
10. Code Brown: Nuclear Power Plant Emergency

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. Nuclear power plants operate in most states in the country and produce about 20 percent of the nation's power. Nearly three million Americans live within ten miles of an operating nuclear power plant.

Although the construction and operation of these facilities are closely monitored and regulated by the Nuclear Regulatory Commission (NRC), accidents are possible. 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.

Local and state governments, federal agencies, and the electric utilities have emergency response plans in the event of a nuclear power plant incident. The plans define two "emergency planning zones." One zone covers an area within a ten-mile radius of the plant, where it is possible that people could be harmed by direct radiation exposure. The second zone 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.

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 major hazards to people in the vicinity of the plume are radiation exposure to the body from the cloud and particles deposited on the ground, inhalation of radioactive materials, and ingestion of radioactive materials.

Radioactive materials are composed of atoms that are unstable. An unstable atom gives off its excess energy until it becomes stable. The energy emitted is radiation. Each of us is exposed to radiation daily from natural sources, including the Sun and the Earth. Small traces of radiation are present in food and water. Radiation is also released from man-made sources such as X-ray machines, television sets, and microwave ovens. Radiation has a cumulative effect. The longer a person is exposed to radiation, the greater the effect. A high exposure to radiation can cause serious illness or death.

Although the risk of a chemical accident is slight, knowing how to handle these products and how to react during an emergency can reduce the risk of injury.

Facility staff members should be familiar with these terms to help identify a nuclear power plant emergency:

Notification of Unusual Event: A small problem has occurred at the plant. No radiation leak is expected. No action at the facility will be necessary.

Alert: A small problem has occurred, and small amounts of radiation could leak inside the plant. This will not affect the facility and no action is required.

Site Area Emergency: Area sirens may be sounded. Listen to your radio or television for safety information.

General Emergency: Radiation could leak outside the plant and off the plant site. The sirens will sound. Tune to local radio or television station for reports. Be prepared to follow instructions promptly.

Planning Considerations for a Nuclear Plant Emergency:

1. Obtain public emergency information materials from the power company that operates your local nuclear power plant or your local emergency services office. If you live within 10 miles of the power plant, you should receive these materials annually from the power company or your state or local government.