	<p>“Hotspots” is an incorrect characterization. These simply are areas outside the Emergency Protection Zone that have slightly elevated radiation levels. This is a result of rainfall that occurred while the release was going on. Levels in these areas are still far below the U.S. Environmental Protection Agency’s Protective Action Guidelines.</p> <p>The EPA sets these Protective Action Guidelines to minimize risk from radiation exposure, and no health effects are likely at radiation levels below these guidelines. In fact, the EPA requires protective actions be taken when the potential exposure is much lower than a level that would produce health effects.</p>

<p><b>Where are these areas?</b></p> <p><b>What should I do if I was in that area?</b></p>	<p>You do not need to take any special precautions. Even though the level of radiation was slightly elevated at these “hotspots,” it was still far below the Environmental Protection Agency’s Protective Action Guidelines.</p>
<p><b>How do I know if I was contaminated?</b></p>	<p>People who were told to evacuate were asked to report to reception centers. Personnel monitoring stations were set up at the reception centers, to find and immediately take care of anyone who may have been contaminated. External contamination on the body is removed by simple methods such as changing clothes and washing.</p>
<p><b>What is being done now to make sure people do not get contaminated after the fact?</b></p>	<p>The state is currently assessing contamination levels in soil, water and food products, including milk. To prevent further contamination, people in previously listed areas downwind of the plant are being instructed not to eat locally grown fresh produce or drink locally produced milk. Farmers have been instructed to leave unharvested forage in the field.</p> <p><b>This area includes: ....</b></p> <p>Farmers within 50 miles of the Ginna plant were instructed to take precautionary actions to reduce the possibility that milk would be contaminated. Before the release started, they were directed to bring livestock, especially dairy animals, under shelter and place them on stored feed and water, and to cover any harvested produce or take it inside, if possible. In addition, an agricultural quarantine was quickly established within the evacuated area, restricting the movement of any food products, including livestock.</p>
<p><b>Were the released radioactive materials a health risk?</b></p>	<p>Radiation can cause two types of health effects, immediate and long term. No immediate effects occurred as a result of this release. Evacuation of residents living nearest the plant prevented anyone from getting a large enough radiation dose to cause immediate health effects.</p> <p>The major long-term health effect is cancer. According to scientists, any exposure to radiation causes an increased risk of developing cancer. The higher the exposure, the higher the risk of developing cancer later in life. However, the protective actions taken, including evacuations, KI, and avoiding produce and milk from the affected area, have minimized exposure to radiation, and therefore minimized the risk of developing cancer.</p> <p>Decisions to evacuate are based on Protective Action Guidelines developed by the US Environmental Protection Agency. Decisions regarding the consumption of produce, milk, and water are based on Protective Action Guidelines developed by the US Food and Drug Administration. These guidelines are radiation levels below which there is not expected to be any health effects.</p>

<p><b>How do you know how much radioactive material was released?</b></p>	<p>First, we used a computer model with information based on plant conditions. Weather data were also used to produce a map of the potentially affected areas. This model is a projection of what was released from the plant.</p> <p>We next verified the projection with different types of actual field measurements. These included radiation measurements taken from a fixed wing aircraft and a helicopter equipped with specialized monitoring instruments. We also collected soil, water and air samples for lab analyses. Once we receive these results, we will have a good picture of how much radiation is present at different locations.</p> <p>We continue to collect samples to confirm and further verify our computer estimates and the original measurements taken.</p>
<p><b>Do I need to take potassium iodide (KI)?</b></p>	<p>No. Only people who were directed to evacuate were advised to take KI. The radioactive iodine released from the plant was only present in the atmosphere for a short time, and deposited to the ground and other surfaces. Potassium iodide (KI) fills your thyroid with a kind of iodine that prevents your thyroid gland from taking in the radioactive iodine that may be released during the emergency. One KI tablet protects the thyroid gland for 24 hours.</p> <p>Since there is no longer a risk of breathing in the radioactive iodine, you do not need to take KI. Avoiding foods grown in the affected area will prevent exposure to radioactive iodine deposited on the ground.</p>
<p><b>Do I need to take any more potassium iodide (KI)?</b></p>	<p>Potassium iodide (KI) fills your thyroid with a kind of iodine that prevents your thyroid gland from taking in the radioactive iodine that may be released right after the emergency. One KI tablet protects the thyroid gland for 24 hours. The radioactive iodine is only present in the atmosphere for a short time, then deposits out on to the ground and other surfaces. If there is no longer a risk of breathing in the radioactive iodine, you do not need to take more KI. Avoiding foods grown in the affected area prevents exposure to radioactive iodine deposited on the ground.</p> <p>For more information, please refer to our potassium iodide fact sheet at our website.....</p>

<p><b>How can I be exposed to radiation from a power plant release?</b></p>	<p>There are two important concepts that help in understanding radiation: exposure and contamination. Both can occur when radioactive materials are released in a power plant emergency.</p> <p><b>Exposure:</b> Radioactive materials give off a form of energy that travels in waves or particles. This energy is similar to an x-ray, and can penetrate the body. This exposure ends when the radioactive material is no longer present, for example, after the noble gases disperse.</p> <p><b>Contamination:</b> Contamination occurs when radioactive materials (dusts) are deposited on or in an object or person. External contamination occurs when radioactive material or dust comes into contact with a person's skin hair or clothing. People who are externally contaminated can become internally contaminated if radioactive materials get into their bodies.</p> <p>Internal contamination occurs when people swallow or breathe in radioactive materials, if these materials enter the body through an open wound, or if they are absorbed through the skin. Some types of radioactive materials stay in the body and are deposited in different body organs. Other types are eliminated from the body in blood, sweat, urine, and feces.</p> <p><b>Limiting skin contamination: Both</b> external and internal contamination can cause exposure to radioactive materials. Removing contaminated clothing and washing off the radioactive materials will end exposure from external contamination.</p> <p>If you think you have been contaminated, you can:</p> <ul style="list-style-type: none"> <li>• Remove the outer layer of your clothing.</li> <li>• Place the clothing in a plastic bag.</li> <li>• Wash all of the exposed parts of your body.</li> <li>• Do not eat, drink or smoke until you have removed contamination as described above.</li> </ul> <p>Methods to reduce surface contamination are discussed below.</p>
<p><b>What about the water supply?</b></p>	<p>Any radioactive material that may have deposited into an uncovered water supply, such as an open reservoir, would be greatly diluted by the quantity of water in the reservoir.</p> <p>Residents in some areas close to the plant are advised to drink bottled water until sample data is analyzed from water supplies in that area.</p> <p>Water samples are being collected from numerous public water supplies within a 20-mile radius of the XXXX plant. We have asked for federal assistance to get laboratory test results on these samples back quickly. Preliminary results show no cause for</p>

	<p>concern.</p> <p>In addition, as an extra precaution, the uncovered water storage reservoirs serving the City of XXXX have been taken off line pending sample results.</p>
<b>I live within 20 miles of the plant—can I drink water out of my faucet right now?</b>	Yes, you can.
<b>I have a private well—can I drink the water?</b>	Yes. Soil is a very good filter for particulates, so well water is unlikely to be affected. As a precaution, wells that provide water for public water supplies are currently being sampled to determine whether groundwater in the area has been affected. Preliminary results show no cause for concern.
<b>Can I go swimming?</b>	Yes, you can. We have water sample results that show no risk to swimmers. Any contamination from the release was minimal and has been diluted.
<b>Can my children play in the yard?</b>	<p>Yes. Residents who were allowed to remain in their homes, or who were evacuated but now may return, can be confident that radiation levels are lower than the EPA Protective Action Guidelines.</p> <p>The EPA sets these Protective Action Guidelines to minimize risk from radiation exposure, and no health effects are likely at radiation levels below these guidelines. In fact, the EPA requires that protective actions be taken when the potential exposure is much lower than the level that would produce health effects.</p> <p>If children wash their hands thoroughly after playing outside they will further reduce even this minimal exposure.</p> <p>Because it rained during the release, playground equipment or toys left outside do not need to be washed.</p> <p>If you have any concerns about the sand in children’s sandboxes, you may wish to empty and wash the sandbox and replace the sand, although this is not necessary.</p> <p>While this precaution also is not necessary, if you have concerns about your swimming pool you may wish to drain the pool and refill it.</p>
<b>I am pregnant, are there any special precautions I should take?</b>	The EPA Protective Action Guidelines are intended to protect everyone. Pregnant women do not need to take any precautions other than those advised for the rest of the population. Taking these precautions will minimize the already low exposure to radiation.

<p><b>Is there anything I can do to further decrease contamination where I live?</b></p>	<p>Residents who were allowed to remain in their homes, or who were evacuated but now may return, can be confident that the radiation levels are lower than the EPA Protective Action Guidelines. To reduce even this minimal potential exposure, you can take the following steps inside your home:</p> <ul style="list-style-type: none"> <li>• Discard foodstuffs that were open to the environment, such as a bowl of fruit on a countertop. There is no need to discard food that was kept refrigerated, or was in a closed container. If you are concerned about it, throw it away.</li> <li>• Use wet methods to wipe things whenever possible. Use a damp rag or mop to clean surfaces. Dispose of cleaning materials in the regular trash.</li> <li>• Do not use a vacuum cleaner until after you have done a wet wash.</li> <li>• Do not eat, drink, or smoke while you are cleaning up.</li> <li>• Wear disposable gloves and use good hygiene. Wash hands after cleaning up.</li> <li>• Be conscious of your shoes tracking materials and wipe your feet before entering a clean area.</li> <li>• Start your cleanup work in the dirtiest part of the work area (for example, near an open window) and work toward the clean area further inside.</li> <li>• Work from the top of the room toward the bottom.</li> <li>• Dispose of used wash water down the toilet. Do not pour off on soil.</li> <li>• Shower and wash hair right after finishing.</li> </ul> <p><b>Where can I get more information?</b></p> <p>In addition to the toll-free Public Inquiry number, available at XXX-XXX-XXXX, you may also wish to check the following websites:</p> <p><a href="http://www.health.state.ny.us">www.health.state.ny.us</a>  <a href="http://www.nysemo.ny.us">www.nysemo.ny.us</a>  <a href="http://www.cdc.gov">www.cdc.gov</a>  <a href="http://www.atsdr.cdc.gov/toxfaq.html">www.atsdr.cdc.gov/toxfaq.html</a></p>
<p><b>From Nuclear Regulatory Commission (NRC) <a href="http://www.nrc.gov/">http://www.nrc.gov/</a></b></p>	
<p><b>What is radiation?</b></p>	<p>Radiation is energy given off by matter in the form of rays or high-speed particles. All matter is composed of <b>atoms</b>. Atoms are made up of various parts; the <b>nucleus</b> contains minute particles called <b>protons</b> and <b>neutrons</b>, and the atom's outer shell contains other particles called <b>electrons</b>. The nucleus carries a positive electrical charge, while the electrons carry a negative electrical charge.</p>

	<p>These forces within the atom work toward a strong, stable balance by getting rid of excess atomic energy (<a href="#">radioactivity</a>). In that process, unstable nuclei may emit a quantity of energy, and this spontaneous emission is what we call radiation.</p> <p>There are many familiar forms of radiation. For example, we use light, heat, and microwaves every day. Doctors use x-rays to see inside our bodies. Radio and television waves bring us our favorite shows. All of these are forms of radiation. Radiation is also naturally present in our environment, as it has been since before the birth of this planet. The sun and stars send a constant stream of <a href="#">cosmic radiation</a> to Earth, much like a steady drizzle of rain. Also, the Earth itself is a source of <a href="#">terrestrial radiation</a>. Radioactive materials (including <a href="#">uranium</a>, <a href="#">thorium</a>, and <a href="#">radium</a>) exist naturally in soil and rock. Essentially all air contains <a href="#">radon</a>, water contains small amounts of dissolved uranium and thorium, and all organic matter (both plant and animal) contains radioactive carbon and potassium. In addition, all people have internal radiation, mainly from radioactive potassium-40 and carbon-14 inside their bodies from birth and, therefore, are sources of exposure to others. Finally, to a lesser degree, people are also exposed to radiation from the nuclear fuel cycle, from uranium mining and milling to disposal of used (spent) fuel. In addition, the public receives some minimal exposure from the transportation of radioactive materials and fallout from nuclear weapons testing and reactor accidents (such as Chernobyl).</p>
<p><b>What kind and how much radiation is produced by a nuclear power plant?</b></p>	<p>An operating nuclear power plant produces very small amounts of radioactive gases and liquids, as well as small amounts of direct radiation. If you lived within 50 miles of a nuclear power plant, you would receive an average radiation dose of about 0.01 millirem per year. To put this in perspective, the average person in the United States receives an exposure of 300 millirem per year from <a href="#">natural background sources of radiation</a>.</p>
<p><b>What happens to radiation produced by a plant?</b></p>	<p>Nuclear power plants sometimes release radioactive gases and liquids into the environment under controlled, monitored conditions to ensure that they pose no danger to the public or the environment. These releases dissipate into the atmosphere or a large water source and, therefore, are diluted to the point where it becomes difficult to measure any radioactivity. By contrast, most of an operating nuclear power plant's direct radiation is blocked by the plant's steel and concrete structures. The remainder dissipates in an area of controlled, uninhabited space around the plant, ensuring that it does not affect any member of the public.</p>

<p><b>How does radiation affect the public?</b></p>	<p>The exact effect depends on the specific type and intensity of the radiation exposure. More than 100 years ago, scientists discovered that many <u>elements</u> commonly found on Earth occur in different configurations at the most basic (<u>atom</u>) level. These various configurations (called <u>isotopes</u>) have identical chemical properties, but different physical properties. In particular, some isotopes (known as <u>radioisotopes</u>) are radioactive, meaning that they emit energy in several different forms. This energy emission is what we call radiation.</p> <p>Over time, we have come to think of radiation in terms of its biological effect on living cells. For low levels of radiation exposure, these biological effects are so small that they may not even be detectable. In addition, the human body has defense mechanisms against many types of damage induced by radiation. Consequently, radiation may have one of three biological effects, with distinct outcomes for living cells: (1) injured or damaged cells repair themselves, resulting in no residual damage; (2) cells die, much like millions of body cells do every day, being replaced through normal biological processes; or (3) cells incorrectly repair themselves, resulting in a biophysical change.</p> <p>The exact effect depends on the specific type and intensity of the radiation exposure. In general, however, a 3-millirem exposure imposes the same chance of death — 1 in a million — as each of the following common life experiences:</p> <ul style="list-style-type: none"> <li>• Spending 2 days in New York City (because of the air quality)</li> <li>• Riding 1 mile on a motorcycle or 300 miles in a car (because of the risk of collision)</li> <li>• Eating 40 tablespoons of peanut butter (because of aflatoxin) or 10 charbroiled steaks</li> <li>• Smoking 1 cigarette</li> </ul>
<p><b>From Environmental Protection Agency</b> <a href="http://www.epa.gov/">http://www.epa.gov/</a></p>	
<p><b>How you can protect yourself from radiation?</b></p>	<p>Three basic concepts apply to protecting yourself and your family from all types of ionizing radiation: time, distance, and shielding.</p> <p><b>Basic Concepts of Radiation Protection</b></p> <ul style="list-style-type: none"> <li>• <b>Time:</b> The amount of radiation exposure increases as the time spent near the source of radiation increases.</li> <li>• <b>Distance:</b> The farther away people are from a radiation source, the less their exposure</li> <li>• <b>Shielding:</b> The greater the thickness and density of shielding around a radiation source, the smaller the exposure.</li> </ul>

<p><b>What Do I Do in a Radiological Emergency at a Nuclear Power Plant?</b></p>	<p>If you live within a 10-mile radius of a nuclear power plant involved in a radiological emergency, you may receive one or a combination of the following alerts to warn you of the emergency: hear an outdoor siren, hear an indoor tone-alert on your radio, receive a route alert (the "Paul Revere" method), or a message from a geographic area public safety reverse dial warning system (i.e., REVERSE 911®).</p> <p>If you get such a warning, tune your radio or television to the <a href="#">Emergency Alert System</a> station for your area. The EAS station for your area is identified in the emergency preparedness information you receive annually. Follow the instructions you receive from this station. Your instructions may include directions for evacuating or for remaining in place (called sheltering) to reduce any possible exposure to radiation.</p> <p>Your instructions may include directions for evacuating or for remaining where you are (called sheltering in place) to reduce any possible exposure to radiation.</p> <p><b>Remember, in the unlikely event of a nuclear power plant accident, follow the direction of your State or local government.</b></p>
<p><b>What are the 10-mile and 50-mile emergency planning zones?</b></p>	<p>Two emergency planning zones (EPZs) around each nuclear power plant help plan a strategy for protective actions during an emergency. The plume exposure pathway EPZ has a radius of about 10 miles from the reactor. Predetermined protection action plans are in place for this EPZ and are designed to avoid or reduce dose from potential exposure of radioactive materials. These actions include sheltering, evacuation, and the use of potassium iodide where appropriate. The ingestion exposure pathway EPZ has a radius of about 50 miles from the reactor. Predetermined protection action plans are in place for this EPZ and are designed to avoid or reduce dose from potential ingestion of radioactive materials. These actions include a ban of contaminated food and water.</p>
<p><b>Will radiation from a nuclear power plant accident spread out over the entire 10-mile EPZ?</b></p>	<p>A radioactive plume (cloud with radioactive materials discharged from the nuclear power plant during an accident) travels in the same direction as the wind rather than spread out over the entire 10-mile EPZ. The plume characteristics are determined by natural environmental factors, such as wind speed, wind direction, turbulence due to solar heating, humidity, and ground temperatures. As radioactivity enters the plume, it travels downwind and expands in the horizontal and vertical directions. The expansion of the plume causes the concentration of the radioactivity in the plume to decrease with increasing downwind distance. The radiation dose to persons in the plume is a function of the concentration of the radioactivity at any point in the plume.</p>

	So, as the plume expands downwind, the concentration decreases as does the radiation dose.
<b>What if conditions don't allow for an evacuation?</b>	Evacuation is not the only protective action available to the public. In some situations sheltering may provide protection that is equal to or even greater than evacuation. Sheltering may be the preferred protective action in cases where weather, competing events, or short-term releases are factors.
<b>What are evacuation time estimates?</b>	Evacuation time estimates are tools to assist offsite authorities to determine evacuation routes, traffic control plans, and impediments to traffic flow. These time estimates are used by State and local authorities when they make protective action decisions. Under inclement weather conditions, the time to evacuate may be longer, so the decision may be made only to evacuate a small portion of the area and advise sheltering for the remainder of the population. Evacuation time estimates are not linked, in any way, to the doses at which protective actions are recommended.
<b>Will sheltering result in a higher radiation dose than evacuation?</b>	When the public evacuates, they are removed from further exposure to radioactive materials, and under most conditions, evacuation is preferred. However, there are many instances where sheltering may be the preferred protective action. Sheltering may provide protection that is equal to or greater than evacuation, taking into consideration such factors as weather, competing events, fast-breaking or short-term release, or traffic considerations. As an example, during a relatively short term release, it may be prudent to recommend that the population shelter in place, such as at home, the office, school, or shopping mall. Depending on the type of building, sheltering can result in a radiation dose reduction of up to 80% compared to being outdoors.
<b>What is potassium iodide?</b>	Potassium iodide is a salt, similar to table salt. Its chemical symbol is KI. It is routinely added to table salt to make it "iodized." Potassium iodide, if taken in time and at the appropriate dosage, blocks the thyroid gland's uptake of radioactive iodine and thus could reduce the risk of thyroid cancers and other diseases that might otherwise be caused by exposure to radioactive iodine that could be dispersed in a severe nuclear accident.
<b>What is the benefit of taking potassium iodide during a radiological accident?</b>	When potassium iodide is ingested, it is taken up by the thyroid gland. In the proper dosage, and taken at the appropriate time, it will effectively saturate the thyroid gland in such a way that inhaled or ingested radioactive iodines will not be accumulated in the thyroid gland. The risk of thyroid effects is reduced. Such thyroid effects resulting from radioiodine uptakes due to inhalation or ingestion, or both, could result in acute, chronic, and delayed effects. Acute effects from high doses include thyroiditis, while chronic and delayed effects include

	hypothyroidism, thyroid nodules, and thyroid cancer.
<p><b>Why is KI only being provided to the 10-mile EPZ around nuclear power plants?</b></p>	<p>The population closest (within the 10-mile EPZ) to the nuclear power plant is at greatest risk of exposure to radiation and radioactive materials. The purpose of radiological emergency preparedness is to protect people from the effects of radiation exposure after an accident at a nuclear power plant. Evacuation is the most effective protective measure in the event of a radiological emergency because it protects the whole body (including the thyroid gland and other organs) from all radionuclides and all exposure pathways. However, in situations when evacuation is not feasible, in-place sheltering is substituted as an effective protective action. In addition, administering potassium iodide is a reasonable, prudent, and inexpensive supplement to both evacuation and sheltering. When the population is evacuated out of the area, and potentially contaminated foodstuffs are prohibited, the risk from further radioactive iodine exposure to the thyroid gland is essentially eliminated.</p>
<p><b>From RadiationAnswers.org</b> <a href="http://www.radiationanswers.org/radiation-questions-answers/radiation-small-doses.html">http://www.radiationanswers.org/radiation-questions-answers/radiation-small-doses.html</a></p>	
<p><b>What is radiation contamination and how does it differ from radiation exposure?</b></p>	<p>When radioactive materials in liquid, gas, or powder form are not kept contained, they can transfer to other surfaces or can be carried in the air. When <a href="#">radioactive material</a> is “loose” and comes to rest on something, that something is then said to be contaminated—there is now <a href="#">radioactive material</a> on it. If the something is a countertop, we have countertop <a href="#">contamination</a>. If the <a href="#">radioactive material</a> gets on our skin, we have skin <a href="#">contamination</a>. If it gets inside of us, we are internally contaminated.</p> <p>We need to know the type of radioactive <a href="#">contamination</a> to determine whether we are being exposed to that radiation. So now it goes back to the discussion of the type of radiation (alpha, beta, gamma) and the energy of that radiation. In general, gamma radiation will expose us if it is an external source, skin <a href="#">contamination</a>, or inside of us. Alpha and beta particles will expose us if they are inside of us. Some high-energy beta particles can expose us if they are on our skin.</p> <p>A big difference between <a href="#">contamination</a> and <a href="#">exposure</a> comes when we talk about certain devices, like x-ray machines, that expose us to radiation. In this case, we are not talking about a liquid, gas, or powder, so this type of <a href="#">exposure</a> does not cause <a href="#">contamination</a>. Sometimes people who have an x-ray exam performed wonder if they are radioactive afterward. To become radioactive, you would need to become contaminated (have radioactive materials actually deposited on you or inside of you) and the x-ray machine does not do that.</p>

## From University of Michigan

<http://www.umich.edu/~radinfo/introduction/qanda.htm>

**What are the biological effects of exposure to radiation?**

The effect depends on the amount (dose), ranging from no effect (low) to death (high). For the most part, what radiation does is create ions in our cells, and these ions cause problems in the cell. damage may lead to cancer.

The radiation may interact directly with biologically significant molecules, like DNA and proteins. Radiation may also interact indirectly to cause damage, by interacting with chemicals in our bodies, such as water, and form very active chemicals like free radicals that may cause damage to the biologically significant molecules. The damage can be fixed, or the cell may die, or it may actually affect the tissue/organ if there is enough damage. It is felt that the damage to the DNA is of the most importance, and could lead to increase risk of cancer. The damage could be to a single base pair, could cause the DNA to bind to itself or cause an actually break the DNA on one stand or more rarely, to both DNA strands. If the damage is not fixed or is fixed wrong and the cell escapes apoptosis (programmed cell death) it may be one of the several needed steps that results in the cell becoming a tumor. But the chain of events that leads from DNA damage to cancer is a long, multi-step process with many check points along the way where things must go wrong in order to cause cancer.

One of the reasons cancer is not more common is that every minute of the day for your whole life, your body's repair mechanisms are working to fix damage to your DNA.

## From NRC <http://www.nrc.gov/>

**What is a "meltdown"? Can a meltdown be prevented?**

A nuclear reactor is fueled with many thousands of ceramic uranium pellets located within 12-foot long metal fuel rods. As the reactor performs its intended function (uranium atoms fission, releasing heat energy, generating steam for electrical power production) many of the uranium atoms are converted into new atoms which are highly energetic and highly radioactive. Under normal conditions these highly radioactive "fission products" remain safely within the confines of the metal fuel rod. During a severe malfunction, it is possible that the energy released by the fission products could be sufficient enough to damage the metal fuel rod, and even melt the ceramic fuel pellet itself.

Fuel pellet melting is a significant concern because it indicates that multiple protection systems and radiation barriers have failed and that other systems and barriers are about to be challenged. Accidents of this magnitude are classified at the highest severity level (general emergency).

A meltdown is prevented by ensuring that sufficient cooling water is always available to remove fission product heat from the reactor. Multiple water systems, pumps, and flow paths are

	<p>maintained to ensure that water will always be available for this purpose. But in case all these precautions fail, the emergency response organization must always be ready.</p>
<p><b>From RadiationAnswers.org</b>  <a href="http://www.radiationanswers.org/radiation-questions-answers/nuclear-power.html">http://www.radiationanswers.org/radiation-questions-answers/nuclear-power.html</a></p>	
<p><b>What went on at Three Mile Island and Chernobyl? Were they different?</b></p>	<p>Yes, the accidents at Three Mile Island and Chernobyl were very different. In the 65 years since the first nuclear reactor became operational, there have been accidents that have affected people. Two events that affected people outside the immediate plant were <a href="#">Three Mile Island</a> in the United States in 1979 and <a href="#">Chernobyl</a> in the Ukraine in 1986.</p> <p><b>Three Mile Island</b></p> <p>The accident at Three Mile Island Unit 2 (TMI 2) in Pennsylvania in 1979 was caused by misinterpretation of equipment functioning by plant operators when assessing the reactor's condition. A gradual loss of cooling water to the reactor's heat-producing core led to partial melting of the uranium fuel and fuel rod assemblies and the release into the environment of a very small amount of <a href="#">radioactive material</a>. While the TMI 2 accident caused no physical injuries or deaths, it did result in serious concerns and fear and, undoubtedly, was a source of stress to some of the people living close by. Related to the radiation, however, careful follow-up studies showed that the highest <a href="#">dose</a> an individual member of the public could have received would have been about one-fourth of the <a href="#">dose</a> we get each year from natural <a href="#">background radiation</a> sources, even if the individual stood just outside the plant fence during the entire accident.</p> <p><b>Chernobyl</b></p> <p>The accident in the Chernobyl nuclear power plant in the Ukraine in 1986 was the most devastating event of its kind that has taken place. Prior to discussing its impacts, it would be helpful to describe this plant and the reasons that the accident occurred and that its impacts were so devastating. As a first observation, it is to be noted that the building in which the reactor was housed was not a thick steel-reinforced concrete containment, such as those in use in other countries of the world including the United States.</p> <p>Another reason for the release of radioactive materials was that the Chernobyl reactor operated very differently than other power plants. Nearly all plants operate on the principle called a “self-sustaining nuclear fission chain reaction,” where neutrons bombard or hit atoms in the fuel, causing fission. When a <a href="#">neutron</a> gets absorbed in the uranium fuel, two or three new neutrons are released, which allows the fission process to be self-sustaining. The process, however, needs to be controlled—there must be multiple methods to control the rate at which the chain reaction is permitted to occur. The use of methods to control this chain reaction is where the Chernobyl reactor differed greatly</p>

from other reactors.

Neutrons produced in the fissioning process are released at high velocity. For these neutrons to be effectively absorbed by other uranium atoms in the fuel and cause subsequent fissioning events, they must first be slowed down. Slowing down the neutrons requires what is called a moderator (i.e., a material in which the neutrons can “bounce around” and be slowed down. All power reactors in the United States use water as both a coolant and a moderator. As such, water completely surrounds the uranium fuel and moderates (slows down) the neutrons at the same time that the water is removing heat from the uranium fuel. The water is subsequently converted into steam, in boiling water reactors, which flows through piping to the turbines, which, in turn, rotate and generate electricity. Although the Chernobyl reactor was also cooled by water, the water was essentially only used for cooling, but not slowing down the neutrons. Instead, enormous blocks of graphite surrounded the fuel and were used to slow down the neutrons.

If something goes wrong in a reactor that is both water-cooled and water-moderated, the heat generated causes the water surrounding the fuel to boil and be converted into steam. While water is an excellent moderator for the neutrons, steam is not. When the slowdown of the neutrons decreases (because some or all of the water has turned to steam), the neutrons will no longer be able to continue the fission chain reaction, and the reactor will shut down. This is why most reactors inherently respond to prevent any disastrous increase in pressure and the potential consequences of that.

In the case of Chernobyl accident, the sudden increase in power did cause the cooling water to boil but, because it was not water-moderated, the graphite blocks continued to moderate the neutrons, allowing power to increase until it reached devastating consequences.

It is also noteworthy that just prior to this incident, operators were conducting tests in which they chose to disconnect certain safety circuits so the tests would not take as long. The lack of one of those safety circuits actually allowed power to increase rapidly.

The graphite blocks caught fire causing more heat and damage. The steam explosions and all the heat forced the reactor core cover off its mountings and caused a lot of the fission products in the reactor to be thrown out of the reactor building. And remember, at Chernobyl, the reactor was housed in a thin-metal-walled building and did not have a three-to-six-foot thick steel-reinforced concrete containment such as those used in the United States and countries other than Russia and in the former Soviet Union.

The number of deaths due to acute radiation syndrome (ARS) during the first year following the Chernobyl accident is well documented. According to the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR 2000),

ARS was diagnosed in 134 emergency workers. In many cases the ARS was complicated by extensive beta radiation skin burns and infection in the blood stream. In addition, 30 people, mostly workers fighting the graphite fire at the Chernobyl site, died of ARS caused by their [exposure](#) to a large amount of radiation from the open and unprotected reactor core. Two other people died due to other injuries sustained after the accident.

Subsequent to the Chernobyl accident, there were predictions of the large number of cancer deaths that would occur. Of particular concern were potential health effects of the unborn children of pregnant women who potentially had been exposed during the accident. Because of this concern and bad information these women were getting, over 2,500 unnecessary, elective abortions were performed in Greece alone. Similar observations were reported in Italy (an average increase of 30 to 60 abortions per day), West Germany, Denmark, and Norway. While there was the potential for an increase in thyroid cancers in children who were exposed before birth, very few would have died from the disease.

After the accident, about 4,000 cases of childhood thyroid cancer were diagnosed. Most of these are thought due to the  $^{131}\text{I}$  (iodine-131) released during the accident. It is also believed that up to 4,000 additional persons who were in the highest radiation [exposure](#) group may get cancer (that is in addition to the 100,000 cancers this population would be diagnosed with without additional radiation [exposure](#)). However, to date, there is no clear increase in the number of solid cancers or leukemia in the population receiving the highest [exposure](#).