

Though an accident at a commercial nuclear power plant is highly unlikely, the consequences of such an event would be severe. Plant workers and members of the public would be at risk of radiation exposure in the event of an accident. With 120 million Americans living within 50 miles of a nuclear reactor, stringent oversight of emergency planning and preparedness in the event of a nuclear accident is a crucial public health and safety measure.

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Background

Following the nuclear disaster at Three Mile Island in 1979, the way in which the United States prepares for radiological emergencies drastically changed. While the Nuclear Regulatory Commission (NRC) remained responsible for oversight of onsite emergency preparedness and planning, President Carter transferred the federal responsibility for offsite planning to the Radiological Emergency Preparedness Program under the Federal Emergency Management Agency (FEMA). In 1980, a joint task force created by FEMA and the NRC published guidelines for the preparation and evaluation of radiological emergency response plans of nuclear power plants.ⁱ This publication allocated the responsibility of onsite emergency preparedness and preparation to plant owners, and offsite planning to state and local governments. Though many actors contribute to the development of emergency preparedness plans, the NRC has overall authority for the final review of both onsite and offsite emergency planning.ⁱⁱ

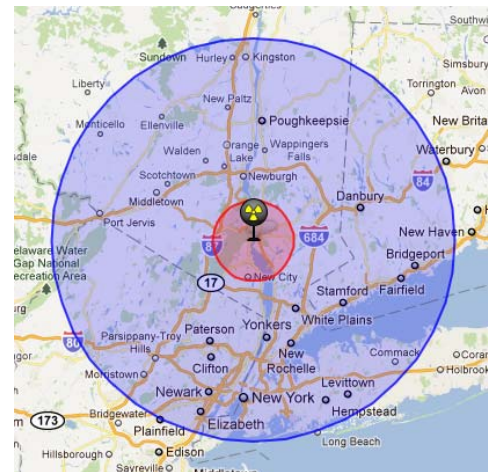
Emergency Preparedness Requirements for Licensing

During the initial licensing process, the NRC reviews the applicant's on-site emergency planning procedures and training to evaluate compliance with federal criteria. Plant owners are required to exercise their emergency plans with the NRC, FEMA, and offsite authorities at least once every two years. The NRC notes that plants also self-test these emergency plans more frequently, but are not explicitly required to do so. Additionally, plant owners are required to conduct independent reviews of their emergency plans every 12 months and apply to FEMA for an annual letter of certification.

General Provisions of Emergency Planning

For planning purposes, the federal criteria for emergency planning specifies two types of emergency planning zones (EPZ): the 10 mile radius EPZ, known as the ingestion pathway, and the 50 mile radius EPZ, known as the exposure pathway. The NRC categorizes the 10-mile EPZ as an area where people could possibly be harmed by direct radiation exposure and should thus require protective measures such as evacuation or sheltering, whereas the primary concern in the 50-mile EPZ is the contamination of water supplies, food crops and livestock where evacuation is at the discretion of local authorities.ⁱⁱⁱ However, following the nuclear disaster at Japan's Fukushima power plant in March 2011, the United States urged Americans to evacuate the area within 50 miles of the power plant, suggesting a disconnect between domestic emergency planning procedures and practice in the event of an accident.^{iv}

Emergency Planning Zones: Indian Point, NY



This is an image of the emergency planning zones (EPZ) around the Indian Point nuclear power station in New York. The 10 mile EPZ is represented in red and the 50 mile EPZ in purple. In the event of a nuclear disaster, over 250,000 people would have to be evacuated within the 10 mile EPZ. If the 50 mile EPZ were also evacuated, 17 million people would have to be relocated, including those in New York City. Source: Physicians for Social Responsibility, [Evacuation Zones for Nuclear Reactors](#), 2011.

Role of State and Local Government

Ultimately, state and local governments are responsible for coordinating and implementing offsite emergency preparedness plans in the event of a radiological disaster. Procedures for evacuation, sheltering, and the distribution of potassium iodide (KI) tablets are at the discretion of emergency planners. The NRC requires that states with populations within the 10 miles of nuclear power plants *consider* the use of KI as a protective measure. The NRC will provide funding for the stockpiling of KI within these EPZs. Out of the 34 states with populations living within 10 miles of a nuclear reactor, 21 have KI distribution programs.

In most cases, the state's Emergency Management Agency takes the lead in coordinating offsite emergency planning efforts. State level emergency planning usually includes a number of agencies such as the state's Department of Health, Environmental Protection Agency, and Department of Homeland Security. The Federal Radiological Preparedness Coordinating Committee (FRPCC), a national level forum co-chaired by FEMA and the Department of Homeland Security that is comprised of more than 20 federal agencies, validates the requirements of each agency in state and local emergency planning.

In 2011, the NRC finalized "enhancements" to the emergency planning guidelines that had been proposed following the 9/11, 2001 terrorist attacks. Regarding offsite planning, the changes require operators to periodically review changes in population that could affect the estimates of the time it would take to evacuate the EPZs, but only requires that these "evacuation time estimates" be formally updated if a significant increase in evacuation time is projected.^v The rule also requires state governments to participate in "hostile action drills," mock scenarios that enact hostage situations at plants, the first of which must be conducted before 2015. However, in response to industry objections, the rule does not require that subsequent drills be conducted at a specified frequency.

Funding

Since emergency preparedness is quite extensive at the state and federal level, the procedures associated with planning are consequently quite costly. To recompense emergency planning activities on a federal level, FEMA is responsible for assessing expenses and collecting fees from nuclear facilities to deposit into the Radiological Emergency Preparedness Fund in the Treasury. Since the NRC does not explicitly regulate who pays for state level offsite emergency planning, the collection and allocation of state-level emergency planning funds varies. States usually establish radiological emergency preparedness funds into which nuclear facilities deposit the appropriate fees. Alternatively, and often additionally, agencies involved with emergency planning submit costs to nuclear facilities for reimbursement.^{vi}

UCS Recommendations

The NRC should ensure that everyone at significant risk from an accident—not just people within the arbitrary 10-mile EPZ—is protected in the event of a nuclear disaster. Just as the U.S. government advised Americans within 50 miles of Fukushima to evacuate, an accident at a U.S. reactor could similarly require evacuation of people outside the 10 mile EPZ and other protective measures to avoid high radiation exposures. The NRC should therefore require reactor owners to develop emergency plans for a larger area, based on a scientific assessment of the populations at risk for each reactor site.

ⁱ NUREG-0654/FEMA-REP-1 was published in 1980. Following 9/11, the NRC and FEMA published a final report of addenda to the original criteria in March 2002.

ⁱⁱ The Nuclear Regulatory Commission, *Backgrounder on Emergency Preparedness at Nuclear Power Plants*, 2011.

ⁱⁱⁱ NRC. 2011.

^{iv} Fahrenthold, David et al., [U.S. urges Americans within 50 miles of Japanese nuclear plant to evacuate; NRC chief outlines dangerous situation](#). The Washington Post. March 16, 2011.

^v Northey, Hannah. *NRC finalizes post-9/11 safety rule*, E&E. November 20, 2011.

^{vi} In California, for example, the two nuclear power plants paid a total of \$1,094,000 in the support of agencies related to disaster relief, and \$953,000 in support of the State Department of Public Health in relation to radiological disaster relief planning in fiscal year 2009-2010. [2010 California Code Government Code, Article 10. Local Disaster Councils.](#)

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