

# ***Nuclear Emergency Response Program***

## **NUCLEAR POWER PLANTS**

In California, there is one operating nuclear power plant site: Diablo Canyon in San Luis Obispo County, which has two active units. San Onofre Nuclear Generating Station (SONGS) in San Diego County has three non-operative units; one unit is in "safe storage" mode (fuel has been removed and stored); and the other two units have been de-fueled and are in the process of being placed in "safe storage" mode. The Rancho Seco plant in Sacramento County was shut down in 1989 and the entire plant is in a "safe storage" mode. Humboldt Bay has been shut down since the early 1980s, and has remained in "safe storage" mode for several decades.

Commercial nuclear power plants are fueled with uranium. Uranium atoms split, producing heat. The heat boils water, creating steam. The steam is used to spin turbines and the turbines turn generators, producing electricity.

Because of the potential health hazard associated with this type of fuel, power plants are built with multiple physical barriers to prevent the release of radioactive material. In fact, the safety record of the industry is superior to those of other energy producing systems.

Still, the possibility exists for an accidental release of radiation into the atmosphere. If this were to occur, people could breathe contaminated air and radioactive particles could be deposited on the ground, in water, on property and on agricultural crops. Food and dairy animals could graze on contaminated pasture, passing on the contamination to consumers through milk and meat, if precautions were not taken.

## **LEGAL REQUIREMENTS**

In 1979, following the accident at Three Mile Island nuclear power plant in Pennsylvania, the California Legislature mandated that the Office of Emergency Services (OES), together with Department of Public Health (DPH) and affected counties, investigate the consequences of a serious nuclear power plant accident. Based on site-specific studies, Emergency Planning Zones (These zones are discussed later in this discussion) around the plant sites were established and detailed, and integrated plans were developed.

Legislation mandating the Nuclear Power Preparedness Program has been continuous since 1979, enacted as Government Code Section 8610.5, the Radiation Protection Act. The program is funded by the utilities through a special assessment fund managed through the State Controller.

Under state law, counties have the authority and responsibility to protect the lives and property of their citizens. The state supports their emergency response activities involved in nuclear power plant planning.

In the event of an emergency at one of California's nuclear power plants, the Governor's Office of Emergency Services (OES) is prepared to mobilize state resources, in support of the counties, to help mitigate the effects of radiation released into the atmosphere.

While State OES has absolute coordination authority during emergency response, the Department of Public Health (DPH) is assigned the technical lead responsibility during ingestion pathway and recovery phases of an emergency. The goal during ingestion pathway response is preventing contaminated water, food and food animals from reaching the consumer.

The goal during recovery is restoring areas to pre-accident conditions.

## **EMERGENCY RESPONSE PLANNING**

The Nuclear Power Plant Emergency Response Plan establishes the State of California's emergency response organization and defines the role of OES as the coordinating agency for utility, local, state, federal and volunteer agency response to a nuclear power plant incident. A series of zones has been established around each plant to detail required activities in the event of an accident.

The basic Emergency Planning Zone, an approximate ten-mile radius around the plants, is defined for the plume exposure pathway. Plans are in place to protect people, property and the environment in that zone from the effects of radioactive contamination.

In the Ingestion Pathway Zone, an approximate 50 mile radius around that plant, plans are in place to mitigate the effects on agriculture, and food processing and distribution.

During emergency response, best efforts are made making use of plan action criteria without regard to whether particular areas are inside or outside zones.

Within Public Education Zones, approximately 35 miles from the plants, educational materials are distributed to inform the public about nuclear power plant operations, what to expect in the event of an accident, and what plans are in place for public protection. The utilities are required to publish and disseminate information for residents and transient populations, including telephone directory guidance.

Planning and preparedness are cooperative efforts by state agencies, local jurisdiction and the utilities. These efforts result in integrated and refined plans for emergency response and a cadre of trained emergency responders. The plans and attendant procedures are predicated on guidance provided by the Federal Emergency Management Agency (FEMA), in concert with the Nuclear Regulatory Commission (NRC).

## **EMERGENCY PREPAREDNESS**

Following is the list of Planning Standards and Evaluation Criteria mandated by the Federal Emergency Management Agency in developing a nuclear power plant emergency response plan:

- Accident Assessment
- Assignment of Responsibility (Organizational Control)
- Emergency Classification System
- Emergency Communications
- Emergency Facility and Equipment
- Emergency Response Support and Resources
- Exercises and Drills
- Medical and Public Health Support
- Notification Methods and Procedures
- Onsite Emergency Organization

- Protective Response
- Public Education and Information
- Radiological Emergency Response Training
- Radiological Exposure Control
- Recovery and Reentry Planning and Post-Accident Operations
- Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans

Emergency responders test their plans and their skills through regularly scheduled exercises, based on a federally-mandated six-year cycle. Exercises test (1) organizations' integrated capability and (2) major portions of basic plans. There are 33 exercise objectives, grouped according to the frequency with which they must be tested. State law requires full activation of state level response every two years, in conjunction with a plant site.

## **EMERGENCY RESPONSE**

If there were an accident at a nuclear power plant, state and local emergency responders and decisionmakers would deploy to operations centers and various facilities near the plant. Based on plans and procedures previously tested and proven through the exercise program, actions would be undertaken to protect the public and the environment.

There are four accident classifications—called EMERGENCY ACTION LEVELS. Each level mandates specific actions by the utility and local and state emergency response organizations:

**NOTICE OF UNUSUAL EVENT:** No threat to public safety. Requires notification by plant operator of offsite authorities within 15 minutes of the event classification.

**ALERT:** Little or no threat to public safety. Conditions could escalate due to operator error or equipment failure. Requires notification by plant operator of offsite authorities within 15 minutes. Communications with the plant operator thereafter are on a regular basis until such time as plant conditions stabilize.

- **OES notifies the DPH and FEMA.**
- **State and local emergency response facilities are activated.**
- **Beach parks are closed.**
- **Schools relocate students to safe, predesignated sites.**
- **State prisons are locked down.**

**SITE AREA EMERGENCY:** Releases, if any, are not expected to result in exposure levels exceeding the Protective Action Guides set by the Environmental Protection Agency, except possibly near the plant site boundary.

- **State emergency response organizations are fully mobilized.**
- **Local emergency response organizations are fully mobilized.**

- **Field monitoring teams are dispatched.**
- **Public and agricultural protective action recommendations are implemented.**
- **Federal assistance is requested.**

**GENERAL EMERGENCY:** This is the most severe classification, based on potential reactor core melt and threat to public safety.

- **All previous actions are continued.**
- **Likely impacted populations could be evacuated.**
- **A local emergency may be declared.**
- **All levels of government emergency response are fully activated according to plans and procedures.**

Since these standards have been set, nationwide, there have been five Site Area Emergencies. There has never been a General Emergency in this country.

## **FEDERAL PARTICIPATION**

The federal government is an integral part of the emergency response planning and preparedness cadre. While the utilities operating the nuclear power plants have jurisdiction onsite (the plants and grounds, equipment and facilities), the Nuclear Regulatory Commission (NRC) maintains a constant presence there. The NRC is the power plant licensing authority and is the designated Lead Federal Agency for all technical issues.

FEMA coordinates federal non-technical offsite support to state local authorities. They are a working presence in the emergency planning community. FEMA has established detailed guidance for writing plans, developing procedures and conducting emergency response exercises, including a rating and corrective action system for evaluating exercises.

In the event of an accident, NRC would expand its technical presence at the plant site and coordinate with FEMA at nearsite facilities. FEMA is the conduit through which the state would request appropriate federal resources.

The Department of Energy (DOE) would establish and manage a Federal Radiological Monitoring and Assessment Center (FRMAC) to support state and local responders. Through FRMAC, DOE will coordinate federal staffing and resources in support of state and local organizations.

The Environmental Protection Agency (EPA) would assist during initial phases and would later assume the lead role from DOE. Additional resources would be available through the US: Departments of Agriculture, Health and Human Services, Commerce, Defense, Housing and Urban Development, Interior, Transportation, the American Nuclear Insurers, NASA, and the National Communications System.