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NUCLEAR SAFETY

Countries' Regulatory Bodies Have Made Changes in Response to the Fukushima Daiichi Accident

GAO Highlights

Highlights of GAO-14-109, a report to the Chairman, Subcommittee on Transportation and Infrastructure, Committee on Environment and Public Works, U.S. Senate

Why GAO Did This Study

The March 2011 accident at Japan's Fukushima Daiichi nuclear power plant led to a worldwide review of nuclear power programs. NRC licenses and oversees civilian nuclear reactors. The State Department coordinates policy matters with international organizations and treaties, including those dealing with nuclear safety.

GAO was asked to examine (1) the actions nuclear regulatory bodies from selected countries have taken to strengthen nuclear safety; (2) the extent to which these countries have established automated systems to collect and transmit accident data; and (3) steps international organizations have taken to support nuclear regulatory bodies and promote nuclear safety worldwide since the accident. The countries GAO selected represent a cross section of established and emerging nuclear power countries. GAO also reviewed relevant documents and interviewed or obtained information from U.S. federal agencies, 15 foreign nuclear regulatory bodies, and international organizations.

What GAO Recommends

GAO recommends (1) that State and NRC work with and encourage IAEA to systematically track the status of recommendations made by IAEA peer review missions and (2) NRC consider expediting its decision on whether or how to upgrade its automated system for transmitting key reactor data. NRC neither agreed nor disagreed with the recommendations. State partially concurred with the first recommendation and had no comment on the second. GAO believes that fully implementing these recommendations would enhance nuclear safety.

View GAO-14-109. For more information, contact David C.Trimble at (202) 512-3841 or trimbled@gao.gov.

What GAO Found

All the nuclear regulatory bodies in the 16 selected countries in GAO's review—13 of which currently operate nuclear power reactors and 3 of which are developing or considering developing civilian nuclear power programs—have taken steps to strengthen nuclear safety in response to the Fukushima Daiichi accident in Japan. Japan in particular has fundamentally restructured its nuclear regulatory framework, and 3 other countries—China, Sweden, and Vietnam—are providing additional resources to their nuclear regulatory bodies. Countries are taking steps to improve safety with a focus on considering previously unimagined accident scenarios. Specifically, regulatory bodies in several countries (e.g., Belgium, Canada, Russia, and the United States) are now planning for accident scenarios that could involve multiple reactors at a single power plant. In addition, new requirements for emergency equipment, such as backup electric generators, in case of the loss of off-site power, as occurred at the Fukushima Daiichi nuclear power plant, are an area of focus among the regulatory bodies in GAO's review.

Officials from 6 of the 13 countries with operating nuclear power reactors in GAO's review said they have automated systems for collecting and transmitting critical nuclear power plant data to the nuclear regulatory body or designated technical experts who work with the regulatory body during an accident, and officials from a seventh country said that it has plans to build such a system. Officials from 3 of the countries with automated systems, including the United States, told GAO they are considering steps to ensure their systems can operate in certain emergency conditions, such as during the loss of off-site power, but none has a specific timetable for doing so. For example, the U.S. Nuclear Regulatory Commission (NRC) is first completing higher priority nuclear safety enhancements before deciding whether or how to upgrade its automated system because how enhancements are done may affect how upgrades to an automated system would be implemented. By delaying its decision on upgrades to enable the system to function under emergency conditions, the system may not function when needed most—during a severe accident.

Three key international organizations—the International Atomic Energy Agency (IAEA), the World Association of Nuclear Operators, and the European Union—along with the Convention on Nuclear Safety, have taken steps to support nuclear regulatory bodies and help them identify the most important lessons of the Fukushima Daiichi accident and promote regulatory changes to enhance nuclear safety worldwide. For example, one key way IAEA helps countries improve nuclear safety and regulatory effectiveness is through peer review missions, which evaluate, among other things, a country's nuclear safety regulatory framework based on IAEA Safety Standards and good regulatory practices. However, according to IAEA officials, the agency does not systematically track whether the recommendations of the peer review missions are implemented by the host countries. Without this information, IAEA cannot fully determine the impact and effectiveness of the peer review missions.