



# Safety Planning Information for Neighbors of Millstone Power Station



PARA OBTENER LA VERSION ESPANOLA DE ESTA GUIA O LA ADJUNTA ENCUESTA PARA NECESIDADES ESPECIALES, llame (800) 397-8876, o contacte su Oficina de Manejo de Emergencias local.

**Message from the Connecticut Department of Emergency Services and Public Protection (DESPP) Division of Emergency Management & Homeland Security (DEMHS)**

This booklet is Connecticut's nuclear power plant emergency preparedness guide for the general public. It contains information about nuclear power plants and specific emergency planning information for Millstone Power Station owned by Dominion Energy Nuclear Connecticut, Inc., located in Waterford. This guide is produced in coordination with DESPP/DEMHS's Radiological Emergency Preparedness Unit and Dominion Energy.

DEMHS works closely with Dominion Energy to ensure that the public is aware of what they should do in the unlikely event of an emergency at Millstone Power Station. This information is available to the public in a variety of areas:

- This booklet is updated annually and mailed to all households and businesses in the communities located within the 10 mile area around Millstone Power Station.
- For residents of Fishers Island, New York the Fishers Island Utility Company provides emergency guidance at [fiuc.net/emergency/](http://fiuc.net/emergency/). Pages 1 through 3 of the Fishers Island phone book also contain emergency information.
- Emergency information is posted annually at public venues such as: state parks, boat launches, beaches, forests, campgrounds, hotels, motels, inns, marinas, museums, and other attractions.
- Specialized emergency planning guidance is available for the agricultural community.

Please visit [www.ct.gov/demhs](http://www.ct.gov/demhs) for additional information regarding our radiological emergency preparedness program. Other useful references can be found on page 32 of this booklet. We encourage you to place this and other disaster planning information in a convenient location.

Please feel free to contact our office if you have any questions or would like to request any of our publications. Connecticut's Radiological Emergency Preparedness Unit can be reached by calling 860-256-0800, or 1-800-397-8876.

## Readiness Preparation Checklist

Use this checklist to prepare for an emergency situation:

- Individuals with functional needs that affect your ability to evacuate should complete and return the confidential registration form. This form is mailed to residents within the 10 mile preparedness zone around Millstone every year. You may also contact your community's Emergency Management office to let them know of your needs (see page 31 for local offices).
- Review this booklet carefully and keep it handy.
- Make sure everyone in your household knows what to do in an emergency, especially children.
- Keep important papers in a safe and handy place.
- Make sure your vehicle is ready to use, have an extra set of car keys and keep emergency supplies in your vehicle:
  - Flashlight and batteries
  - First aid kit
  - Safety flares
  - Fire extinguisher
  - Road maps
- Develop an emergency supply kit, including:
  - A three-day supply of water (1 gallon/person per day).
  - Battery-powered radio, extra batteries, cell phone, charging cords.
  - Food for at least 3 days – canned/sealed packaged foods and juices that do not require refrigeration or cooking. Foods for infants and elderly.
  - Non-electric can opener, cooking tools and fuel, paper plates and plastic utensils.
  - Toiletries.
  - Blanket/sleeping bag, pillows for each member of the family, a change of season-appropriate clothing.
  - Prescription and non-prescription medications your family needs.
  - Baby and children's items (diapers, toys, and books).
- Develop a plan for your pets before there is an emergency. See page 13 for a sample pet emergency supply kit.

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## What Happens During A Nuclear Power Plant Emergency?

A nuclear power plant emergency could result in the release of radioactive material. Normally, this radioactive material is contained within the plant by a number of protective barriers and systems. In the unlikely event that protective barriers or systems fail to work properly, radioactive material in the form of gases or small particles could escape from the plant into the air. This could result in the public being exposed to radioactive contamination and receiving a dose of radiation.

## How Will You Know That An Emergency Exists?

Local or state officials will alert the public if an emergency exists at Millstone Power Station. They may use several methods to alert and notify including: CT Alert (automated telephone calls or texts), social media, news media, the Emergency Alert System (EAS) on radio and televisions, and emergency sirens.

Emergency sirens are an outdoor warning system that are located throughout the approximate 10-mile Emergency Planning Zone (EPZ). See the map on page 7.

**Sirens are not a signal to evacuate.** They are a signal to turn on your radio or television and tune into an Emergency Alert System (EAS) station near you. (See “The Emergency Alert System (EAS)” on page 5 for a listing of EAS stations.)

**A steady tone for three minutes (that may be repeated) signals a nuclear plant emergency.**

These sirens are maintained and routinely tested throughout the year by Millstone Power Station. Many communities also routinely test their sirens and use them as part of their own fire and disaster warning systems. In the event that a siren fails to activate, procedures call for “back-up route alerting.” Route alerting means that local first responders will go street by street, using emergency vehicles and public address loudspeakers to warn the public.

The US Coast Guard will broadcast waterway advisories for the EPZ via VHF marine radio. For waterway questions, contact USCG Sector Long Island Sound by phone 800-774-8724/203-468-4401 or via VHF radio channel 16.

## What Should You Do In a Nuclear Power Plant Emergency?



Stay calm, and remember that a nuclear power plant emergency would most likely take hours to develop into a situation that could affect public health and safety. You will be kept informed by local and state officials throughout the emergency.

You may be instructed to:

- MONITOR AND PREPARE to follow instructions from public officials.
- Ingest your potassium iodide (KI) tablets.
- Stay indoors and take shelter.
- Evacuate to a reception center (see page 11).

Other things you should do in any emergency:

Monitor the news and social media for updates and guidance.

Check with your neighbors to make sure they are aware of the emergency.

Do not use the telephone unless it is absolutely necessary. Telephone lines are needed by local officials to respond to the emergency. (Consider a short text message instead of a call.)

Please do not call local authorities unless you need special assistance.

### The Emergency Alert System (EAS)

The EAS allows local and state officials to interrupt radio and television programming with emergency information and instructions. In the event of an emergency, you should tune in to your local EAS radio or TV station.

#### Primary EAS Radio Stations

WTIC – 1080 AM & 96.5 FM (Hartford)

WDRG – 1360 AM & 102.9 FM (Hartford)

WCTY – 97.7 FM (Norwich)

## Other EAS Radio Stations

WXLM—980 AM  
WLIS—1420 AM  
WNLC—98.7 FM  
WIHS—104.9 FM  
WWRX—107.7 FM

WMRD—1150 AM  
WNPR— 89.1 FM  
WKNL—100.9 FM  
WQGN—105.5 FM

WICH—1310 AM  
WPKT—90.5 FM  
WMOS—102.3 FM  
WBMW—106.5 FM

## EAS TV Stations

WFSB – Channel 3  
WVIT – Channel 30

WTNH – Channel 8  
WTIC – Channel 61

WHPX – Channel 26

## Additional Sources of Emergency Information



CT Alert is used by local and state public safety officials to notify the public of emergencies. The system uses the 911 database of landline phone numbers to send an automated message. If you want the system to send alerts to other communication devices that you use, go to [www.ct.gov/ctaalert](http://www.ct.gov/ctaalert). You can add mobile phones, Voice Over

Internet Protocol (VOIP) landlines, e-mail, and text messaging.

### Register today!

**2-1-1 Infoline** - During times of emergency or disaster the United Way of Connecticut's 2-1-1 informational service serves as the State information hotline. The hotline is accessed toll-free from anywhere in Connecticut by simply dialing 2-1-1. It operates 24 hours a day, 365 days a year. Multilingual call specialists and TDD access are available.

Individuals with Voice Over Internet Protocol (VOIP) services can access 2-1-1 by dialing 1-800-203-1234. Rotary phone users should dial 1-800-505-2000 for assistance. Our website link is <https://www.211ct.org>



**Connecticut Network**

Your State. Your Government. Your Network.

### Connecticut Network (CT-N) -

During times of emergency or disaster Connecticut Network (CT-N) will provide emergency public information directly from the State Emergency Operations Center.

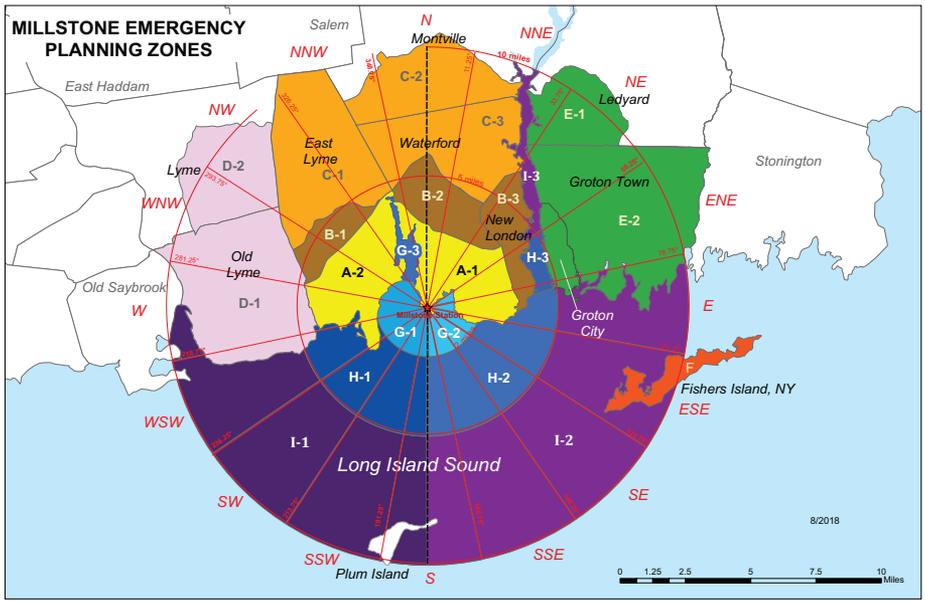
Emergency information can be broadcast over CT-N 24 hours a day, seven days per week without interruption.

Most cable systems offer CT-N on their expanded basic lineups. To find out your community's CT-N channel, go to:

[www.ctn.state.ct.us/ctn\\_tv.asp](http://www.ctn.state.ct.us/ctn_tv.asp)  
or call 860-240-1400 or 860-240-0365.

## Millstone Station Emergency Planning Zones

Approximately 10 Miles (See pages 16-17 for larger map.)



## Shelter in Place

Shelter in place may be recommended during a nuclear power station event. Shelter in place means going indoors and remaining indoors until the emergency is over. Such action will reduce an individual's exposure to radiation resulting from a radioactive release of short duration.

Use this checklist if you are directed to shelter in place:

- If driving, close windows/vents and turn off air conditioner or heater.
- Go home or to a public building.
- Keep family and pets indoors.
- Close all windows and doors.
- If possible, turn off all devices that draw outside air.
- Extinguish stove/fireplace fires and close flues when possible.
- Avoid using telephones, including cell phones, to prevent overloading the system and interfering with emergency use.
- Remain indoors until officially notified that the emergency is over.
- Do not evacuate unless told to do so.
- Continue to monitor your local Emergency Alert System (EAS) radio/TV station (see "The Emergency Alert System" on page 5).

If you must go outside, covering your mouth and nose with a cloth (e.g., folded handkerchief or towel) may help prevent breathing in radioactive particles. Move quickly and limit outdoor exposure time to as little as possible.

Food already in your home is safe to eat, although food grown locally may have to be tested by state monitors before it is consumed.

Children in schools will be cared for through the school's emergency procedures. Become familiar with these procedures and follow them.

When you go inside, remove the outer layer of your clothing. If radioactive material is on your clothes, getting it away from you will reduce the external contamination and decrease the risk of internal contamination. It will also reduce the length of time that you are exposed to radiation. If possible, place the clothing in a plastic bag or leave it in an out-of-the-way area, such as the corner of a room. Keep people away from it to reduce their exposure to radiation. Wash all of the exposed parts of your body using lots of soap and lukewarm water to remove contamination. This process is called decontamination. Try to avoid spreading contamination to parts of the body that may not be contaminated, such as areas that were clothed. If you can, you should also cover your mouth with a mask, cloth, or towel when you are decontaminating other people (such as children) or pets. You may use scissors to carefully cut away clothing so that you avoid contaminating other parts of your body (as with pulling a t-shirt over your head).

## Evacuation

Use this checklist to prepare to evacuate if/when directed:

- Gather together those household members who are present.
- Pack the following items, as necessary:
  - Clothing, money, credit cards, checkbook
  - Prescription medicine or special medical equipment
  - Potassium Iodide (KI) tablets
  - Blankets, pillows, soap, towels, toiletries
  - Diapers, bottles, milk/baby formula, toys
  - Identification and important personal papers
  - Portable radio, flashlight, batteries
- Close and lock all windows and doors.
- Turn off devices that draw outside air.
- Turn off lights and electrical appliances (except refrigerator and freezer).
- Continue to listen to a local Emergency Alert System (EAS) radio station in your vehicle.
- Leave food and water for pets, or have alternate plans for their care. Reception Centers and some shelters may have provisions for your pets, but the best thing to do is plan ahead for their care. See page 13 for more information on planning for your pets.
- Check with your neighbors to see if they need a ride and carpool with them, if possible.
- Go to your assigned evacuation reception center (see page 11). Follow evacuation routes described in pages 16 - 17 of this book or as directed by news advisories.
- If you are on the waterways, you may not be allowed to return to your original point of departure. Follow the guidance of the US Coast Guard, harbor master and local Emergency Management officials. You may be directed to another port where transportation can be made available to reception centers.

## Evacuation Reception Centers

### For Communities Located Within 10 Miles of Millstone Power Station

Town	Host Community	Reception Center
East Lyme	New Haven	Southern Connecticut State University Moore Field House, 125 Wintergreen Ave. New Haven, CT 06515
Groton City & Groton Town	Norwich	Norwich Technical High School 7 Mahan Drive Norwich, CT 06360
Ledyard	UCONN/Storrs	UCONN Field House 2111 Hillside Road Storrs, CT 06269
Lyme & Old Lyme	New Haven	Southern Connecticut State University Moore Field House 125 Wintergreen Ave. New Haven, CT 06515
Montville	East Hartford	East Hartford High School 869 Forbes Street East Hartford, CT 06118
New London	Windham	Windham High School 355 High Street Willimantic, CT 06226
Waterford	East Hartford	East Hartford High School 869 Forbes Street East Hartford, CT 06118
Fishers Island, NY	Windham	Windham High School 355 High Street Willimantic, CT 06226

Only a portion of Ledyard, Lyme and Montville are located in the 10-mile emergency planning zone. The areas within the EPZ are:

- (1) Ledyard EPZ – All areas south of Hurlbutt Road, Whalehead Road and Sandy Hollow Road to Route 117.
- (2) Lyme EPZ – All areas east of Route 156 and south of Beaver Brook Road.
- (3) Montville EPZ – All areas south of Grassy Hill Road, Chesterfield Road, Route 163 and Depot Road to Waterford and East Lyme town lines including those areas between Glendale Road and Chapel Hill Road in Oakdale Heights.



## What If Your Children Are In School Or Child Care?



Each school and licensed child care facility within the 10 mile emergency planning zone around Millstone Power Station is required to have plans in place to provide for the safety of the children in their care. These plans are developed in conjunction with local emergency management officials and are reviewed by state and federal officials.

Depending on the circumstances of the emergency, schools may enact their early dismissal procedures, shelter in place, or conduct precautionary transfers to another school or a reception center. Each school year, parents and children should become familiar with the school's emergency plans and procedures.

If your child has special needs, make sure they have a go-kit with them at all times with medications, or other things they may need in an emergency.

**Before an emergency occurs become familiar with your school or child care provider's emergency plans. Make sure you provide them with your up-to-date emergency contact information and make a family plan.**

## What About Pets?



Long before an emergency occurs, individuals should consider what they would do with their pets should they need to evacuate. You should never hesitate to evacuate your home if directed because you have to leave your pets. Identify places that would accept pets in an emergency, such as boarding kennels, or with friends or family outside the affected area.

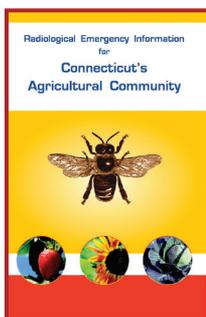
There are plans in place to have provisions for receiving pets at reception centers. Many local community shelters are now pet friendly in Connecticut. Consider having your pet micro-chipped for easier identification in the event that you become separated.

Have a pet disaster/evacuation kit ready. The kit should include: food, water and medicine for three days, pet carrier, litter box and litter, ID tags attached to your pet, leashes. Also think about including medical and veterinary records, toys, blanket or bed, and current photos.

**Do NOT** give your KI to your pets. The KI supplied is not labeled for use in pets. Using KI for your pets should only be done under the guidance of your veterinarian. KI can harm your pet if not dosed correctly.

***For more information on disaster preparedness for your pets or livestock, visit FEMA's web site <http://www.ready.gov/animals>, also see the Connecticut State Animal Response Team web site [http://ctsart.org/who\\_we\\_help/](http://ctsart.org/who_we_help/)***

## Information For The Agricultural Community



If you have livestock or agricultural products, please call 1-800-397-8876 for a copy of the brochure "Radiological Emergency Information for Connecticut's Agricultural Community."

## How Will You Know The Emergency Has Ended?

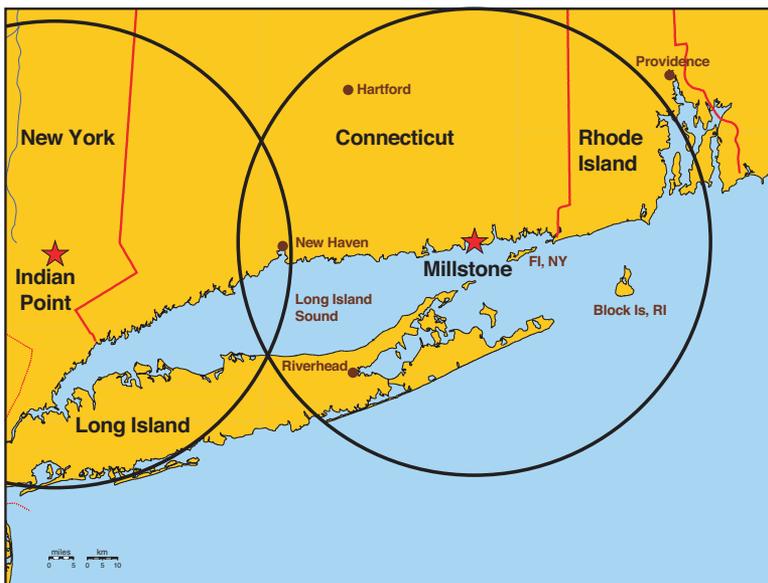
Federal, state, local and Millstone Power Station officials will work closely together for the duration of the event. If radiation is released, state and federal officials will use monitored radiation levels to determine when it is safe to return home. Public officials will inform you of this information.

## Planning Beyond 10 Miles of Millstone Power Station

If an accident were to occur at Millstone, the area within 50 miles of the station would be assessed to determine if there has been any impact on the environment. If there is any impact, the public in the affected area would be notified. If any actions are necessary, the public would be informed of the actions to be taken.

NOTE: A portion of Connecticut also falls within 50 miles of Indian Point Power Station in Buchanan, New York. The Connecticut Radiological Emergency Response Plan (RERP) has procedures in place for emergencies that extend beyond 10 miles for both Millstone and Indian Point. This includes assessing food and drinking water for contamination and determining the need for additional public protective actions.

### 50-Mile Zones



# Emergency Planning Zone Evacuation R

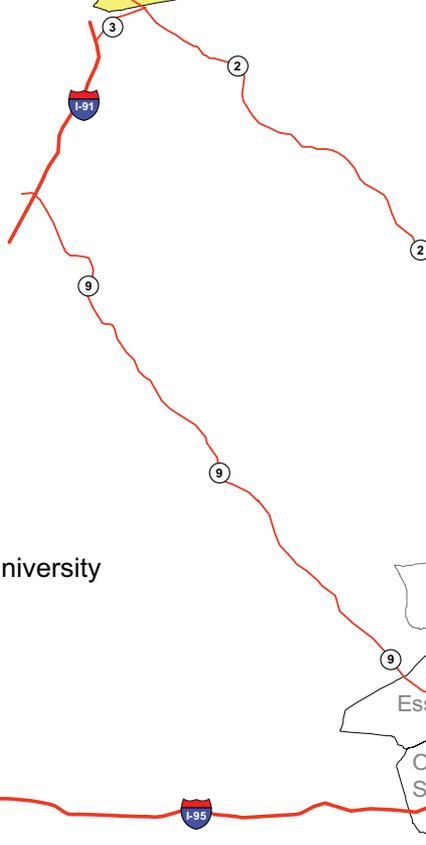
See next page for driving directions

East Hartford High School  
869 Forbes Street  
East Hartford, CT 06118

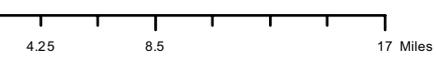
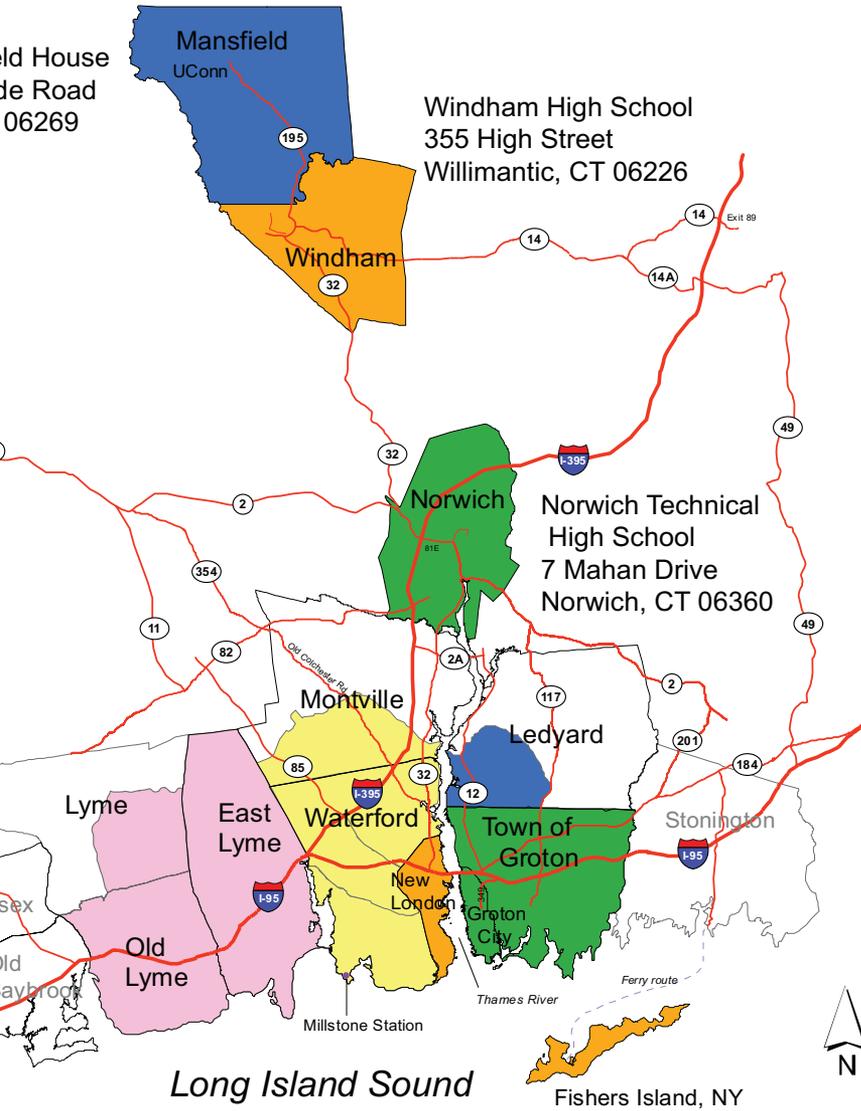


UConn Fie  
2111 Hillside  
Storrs, CT

Southern Connecticut State University  
Moore Field House  
125 Wintergreen Ave.  
New Haven, CT 06515



# outes



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## **Emergency Planning Zone Evacuation Route Directions:**

### **Waterford to East Hartford**

Route 85 North to Route 82 West to Route 11 North to Route 2 West to exit 5A (Main St.) Right at light onto Brewer St. to intersection with Forbes St. Left onto Forbes St. to East Hartford High School.

OR

Old Colchester Road to Route 354 to Route 2 West to exit 5A (Main St.). Then same as above to East Hartford HS.

OR

Interstate 395 North to Route 2 West to Exit 5A (Main St.). Then same as above to East Hartford HS.

OR

Interstate 95 South to Route 9 North to 1-91 North to Exit 25-26 (Route 3 North). Take Exit 25, cross over Putnam Bridge to Route 2 West to Exit 5A (Main St.). Then same as above to East Hartford HS.

### **East Lyme, Lyme & Old Lyme to New Haven**

Interstate 95 South to Exit 44 to Route 10 North (Ella Grasso Blvd.). Continue on Ella Grasso Blvd. to left on Crescent, Right on Fitch, and Left on Wintergreen to Connecticut State U Moore Field House.

### **Montville to East Hartford**

Old Colchester Road to Route 354 to Route 2 West to exit 5A (Main St.). Take a right at the light onto Brewer St. to intersection with Forbes St. Turn left onto Forbes St. to East Hartford H.S.

OR

Rte. 85 North to Route 82 West to Route 11 North to Route 2 West to Exit 5A (Main St.). Then same as above to East Hartford HS.

OR

Interstate 395 North to Route 2 West to Exit 5A (Main St.). Then same as above to East Hartford HS.

### **New London to Windham**

Route 32 N to Frog Bridge, Route 66. Right, over bridge, stay straight on Jackson St. to left on Valley St. Turn right onto High St. uphill to Windham High School.

### **Ledyard to Storrs**

Route 12 North to Route 2A West to 1-395 N to Exit 32, (was exit 89). Take Route 14 West to 203 N to Route 14 W to Route 195 N to UCONN field house.

### **Groton City & Groton Town to Norwich**

Route 12 North to Route 2A West to Interstate 395 N to Exit 13A (was 81E). Take Route 2E to 169 North (Harland Rd.) Right on Ox Hill Rd., turn right before Mahan Drive into Norwich Technical High School.

OR

Route 349 North (CB Sharp Hwy) to I-95 N to Route 117 North to Route 2 West to Route 169 North (Harland Rd.). Right on Ox Hill Rd. Turn right before Mahan Drive into Norwich Technical High School.

OR

Route 184 East to Route 201 North to Route 2 West to Route 169 North (Harland Rd.). Right on Ox Hill Rd., turn right before Mahan Drive into Norwich Technical High School.

### **Please Note:**

Lyme EPZ

All areas East of Route 156 and South of Beaver Brook Rd.

Montville EPZ

All areas south of Grassy Hill Rd., Chesterfield Rd., Route 163 and Depot Rd. to the Waterford and East Lyme town lines including those areas between Glendale Rd. and Chapel Hill Rd. in Oakdale Heights.

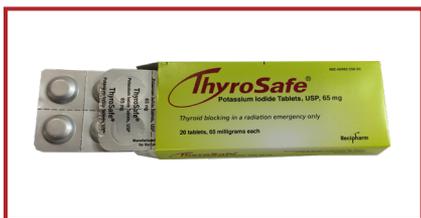
Ledyard EPZ

All areas South of Hurlbutt Rd., Whalehead Rd. and Sandy Hollow Rd. to Route 117.

Fishers Island to Windham

To New London or Stonington Harbor. State provided bus transportation to Windham High School.

## What Is KI?



Potassium Iodide, also known as KI, is an over-the-counter salt tablet that can protect your thyroid gland when there is a chance you might be exposed to a harmful amount of radioactive iodine. Taking KI saturates the thyroid with non-radioactive iodine and prevents

radioactive iodine from being absorbed. Radioactive iodine can harm your thyroid gland and can increase your risk of developing thyroid cancer years after exposure. For most individuals, taking KI is safe; however, adverse reactions are possible in persons having existing thyroid conditions and those with an allergy to iodine. Consult your physician if you have concerns about the safety of KI.

Not every radiation emergency will result in the release of radioactive iodine. KI is a supplement to the primary protective actions of evacuation and/or sheltering and should only be taken upon direction of state health officials. KI does NOT protect against other radioactive materials that might be released during a nuclear power station emergency.

Dosing instructions are available in the ThyroSafe package.

RECOMMENDED DOSAGE FOR POTASSIUM IODIDE		
Age Group	KI Dosage	Number of 65 mg Tablets
Adults and Adolescents* (Over 150 lbs.)	130 mg	2 Tablets 
Children 3-18 yrs.** (Under 150 lbs.)	65 mg	1 Tablet 
Infants to Toddlers 1 month – 3 years**	32 mg	1/2 Tablet 
Infants Birth – 1 month**	16 mg	1/4 Tablet 

A dose of KI may be and crushed to form a powder.

Powdered KI may be mixed with milk, water, formula or soft foods.

\*Individuals 12 to 18 years and over 150 lbs. should take the adult dose of 130 mg (two – 65 mg tablets).

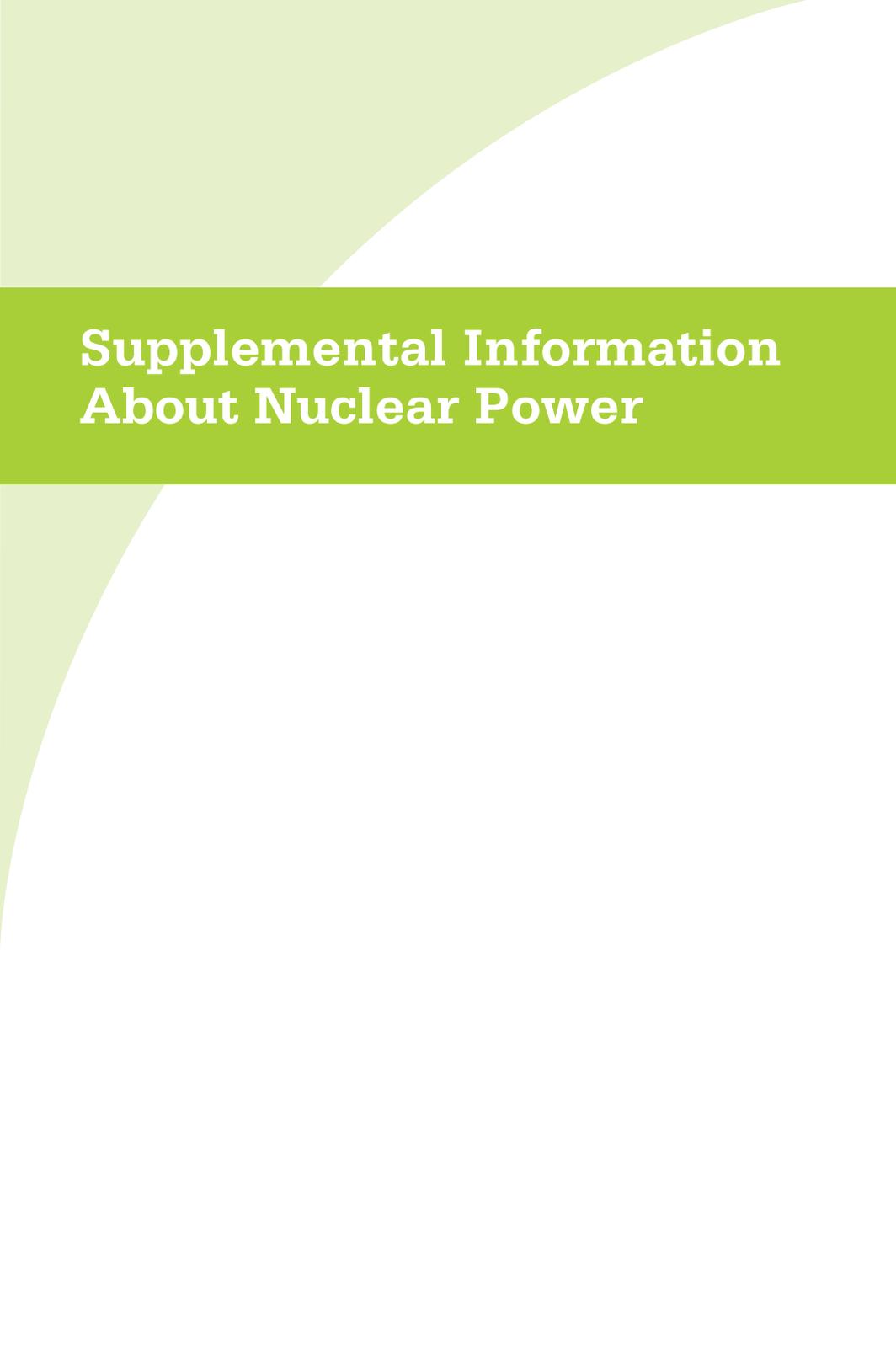
\*\*Breast feeding women receive the adult dose and their breast fed child is dosed separately.

**Please note: During an emergency, KI will only be available at your designated reception center (see page 11).**

People who live and work within a ten-mile area around Millstone Power Station can obtain KI at any time (except during emergencies) at the following locations:

<b>East Lyme</b>	<b>Town Hall</b> 108 Pennsylvania Ave.	Monday – Friday 8:00 a.m. – 4:00 p.m.	(860) 739-6931 Ext. 1135
<b>Groton City</b>	<b>Groton Municipal Building</b> City Clerk’s Office 295 Meridian St.	Monday – Friday 9:00 a.m. – 4:00 p.m.	(860) 446-4102
<b>Groton Town</b>	<b>Town Hall</b> Town Clerk’s Office 45 Fort Hill Rd.  <b>Groton Town PD,</b> 68 Groton Long Point Rd.	Monday – Friday 8:30 a.m. – 4:30 p.m.  Police Department is open 24 hours a day	Dispatch Center: (860) 445-2000 Town Clerk: 860-441-6640
<b>Ledyard</b>	<b>Ledyard Regional VNA</b> 741 Colonel Ledyard Hwy.  <b>Ledyard Senior Center</b> 12 Van Tassell Dr. (Gales Ferry)  <b>Ledyard Police Dept.</b> 737 Colonel Ledyard Hwy.	Monday – Friday 8:00 a.m. – 4:00 p.m.  Monday – Friday 8:30 a.m. – 2:30 p.m.  Police Department is open 24 hours a day	(860) 464-8464  (860) 464-0471 or (860) 464-0478  (860) 464-6400
<b>Lyme</b>	<b>Town Hall</b> Town Clerk’s Office 480 Hamburg Road (Route 156)	Monday – Friday 9:00 a.m. – 4:00 p.m.	(860) 434-7733
<b>Montville</b>	<b>Town Hall</b> Office of the Fire Marshal and Emergency Management Office 310 Norwich - New London Tpke.	Monday – Friday 8:00 a.m. – 4:30 p.m.	(860) 848-1417
<b>New London</b>	<b>Fire Headquarters</b> 289 Bank St.  <b>North Station Fire Dept.</b> 240 Broad St.  <b>South Station Fire Dept.</b> 25 Lower Blvd.	Daily 7:30 a.m. – 7:30 p.m. at all locations	(860) 440-6671 or (860) 447-5291 (860) 437-6340  (860) 437-6341
<b>Old Lyme</b>	<b>Town Hall</b> 52 Lyme Street	Monday – Friday 9:00 a.m. – 4 p.m.	(860) 434-1605 Ext. 212
<b>Waterford</b>	<b>Waterford Police Dept.</b> 41 Avery Lane  <b>Town Hall</b> 15 Rope Ferry Rd	Sunday – Monday 8:00 a.m. - 8:00 p.m.  Monday – Friday 8:00 a.m. – 4 p.m.	(860) 442-9451  (860) 442-0553 or (860) 442-9585

\*In case of emergency, KI will be available at the Fishers Island Fire Department – 250 Athol Crescent Ave.

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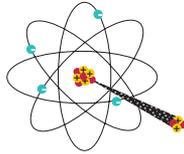
# **Supplemental Information About Nuclear Power**

## What Is Radiation?

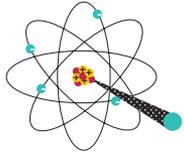
Radiation is energy emitted in tiny waves or particles. You can't see radiation. You can't hear or taste radiation. For these reasons people sometimes think radiation is mysterious or frightening. However, you probably know more about radiation than you realize. Heat, light and radio waves are a kind of radiation. Rocks, trees, and even people have some radioactive atoms.

Radiation sometimes produces charged particles in material it strikes. Charged particles are known as ions. Ionizing radiation can produce charged particles in all matter. The most common types of ionizing radiation are alpha, beta and gamma.

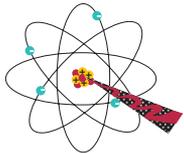
- **Alpha Radiation** is the least penetrating type. It can be stopped with a sheet of paper.



- **Beta Radiation** is emitted from the nucleus of an atom during fission. Beta radiation consists of electrons that can be stopped by thin cardboard.



- **Gamma Radiation** is electro-magnetic waves emitted from the nucleus of an atom and is essentially the same as an X-ray. It can be stopped by heavy shielding such as concrete or lead.



The harm that can come from radiation depends on several things, some of which you can control.

Radiation risk depends on:

- The kind of rays and particles that strike you.
- The length of time you are exposed.
- The parts of your body exposed.
- The amount of radioactive material that enters your body through eating or breathing
- Age – radiation does more harm to young children because the cells in their bodies are growing much faster than the cells of older children and adults.

## Radiation Protection



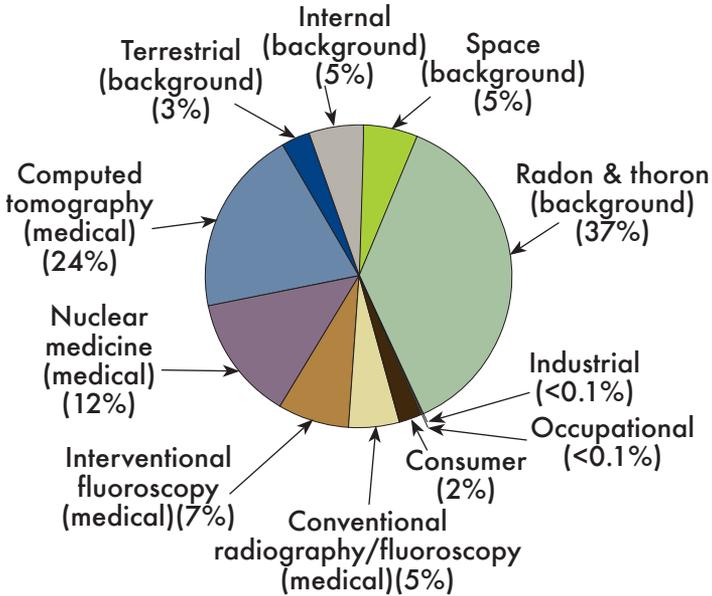
Although you cannot see or smell radiation, it can be detected, accurately and easily, with the aid of instruments designed for that purpose. Trained technicians using these instruments monitor radiation in and around the nuclear power station. Should a nuclear incident occur, this monitoring will be increased to obtain accurate information for all areas that might be affected. State officials will evaluate this information and advise what actions should be taken.

## Where Does Radiation Come From?

### Characteristics of Natural Radioactivity

- The earth's crust and soil contains small amounts of naturally occurring radioactive materials which decay into other radioactive atoms such as radon.
- The radon moves through soil, where it is generated, and then moves into the air.
- Radon is a natural part of the earth's atmosphere.
- The amount of radon in the earth's crust and soil varies with geographic location and soil type.

# Effective Dose Equivalent to Persons in the U.S. from Various Radiation Sources



## Man-Made

• Medical	
- Diagnostic X-Rays .....	33.0
- Other Medical .....	267.0
• Consumer Products.....	13.0
• Occupational .....	0.5
- Nuclear Power .....	0.1
• Miscellaneous.....	0.3
	Millirem (MREM) Per Year Total 314.0

## Natural Background

• Radon and Radon Daughters.....	228.0
• Cosmic Rays .....	33.0
• Terrestrial Radiation .....	21.0
• Internal Radiation .....	29.0
	MREM Per Year Total 311.0

Total man-made and natural sources MREM Per Year 625.0

NCRP Report No. 160, "Ionizing Radiation Exposure of the Population of the United States," March 3, 2009 Bethesda, MD 20814.

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## How Quickly Would A Nuclear Power Plant Emergency Develop?

A severe nuclear power plant emergency would most likely not be a sudden event. It would probably take hours or days to develop. This would enable state and local officials to take necessary public protective actions in a timely manner.

To ensure safety at a nuclear power plant, the concept of “defense in depth” is employed. This means there are several levels of protection, or barriers, each of which is independent of the others. Thus, if one should fail, others would continue to protect the plant, its workers, and the general public. Even if some systems failed, the remaining ones would dramatically slow down the rate of a radioactive release.

A nuclear power plant cannot explode like an atomic bomb. The fuel in a nuclear power plant is too low in concentration to create the rapid release of energy necessary for an explosion.

Incidents like the one in Chernobyl cannot occur in the United States. The plant did not have containment barriers as are required in the U.S. The April 1986 disaster was the product of a severely flawed reactor design and serious mistakes made by the plant operators who violated procedures intended to ensure safe operation of the plant.

## How Are Nuclear Power Plant Emergencies Prevented?

When a nuclear power plant is operating, water circulates through the nuclear reactor fuel, called the **core**. This water, known as **reactor coolant**, transfers heat away from the core. The heat is used to produce steam that drives a turbine-generator to produce electricity. Under normal operating conditions, the reactor coolant continually re-circulates, never entering the outside environment.

The reactor coolant system would have to develop a large leak uncovering its nuclear fuel for an emergency to result in a large radioactive release. Many built-in safety systems ensure public safety. Some are active systems involving pumps and other special components; others are passive and provide protection by their construction and design. These backup safety systems can supply additional water to keep the nuclear core cool and covered.

Millstone Power Station has comprehensive safety, construction, maintenance and inspection programs to prevent emergencies from occurring.

As with the reactor coolant system, the backup safety systems are frequently tested, inspected and maintained to prevent failure. However, if they fail, backup barriers in the plant would prevent, or at least significantly postpone, the release of radioactivity to the environment.

Millstone is designed with three primary physical barriers:

- Fuel rod cladding
- Reactor vessel and coolant system
- Containment structure

The first barrier is the **fuel rods** that contain the uranium fuel pellets. The fuel rods are metal cylinders, known as **cladding**, and are made of a high-quality metal alloy with an extremely high melting point. Under normal conditions, the cladding keeps almost all of the radioactivity produced within the fuel pellets.

The **reactor coolant system** acts as a second barrier. The system includes the reactor vessel, made of high quality steel that is 3 to 9 inches thick, as well as all piping and equipment through which the reactor coolant travels.

If both of these barriers fail, a **containment structure** surrounds the entire reactor coolant system. This building is made of a 1/4 inch steel liner surrounded by reinforced concrete that is 2.5 to 4.5 feet thick. The containment is designed to withstand the internal forces that could be generated by a severe emergency. It is also built to withstand external forces such as those caused by a tornado, a hurricane, an earthquake, or even the impact of a commercial jet.

Additional safety features include a quality assurance program, trained licensed operators, monitoring systems, redundant safety systems, Federal and industry inspections, and an on-site and off-site emergency response program.

## Who Could Be Affected In A Nuclear Emergency?

It is very unlikely that everyone in Millstone's Emergency Planning Zone would be affected in a nuclear emergency. The precautions to take would depend on where you live, the amount of radioactivity being released from the plant, and wind speed and direction.

For example, if a relatively large amount of radioactive material were released into a slow wind, people located immediately downwind from the plant might be directed to evacuate, if road and weather conditions permit. On the other hand, rapidly shifting winds could quickly disperse radioactive material that would affect a larger area, but in less concentrated amounts.

People located in this larger area might be directed to take shelter. State authorities would consider levels of radiation exposure, wind patterns, and overall weather conditions when directing the public whether to take shelter or evacuate. Many lower types of nuclear incidents would not require the public to take any actions.

Farmers, livestock owners, food processors and fruit and vegetable growers would be provided with appropriate emergency instructions as necessary. The booklet entitled "Radiological Emergency Information for Connecticut's Agricultural Community" has been distributed to individual Connecticut agricultural suppliers within a 50-mile radius of Millstone.

## Nuclear Emergency Classifications

The U.S. Nuclear Regulatory Commission (NRC) is the Federal agency responsible for the regulation and inspection of nuclear power stations to ensure safety. The NRC classifies nuclear power plant emergencies into four categories of increasing severity based on plant conditions. Millstone Power Station operators are responsible for classifying an event and notifying state and local authorities within 15 minutes. State and local governments decide on public protective actions and notify the public to initiate these actions.

## **Notification of Unusual Event**

This category is the lowest classification level and is used for a minor event where something out of the ordinary has occurred. There is no danger to the public. No radioactive release of any significance is expected and no protective actions are required. Emergency personnel are not required to respond.

## **Alert**

This category is the next classification level and is used for an event which may involve a small radioactive release or the potential for a release. Emergency personnel are alerted to be ready to respond if the situation becomes more serious.

State and local emergency operation centers may be activated at this level and the State Emergency Alert System (EAS) is placed on standby. There is no danger to the public and no protective actions are required.

## **Site Area Emergency**

This category is the second highest classification level and is used for an emergency involving an actual or potential failure of plant safety systems. A moderate radioactive release out to the site boundary is possible.

State and local emergency operations centers will be activated and the sirens within the approximately 10-Mile Emergency Planning Zone will be sounded as a warning to tune in to an Emergency Alert System (EAS) radio or television station for information.

Public protective actions are not required unless emergency officials determine that the emergency could become more serious.

## **General Emergency**

This category is the highest classification level and is used for a serious emergency involving the failure of plant safety systems, the possibility of reactor core damage or a loss of the integrity of the containment structure. A large radioactive release is possible.

**It is important to know that an incident at a nuclear power plant could slowly evolve over a period of several hours or many days. Plant operators and government officials would be in constant communication with each other. Changes to classification levels are dependent on changes to the situation. The public would be informed of any changes in the incident.**

### **In Conclusion**

The State of Connecticut and Millstone Power Station's first priority is the health and safety of all Connecticut residents and visitors. The state and local governments and Millstone are committed to providing communities surrounding the nuclear facility with the most accurate, timely, and detailed information possible concerning plant safety and emergency preparedness.

The emergency plans for nuclear plants are tested and evaluated every year by the NRC for on-site actions, and every other year by the Federal Emergency Management Agency (FEMA) for off-site actions. Both the NRC and FEMA have approved the emergency plans. Extensive testing of emergency plans and upgrades to emergency preparedness based on lessons learned from drills and exercises helps maintain a continual state of readiness. This demonstrates coordination among federal, state, and local officials, and Millstone Power Station to ensure an integrated and effective response to any emergency.

## Additional Information

For additional information on local emergency preparedness, contact your community emergency management officials:

<b>East Lyme</b>	(860) 739-5900	<b>Montville</b>	(860) 848-1417
<b>Groton City</b>	(860) 445-2451	<b>New London</b>	(860) 442-4444
<b>Groton Town</b>	(860) 445-2000	<b>Old Lyme</b>	(860) 434-1605, X212
<b>Ledyard</b>	860-464-6400	<b>Waterford</b>	(860) 442-9585
<b>Lyme</b>	(860) 625-0237	<b>Fishers Island, NY</b>	(631) 765-2600

Emergency information is on pages 1 through 3 of the Fishers Island phone book.

***For extra copies of this guidebook or  
for further information please contact:***

***Connecticut Department of Emergency Services & Public Protection  
Division of Emergency Management & Homeland Security  
Radiological Emergency Preparedness Unit  
1111 Country Club Road, Middletown, CT 06457  
860-256-0800 or 1-800-397-8876***

## Web Sites

If you have access to a computer, the following web sites provide more information on emergency planning and preparedness information for individuals, families, and businesses:

Ready  
[www.ready.gov](http://www.ready.gov)

American Red Cross  
[www.redcross.org](http://www.redcross.org)

Federal Emergency Management Agency  
[www.fema.gov](http://www.fema.gov)

The Humane Society of The United States  
[www.hsus.org](http://www.hsus.org)

CT Department of Energy and Environmental Protection  
[www.ct.gov/deep](http://www.ct.gov/deep)

CT Department of Emergency Services and Public Protection  
[www.ct.gov/despp](http://www.ct.gov/despp)

CT Division of Emergency Management and Homeland Security  
[www.ct.gov/demhs](http://www.ct.gov/demhs)

CT Department of Public Health  
[www.ct.gov/dph](http://www.ct.gov/dph)

Dominion Energy  
[www.dominionenergy.com](http://www.dominionenergy.com)

Nuclear Regulatory Commission  
[www.nrc.gov](http://www.nrc.gov)

Nuclear Energy Institute  
[www.nei.org](http://www.nei.org)

Download the new preparedness app for your phone or tablet at:  
<http://portal.ct.gov/Emergency-Preparedness/>

**Department of Emergency Services & Public Protection Division  
of Emergency Management & Homeland Security web and  
official social media links**

*<http://www.ct.gov/demhs>*



*<http://twitter.com/#!/ctdemhs>*



**Notes**

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