

The Natural Resources Defense Council's (NRDC) nuclear program is releasing this report to discuss the details of the U.S. Nuclear Regulatory Commission's (NRC) response to the lessons learned from the Fukushima Dai-ichi nuclear disaster, in time for the one-year anniversary of last year's events. On March 11, 2011, Japan was hit by a devastating 9.0-magnitude earthquake and a series of destructive tsunamis. To make matters worse, these extreme natural events helped initiate a third crisis in Japan, which took the form of the crippled Fukushima Dai-ichi nuclear power plant.

The earthquake and subsequent tsunami caused the failure of the plant's emergency cooling systems and, despite valiant efforts by plant operators to restore cooling, the plant suffered a series of core meltdowns and hydrogen explosions that resulted in uncontrolled radiation releases to the surrounding environment and triggered a large evacuation.

While an earthquake and tsunami knocked out primary and backup power at Japan's reactors, a similar multi-hour power loss could occur at U.S. plants through a variety of different means including terrorist attacks as well as extreme weather events.

One year following the worst nuclear accident since the 1986 Chernobyl disaster, those of us in the United States may wonder: Has anything changed here? What have we learned from Fukushima, and is the U.S. nuclear industry safer than it was a year ago? Should Americans be confident in our nuclear regulators? And how has the situation progressed in Japan since March 2011? What has been the impact of the Fukushima catastrophe on the global nuclear industry?

Immediately following the accident, the NRC established a Near-Term Task Force to review the accident and determine what actions are needed to improve the safety of U.S. reactors. While the NRC taskforce provided more than 30 safety recommendations, to date they have not acted on any of them, including actions that were identified as top priority. Some of the issues discussed in this report are:

- Seismic and flood concerns – While the NRC initially called for the industry to provide information on these risks by 2015 in order to determine whether to take regulatory action to improve safety, this will remain largely unaddressed due to cries of limited industry resources. Now, the NRC is estimating that it will take approximately seven years to receive responses from all plants.
- No guarantee against hydrogen explosions – Three of Fukushima's reactor buildings experienced hydrogen-induced explosions, contributing to the release of radioactive material. However, the U.S. currently does not require an adequate level of hydrogen mitigation measures in the event of a severe accident. In other words, one of the more destructive events in the evolution of Japan's nuclear disaster is mostly being ignored.
- Lack of adequate venting to prevent containment failure - In Fukushima, operators encountered problems venting the reactor containments after the blackout, which could have helped prevent containment failure and the resulting uncontrolled radioactive releases to the environment. In 1990, the NRC acknowledged that Fukushima-style reactors in the United States have a high probability of failure in the event of core damage as well. Yet the NRC has stated the few venting systems in place could be compromised during a severe

accident or station blackout. The NRC is still debating the installation of effective and available improvements, such as filters, that help to remove most of the radioactive particulates in the vent stream. Meanwhile, countries like France and Germany have already implemented them.

- No transparency on accident risks – NRC’s recommendations do not include any discussion of what would be considered unacceptable consequences of an accident in the United States. The NRC and the nuclear industry must present realistic accident scenarios showing the full range and weight of environmental, economic and health risks posed by an accident so the public and policymakers can make informed decisions about whether or how they want them operating in their backyards. This is especially critical for communities in densely populated places like the New York City, Philadelphia, and Los Angeles areas.