

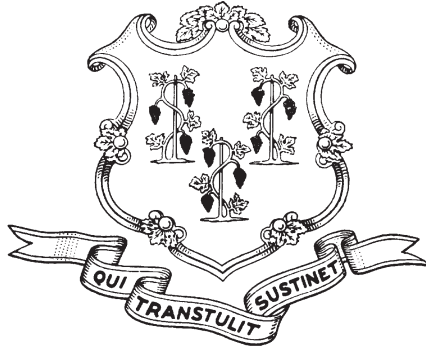
**Radiological Emergency
Information
For
Connecticut's Agricultural
Community**



Revised 2009

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The Honorable Governor,
State of Connecticut

Commissioner,
Department of Agriculture

Commissioner,
Department of Emergency Management
and Homeland Security

PURPOSE

The purpose of this booklet is to provide information to farmers, live-stock owners, fruit and vegetable growers, food processors and food distributors about protective actions that they may need to take if a radiological emergency occurs at a nuclear power plant within Connecticut or a neighboring state.

The State of Connecticut, working with Millstone Station and federal agencies, has developed emergency response plans to support and serve the farm and agricultural community in the event of a nuclear power plant emergency. This booklet also contains information on how you would be notified and what procedures you could be asked to follow.

For more information about state plans and emergency resources, please contact:

The Connecticut Department of Agriculture
165 Capitol Ave.
Hartford, Connecticut 06106
Telephone (860) 713-2500
FAX (860) 713-2514
www.ct.gov/doag

Related Web Site:
Connecticut Department of Emergency Management
& Homeland Security
www.ct.gov/demhs

WHAT IS A NUCLEAR POWER PLANT EMERGENCY?

A nuclear power plant emergency may involve an unplanned release of radioactivity into the atmosphere that has the potential to contaminate food, feed, and water supplies. While the expected level of contamination is small, compared to areas closer to the nuclear power plant, the contamination of food or water supplies may pose a health risk to the consuming public.

If you are a Connecticut farmer, livestock owner, fruit and vegetable grower, food processor, or food distributor and are within 50 miles of a Connecticut or neighboring state's nuclear power plant, actions may be required to protect the food or water supplies in the event of radioactive contamination.

State agencies will dispatch teams to collect samples and conduct tests to determine if contamination occurred. If food and water becomes contaminated, some protective actions will be necessary. Specific information and instructions to carry out these actions, if required, will be provided through EAS announcements and news releases from the Joint Media Center at the Hartford Armory.

HOW WOULD I BE INFORMED?

Emergency procedures are in place to provide you with information in the event an emergency occurred. The primary means of notification is through the Emergency Alert System (EAS).

THE EMERGENCY ALERT SYSTEM (EAS)

In the event of an emergency, public information will be relayed through the Emergency Alert System (EAS) by the State of Connecticut Department of Emergency Management & Homeland Security (DEMHS). Once activated, EAS allows local and state officials to interrupt radio and television programming with emergency

information. Public information can be obtained from the following EAS radio and TV stations, or by tuning to your local EAS station.

EAS STATIONS

The EAS has been established in cooperation with the Connecticut DEMHS and broadcasters in this state. The EAS allows local and state officials to interrupt radio and television programming with emergency information. Refer to the following EAS radio and TV stations:

Primary EAS Radio Stations

WTIC - 1080 AM, 96.5 FM (Hartford)

WDRC - 1360 AM, 102.9 FM (Hartford)

WCTY - 97.7 FM (Norwich)

Other EAS Radio Stations

WWRX - 107.7 FM

WBMW - 106.5 FM

WQGN - 105.5 FM

WIHS - 104.9 FM

WXLM - 102.3 FM

WKNL - 100.9 FM

WPLR - 99.1 FM

WNLC - 98.7 FM

WRKI - 95.1 FM

WPKT - 90.5 FM

WNPR - 89.1 FM

WLIS - 1420 AM

WICH - 1310 AM

WMRD - 1150 AM

WSUB - 980 AM

EAS TV Stations

WFSB - Channel 3

WTNH - Channel 8

WHPX - Channel 26

WVIT - Channel 30

WTIC - Channel 61

In the event of an emergency, you should tune in to your local EAS radio or TV station. State or local officials will provide specific instructions through the EAS.



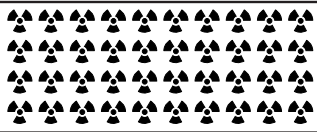

WHAT IS RADIATION?

Simply speaking, radiation is a form of **energy** that occurs naturally or is manmade. Natural radiation is found in the soil, and in buildings and is also produced by the sun. Manmade radiation sources are X-ray machines, television sets, and nuclear power stations.

Radiation is given off by radioactive materials, travels like light or radio waves and can penetrate like X-rays. Exposure to radiation above certain levels may have an adverse health effect on humans and animals.

The unit of measure, rem, is used to measure the amount of biological effect on the human body. Since one rem is such a large unit of radiation, generally smaller units of the rem are used. We call that smaller unit the millirem (abbreviated "mrem"). One millirem is one thousandth of a rem. When we refer to an amount of exposure, the term "dose" is used. Dose is the amount of exposure received in millirem.

Each year our bodies receive a total of about 360 millirem of radiation. Approximately two-thirds of that, 260 millirem, comes from natural sources such as air, water, plants, rocks, the sun, outer space with the greater part coming from radon gas in the home. The other 100 millirem comes from a variety of manmade sources, primarily medical exposures.

Chest X-ray	
Cosmic Radiation	
Smoking 2 packs of cigarettes a day	
Living next door to a nuclear power plant	

 = 10 millirem

WHAT IS CONTAMINATION?

Contamination is the accumulation of radioactive material in an area as it settles out of the atmosphere. The primary risk of contamination is ingesting the radioactive material into the body through breathing, eating, and drinking, or absorption through the skin. Once in the body, the material may create potential health problems.

Your concern, as a farmer or food producer, is the possibility of feed, water, livestock and produce becoming contaminated from contact with radioactive particles. Contamination may be passed from plants and animals via milk and other farm produce.

EFFECTS OF RADIOACTIVE DEPOSITS ON FOOD AND WATER SUPPLIES

Depending on the amount of radioactive material released into the atmosphere from a nuclear power plant accident, the duration of the release and the prevailing weather conditions, people, animals, crops, land and water near the site of the emergency could be affected. Of initial concern would be the condition of fresh milk from lactating animals grazing on pastures and drinking from open sources of water. Sampling for contamination can be performed at the farm or processing plant. If contamination of milk and processed milk products is found, state or government officials will determine whether to dispose of these products or to hold them until safe for consumption.

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

livestock and poultry. Pasture, feed, and water sources, as well as meat and poultry products, will be sampled and analyzed to ensure that the meat and poultry products are safe to eat.

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



EMERGENCY PLANNING ZONES

Federal requirements demand that pre-planning be accomplished for specific areas outside of the nuclear power plant. These specific areas are called **Emergency Planning Zones (EPZ)**. EPZs are defined as the areas for which planning is needed to assure that prompt and effective actions can be taken to protect the public in the event of an incident or emergency.

The Plume Exposure Pathway EPZ

This is the area generally within an approximate 10-mile radius around a commercial nuclear power plant where emergency planning is required and in place to deal with the potential of direct exposure to radiation.

The Ingestion Exposure Pathway EPZ

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

There are two areas in Connecticut that are located within Ingestion Exposure Pathway EPZs. One is located within the fifty mile Ingestion Exposure Pathway EPZ of the **Millstone Power Station** in Waterford, CT. A second is in Western Connecticut that includes towns within fifty miles of the **Indian Point Nuclear Power Station** located in Westchester County, New York. The Indian Point ingestion pathway zone affects less of the Connecticut population. (See EPZ map.)

The safety of the food supply within the 50-mile Ingestion Exposure Pathway EPZ could be a concern to members of the agricultural community if a radiological release to the atmosphere occurred. During such a release, both water and land could become contaminated. Eating contaminated foods and drinking contaminated milk and water could have a harmful, long-term effect on your health.

Federal, state, and local government emergency response organizations will notify and advise the agricultural community on what actions to take in the event of a radiological emergency.



INITIATING PROTECTIVE ACTIONS

There are two types of protective actions that help prevent or lessen the possibility of persons eating or drinking contaminated food or water. They are Precautionary Actions and Protective Actions. The decision to recommend either of these actions will be based on the emergency conditions at the power plant, available information on the amount of radiation that may be and/or has been released to the environment, meteorological considerations, etc.

Precautionary Actions

Precautionary Actions are measures taken, prior to confirmation of contamination, to prevent or minimize the potential contamination of food products. An example is placing dairy animals on stored feed and water.

Protective Actions

Protective Actions are measures taken to isolate or contain food and prevent its introduction into commerce and to determine whether further actions are appropriate. An example would be to restrict or withhold agriculture and dairy products from the marketplace by prohibiting transportation from the affected areas.



RECOMMENDED PRECAUTIONARY ACTIONS FOR FOOD SUPPLY PROTECTION PRIOR TO CONFIRMATION OF CONTAMINATION

The following is a summary of Precautionary actions to be taken prior to confirmation of contamination:

Keep Informed

Tune in to radio and TV EAS stations. If you need more information, contact the Connecticut Department of Agriculture, Commissioner's Office. (Address and phone number are on this booklet's inside covers.)

Plan in Advance

Develop a plan of action to implement the actions listed below, if instructed by the State of Connecticut:

Dairy Animals

Remove lactating animals from pasturage and provide them with shelter, protected water, and stored feed. Increase non-contaminated mineral calcium where possible.

Other Livestock and Pets

Remove from pasturage. Place on stored feed, water from protected sources, and provide shelter where possible. Increase non-contaminated mineral calcium where possible.

Feed Hay and Silage

Cover feed that is outdoors or bring feed inside a building immediately.

Water

Use protected water supplies, such as wells and covered cisterns.

Produce, Fruits and Vegetables

Thoroughly wash, peel outer layers and, in the case of leafy vegetables, remove outer layers. Do not sell until cleared by state or local officials.

RECOMMENDED PROTECTIVE ACTIONS WHEN CONTAMINATION IS FOUND

The following are examples of general protective actions that may be recommended **if a release of radioactive materials occurs and contamination of agricultural products is found** by appropriate state and local government officials:

- When you go outside, wear clothing that covers all portions of the body, similar to what you would wear when applying pesticides; for example, coveralls or long-sleeved shirt, long pants, boots, gloves, etc.
- Wear a respirator, protective mask, or place a folded (preferably dampened) cloth over your mouth and nose when working outside to prevent inhalation of radioactive materials.
- Remove outer clothing before going indoors.
- Wash hands thoroughly before preparing or eating food.
- Do not use raw or fresh milk from dairy animals, fresh garden vegetables, or eggs from within the Ingestion Exposure Pathway Emergency Planning Zone surrounding the nuclear plant until advised it is safe to do so by appropriate health officials.
- Do not engage in dust-producing activities such as cultivating, disking, baling, or harvesting.
- Do not process or distribute agricultural products until they have been sampled by appropriate government officials and found to be free of contamination.
- Do not transport or market food products from the Ingestion Exposure Pathway Emergency Planning Zone surrounding the nuclear plant until advised it is safe to do so by appropriate health officials. Follow advice of these officials when heard on Emergency Alert System (EAS) announcements regarding the area within the Ingestion Exposure Pathway.

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

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

Adhere to the following State and Federal guidelines for specific food & water sources:

STATE AND FEDERAL RECOMMENDED ACTIONS FOR FOOD / WATER SOURCES

The U.S. Department of Health and Human Services, Food and Drug Administration provides the following Protective Actions as guidance to government officials should contamination occur during a radiological accident:

For Dairy Animals

Remove dairy or lactating animals from pasture, shelter them if possible, and place them on stored feed and protected water.

For Milk

Withhold contaminated milk from the market, until cleared by state or local officials, to allow radioactive decay of short-lived radioactive materials. This may be achieved by freezing fresh milk, concentrated milk or concentrated milk products and storing these products for a prescribed length of time.

For Fruits and Vegetables

Wash, brush, scrub or peel fruits and vegetables to remove surface contamination. Wear waterproof gloves while handling contaminated produce.

Preserve by canning, freezing, dehydration, or storage to permit radioactive decay of short-lived radionuclides.

(Radioactive decay is a natural process whereby radioactivity becomes reduced over time. Some radioactive elements reduce to a harmless level in a relatively short time.)

For Meat and Meat Products

Livestock exposed to external contamination could be used for food if they are adequately washed and monitored by state officials before slaughtering. Animals can be washed down using soap and water. In handling animals, you should wear protective clothing to prevent contaminating yourself. Meat animals with internal contamination should not be slaughtered until you are told by State authorities that it is safe to do so. Instructions would be given on a case-by-case basis.

For Animal Feeds

Actions relative to animal feeds, other than pasture, should be carried out on a case-by-case basis. Increase non-contaminated mineral calcium to a maximum.

For Poultry and Poultry Products

Poultry raised outdoors, especially those kept for egg production, will be monitored by state or local officials taking samples and performing laboratory tests to determine the presence of radioactive contamination. If contamination is found, state or local officials may advise that poultry and eggs should not be eaten.

For Fish & Shellfish

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

For Water Supplies

Open sources of water, such as rain barrels and tanks, should be protected or covered to prevent contamination. Covered wells and other covered or underground sources of water probably will not become contaminated. Radiation contaminants deposited on the ground will travel very slowly unless soils are sandy. It is unlikely that underground water supplies will be affected.

Filler pipes should be disconnected from storage containers that are supplied by runoff from roofs or other surface drain fields. This will prevent contaminants from entering the storage containers.

Close water intake valves from any contaminated water sources to prevent distribution (e.g. irrigation) of contaminated water.

For Honey

Honey and bee-hives will need to be sampled and analyzed by appropriate state or local officials if radioactive contamination is detected in the area. You will be instructed by these officials on how to handle the hives and honey.

For Grains

If grains are permitted to grow to maturity, most contamination will probably be removed by the wind and rain. The process of milling and polishing will probably remove any remaining contamination. Sampling and laboratory analysis will determine if the grain is safe to eat.

For Soils

If State or local government officials find that the soil is contaminated, proper soil management procedures can be implemented to reduce contamination to safe levels. Idling, the non-use of the land for a specific period of time, may be necessary in some cases. However, in situations involving highly contaminated soil, removal and disposal of the soil may be more appropriate. State officials will let you know what actions are appropriate.

For Other Food Products

Other food products not covered in this discussion will need to be sampled and analyzed by appropriate state or local officials if radioactive contamination is detected in the area. You will be instructed by these officials on how to handle these food products.

POST-EMERGENCY ACTIONS

The following sections describe post-emergency actions possible if contamination is verified.

Restricted Zone(s)

Designation of an area, or areas, from which the population is evacuated or relocated and to which access is controlled.

Re-entry

Re-entry is the temporary entry, under controlled conditions, into a restricted, contaminated area. If you have been evacuated from your area, you may be allowed to return temporarily to your farm when conditions permit. State or local officials will advise you through EAS broadcasts, or other official means, if a decision to permit re-entry is made. You will receive specific instructions on routes to use and safety precautions to take. Re-entry will allow you to perform such vital activities as milking, watering, and feeding farm animals.

Relocation

The non-emergency removal of populations from areas that are to be restricted due to projected exposures from deposited radioactive materials that exceed protective action guidelines.

Return

The orderly reoccupation of areas that were evacuated during the emergency phase of an accident or from which populations were relocated during the post-emergency phase.

Recovery

Recovery is the process of reducing radiation in the environment to acceptable levels for normal daily living. Following the emergency, state and local government officials will identify the types and levels of contamination. They may need to take samples of air, water, soil, crops, and animal products from your farm or business. They will provide you with instructions and assist you in decontaminating your animals, food and property, if such actions are necessary.

Temporary Embargoes

Following a radiological emergency, and in some cases during an emergency, state or local officials may restrict the movement of food products and withhold them from the marketplace if they are found to be contaminated. These products should not be released until they are safe for consumption, or until a decision is made to dispose of them. You will be instructed how to safely handle and dispose of contaminated food products and how to decontaminate your animals, food, and property, if such actions are necessary. Contaminated food will be isolated (temporary embargoes) to prevent its introduction into the market-place. State and local government officials will determine whether condemnation and disposal are appropriate.

Condemnation

The designation of agricultural products as unfit for consumption, as determined by State or local government officials.

Reimbursement

The repayment for economic losses caused as the result of an accident at a nuclear power plant. Federal legislation requires nuclear power plants to participate in an insurance pool to cover legitimate claims for losses incurred as the result of a radiological emergency.

SUMMARY

If a radiological emergency occurs, the Departments of Agriculture, Public Health, Consumer Protection and Environmental Protection will determine what areas within Connecticut may be affected. These departments will provide Field Sampling Teams to take milk, water, and food samples to determine if there are any radiological concerns in your area.

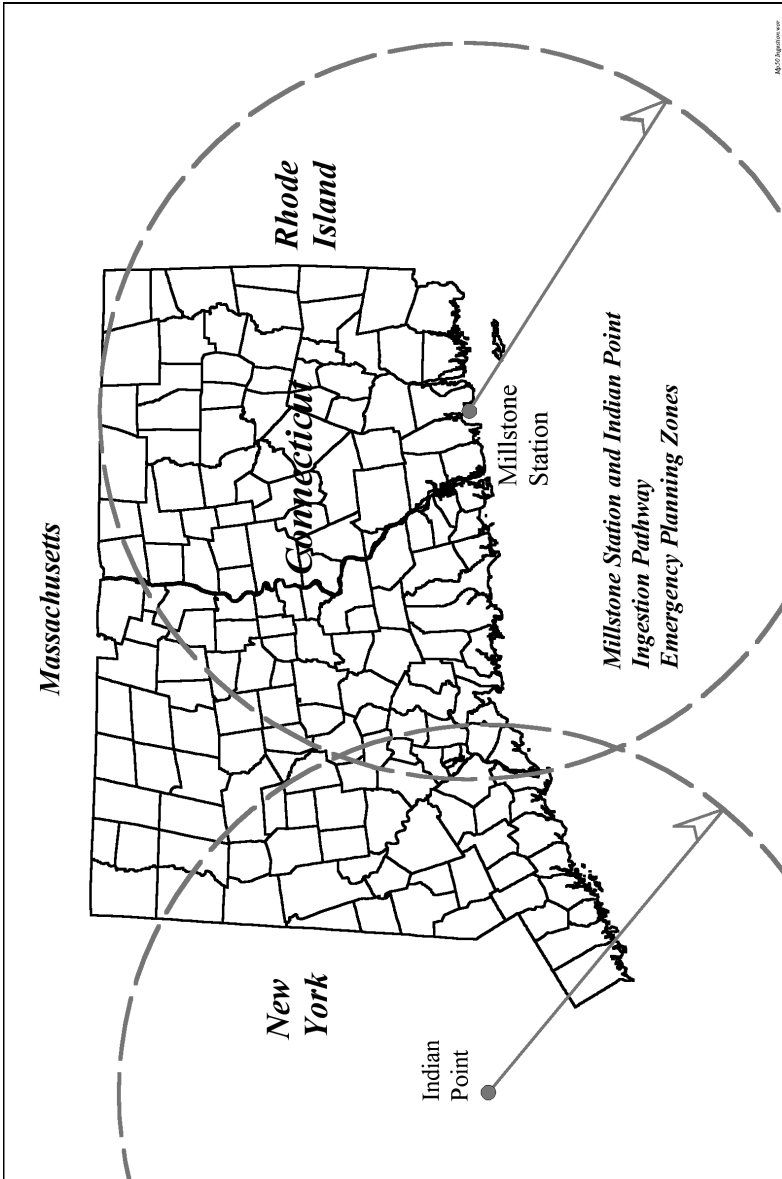
Therefore, be prepared to follow the guidelines for protecting and caring for your livestock, giving lactating dairy animals your first priority by sheltering them, and using feed and water from protected sources. There is no need to automatically destroy milk or other farm produce you feel may be contaminated. State agencies will test milk, fruit and produce for contamination levels. The result of these tests will be used to advise you on the status of your produce or milk.

Protect yourself, your family, and your employees from unnecessary exposure. Avoid needless handling of contaminated produce. Leave plants and crops in the ground until advised by State or local officials. If you are directed to destroy milk or produce, you will be given specific instructions on how and where this is to be done.

Keep records of any losses or expenses you may incur.



INGESTION PATHWAY EMERGENCY PLANNING ZONES FOR CONNECTICUT (50 MILE)



CONNECTICUT CITIES / TOWNS IN THE MILLSTONE STATION INGESTION PATHWAY EPZ

Andover	E. Lyme	Middlefield	Simsbury
Ansonia	E. Windsor	Middletown	Somers
Ashford	Eastford	Milford	S. Windsor
Avon	Ellington	Montville	Southington
Beacon Falls	Enfield	Naugatuck	Sprague
Berlin	Essex	New Britain	Stafford
Bethany	Farmington	New Haven	Sterling
Bloomfield	Franklin	New London	Stonington
Bolton	Glastonbury	Newington	Stratford
Bozrah	Griswold	N. Branford	Suffield
Branford	Groton City	North Haven	Thompson
Bristol	Groton Town	N. Stonington	Tolland
Brooklyn	Guilford	Norwich	Union
Burlington	Haddam	Old Lyme	Vernon
Canterbury	Hamden	Old Saybrook	Voluntown
Chaplin	Hampton	Orange	Wallingford
Cheshire	Hartford	Oxford	Waterbury
Chester	Hebron	Plainfield	Waterford
Clinton	Killingly	Plainville	W. Hartford
Colchester	Killingworth	Plymouth	W. Haven
Columbia	Lebanon	Pomfret	Westbrook
Coventry	Ledyard	Portland	Wethersfield
Cromwell	Lisbon	Preston	Willington
Deep River	Lyme	Prospect	Windham
Derby	Madison	Putnam	Windsor
Durham	Manchester	Rocky Hill	Windsor Locks
E. Haddam	Mansfield	Salem	Wolcott
E. Hampton	Marlborough	Scotland	Woodbridge
E. Hartford	Meriden	Seymour	Woodstock
E. Haven	Middlebury	Shelton	

CONNECTICUT CITIES / TOWNS IN THE INDIAN POINT INGESTION PATHWAY EPZ

Ansonia	Goshen	New Milford	Stamford
Beacon Falls	Fairfield	Newtown	Stratford
Bethany	Greenwich	Norwalk	Trumbull
Bethel	Kent	Orange	Warren
Bethlehem	Litchfield	Oxford	Washington
Bridgeport	Middlebury	Redding	Waterbury
Bridgewater	Milford	Ridgefield	Watertown
Brookfield	Monroe	Roxbury	Weston
Cornwall	Morris	Seymour	Westport
Danbury	Naugatuck	Sharon	Wilton
Darien	New Canaan	Shelton	Woodbridge
Derby	New Fairfield	Sherman	Woodbury
Easton	New Haven	Southbury	

For Your Notes and Additional Phone Numbers, etc.

For Your Notes and Additional Phone Numbers, etc.