NUCLEAR POWER PLANT EMERGENCIES

The construction and operation of nuclear power plants are closely monitored and regulated by the Nuclear Regulatory Commission (NRC). Accidents at these plants are possible, however.

An accident could result in dangerous levels of radiation that could affect the health and safety of the public living near the nuclear power plant.

Radioactive materials are composed of unstable atoms. These atoms give off excess energy until they become stable. The energy emitted is radiation.

Each of us is exposed daily to radiation from natural sources, including the sun and the Earth. Small traces of radiation are present in food and water. Radiation also is released from manmade sources, such as x-ray machines, television sets, and microwave ovens.

Nuclear power plants use the heat generated from nuclear fission in a contained environment to convert water to steam, which powers generators to produce electricity.

Radiation has a cumulative effect. The longer a person is exposed to radiation, the greater the risk of adverse effects. A high exposure to radiation can cause serious illness or death.

The potential danger from an accident at a nuclear power plant is exposure to radiation. This exposure could come from the release of radioactive material from the plant into the environment, usually characterized by a plume (cloud-like) formation of radioactive gases and particles.

The area affected by radioactive release is determined by:

- The amount of radiation released from the plant.
- Wind direction and speed.
- Weather conditions.

NUCLEAR POWER PLANT EMERGENCIES (CONTINUED)

The major hazards to people in the vicinity of the plume:

- Radiation exposure to the body from the cloud and particles deposited on the ground.
- Inhalation of radioactive materials.
- Ingestion of radioactive materials.

If an accident occurred involving a radioactive release at a nuclear power plant, local authorities would:

- Activate warning sirens or another approved alert method.
- Provide instructions through the Emergency Alert System (EAS) on local television radio stations.

Local and State governments, Federal agencies, and the electric utilities have emergency response plans in the event of a nuclear power plant emergency. The plans define two Emergency Planning Zones (EPZs):

- One EPZ covers an area within a 10-mile radius of the plant where it is possible that people could be harmed by direct radiation exposure.
- The other EPZ covers a broader area, usually up to a 50-mile radius from the plant, where radioactive materials could contaminate water supplies, food crops, and livestock.

Exposure can be minimized by:

- Time. Most radioactivity loses its strength fairly quickly. In a nuclear power plant accident, local authorities will monitor any release of radiation and determine when the threat has passed.
- Distance. The more distance between you and the source of the radiation, the better. In a serious nuclear power plant accident, local authorities will call for an evacuation to increase the distance between you and the radiation. (Evacuation also reduces the period of time of exposure.)
- Shielding. The more heavy, dense material between you and the source of the radiation, the better. This is why local authorities could advise you to remain indoors if an accident occurs. In some cases, the walls in your home would be sufficient shielding to protect you.

NUCLEAR POWER PLANT EMERGENCIES (CONTINUED)

It is important to know the terms that are used to describe nuclear emergencies:

- Notification of Unusual Event: A small problem has occurred at the plant. No radiation leak is expected. Federal, State, and county officials will be told right away. No action on your part will be necessary.

- Alert: A small problem has occurred, and small amounts of radiation could leak inside the plant. This will not affect you, and you should not have to do anything.

- Site Area Emergency: A more serious problem has occurred, and small amounts of radiation could leak from the plant. If necessary, State and county officials will act to assure public safety. Area sirens may be sounded. Listen to your radio or television for safety information.

- General Emergency: This is the most serious problem. Radiation could leak outside the plant and off the plant site. The sirens will sound. Tune to your local radio or television station for emergency information reports. State and county officials will act to protect the public. Be prepared to follow instructions promptly.

You should:

- Learn the community's warning system. Nuclear power plants are required to install sirens and other warning systems (flashing warning lights) to cover a 10-mile area around the plant.

  - Find out when the warning systems are tested.
  - When the systems are tested in your area, determine whether you can hear sirens or see flashing warning lights from your home.

- Obtain emergency public information (EPI) from the power company that operates the power plant or from the local emergency services office. If you live within 10 miles of the plant, you should receive these materials annually from the power company or your State or local government.

- Learn the emergency plans for schools, day care centers, nursing homes, and other places that members of your household frequent. Learn where people would go in case of evacuation.

NUCLEAR POWER PLANT EMERGENCIES (CONTINUED)

Citizens should be prepared to evacuate.

Key points during an emergency:

- Listen to the warning. Not all incidents result in the release of radiation. The incident could be contained inside the plant and pose no danger to the public.

- Stay tuned to local radio or television. Local authorities will provide specific information and instructions.

  - The advice given will depend on the nature of the emergency, how quickly it is evolving, and how much radiation, if any, is likely to be released.
  - Local instructions should take precedence over any advice given on national broadcasts or in books.
  - Review the public information materials that you received from the power company or government officials.

- Evacuate, if you are advised to do so.

  - Close and lock doors and windows.
  - Keep car windows and vents closed. Use recirculating air.
  - Listen to the radio for evacuation routes and other instructions.

- If you are not advised to evacuate, shelter in place.

  - Close doors and windows.
  - Turn off the air-conditioner, ventilation fans, furnace, and other air intakes.
  - Go to a basement or other underground area if possible.
  - Keep a battery-powered radio with you at all times.

- Shelter livestock and give them stored feed, if time permits.

- Do not use the telephone unless it is absolutely necessary. Lines will be needed for emergency calls.

- If you suspect exposure, shower thoroughly.

  - Change clothes and shoes.
  - Put exposed clothing in a plastic bag.
  - Seal the bag, and place it out of the way.

- Put food in covered containers or in the refrigerator. Food not previously covered should be washed before being put in containers.

NUCLEAR POWER PLANT EMERGENCIES (CONTINUED)

Key points after an emergency:

- If told to evacuate, return home only when local authorities say that it safe to do so.
- If advised to stay in the home, remain inside until local authorities indicate that it is safe.
- Get medical treatment for any unusual symptoms, such as the rapid onset of vomiting, that may be related to radiation exposure.

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