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INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH

6935 Laurel Avenue, Suite 201
Takoma Park, MD 20912

Phone: (301) 270-5500
FAX: (301) 270-3029
e-mail: ieer@ieer.org
http://www.ieer.org

For further information:
Arjun Makhijani 301-270-5500 (preferred) or, for weekend, cell: 301-509-6843

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RADIOACTIVE IODINE RELEASES FROM JAPAN'S FUKUSHIMA DAIICHI REACTORS MAY EXCEED THOSE OF THREE MILE ISLAND BY OVER 100,000 TIMES

Institute Calls for More Intensive Contingency Planning by Japanese Authorities; U.S. Should Move as Much Spent Fuel as Possible to Dry Storage to Reduce Most Severe Risks and Suspend Licensing and Relicensing during Review

Takoma Park, Maryland – The damaged Fukushima Daiichi reactors in Japan continue to release radioactivity into the atmosphere. So far, the accident has released far more radioactivity than the 1979 Three Mile Island (TMI) accident. While Chernobyl had one source of radioactivity, its reactor, there are seven leaking radiation sources at the Japanese site. Together, the three damaged reactors and four spent fuel pools at Fukushima Daiichi contain far more long-lived radioactivity, notably cesium-137, than the Chernobyl reactor.

The French radiation protection authority, Institut de Radioprotection et de Sûreté Nucléaire (IRSN), estimates the radioactive releases of iodine-131 in Japan had reached about 2.4 million curies by March 22, 2011. That is about 160,000 times the best estimate of the amount released during the TMI accident in Pennsylvania (15 curies) and about 140,000 times the maximum estimate of 17 curies. It is about 10 percent of the estimated amount released during the Chernobyl accident, according to the IRSN. Combined cesium-134 (half-life: about 2 years) and cesium-137 (half life: about 30 years) releases from Fukushima are estimated at about half-a-million curies, about 10 percent of estimated Chernobyl cesium releases. The TMI accident did not emit measurable amounts of radioactive cesium, according to the presidential commission that investigated the accident.

"This accident has long since passed the level of Three Mile Island," said Dr. Arjun Makhijani, president of the Institute for Energy and Environmental Research (IEER). "While the releases are still considerably below Chernobyl, they have already reached a level that could affect the region around the site for a prolonged period. It is simply a fantasy and highly misleading for the official accident level to remain at level 5, given the estimated radioactivity releases and the extended evacuation, contamination of food and water, and other countermeasures that have already been ordered by the government."

The primary risk of concern with iodine-131 is thyroid cancer, with children more at risk than adults. A high enough intake of iodine-131 by children can also cause developmental problems and other thyroid diseases. Young girls are at greater risk than boys. Female infants have a risk of thyroid cancer 70 times greater than adult males for the same radiation exposure. Some iodine-131 deposits on land, including

pastures. When contaminated grass is eaten by cows and goats, iodine-131 concentrates in milk. It has a half-life of about eight days, meaning that appreciable amounts will remain in the environment for a few months after large releases. Cesium-137 will take a few hundred years to decay to very low levels. Some cesium-137 from atmospheric testing in the 1950s and 1960s is still present in soil all over the world. It causes all types of radiogenic cancers since it distributes itself all over the body, like potassium. Cesium-137 contamination is the main reason that a huge exclusion zone (about 1,000 square miles) still needs to be maintained around Chernobyl.

The radioactive fallout from the damaged Fukushima reactors has already covered substantial parts of Honshu, Japan's main island. Japanese officials have warned citizens against consuming 11 types of vegetables found to have higher than the legal levels of radioactivity, as well as milk from regions near the plant. They have urged residents to avoid giving tap water to children and infants.

Despite these warnings, authorities in Japan have not been forthcoming about the actual levels of radioactive releases, which according to some reports are grave enough that additional, immediate public protection is necessary. The large radioactivity releases, large evacuation zone, and extensive contamination of food and water indicate that it should be raised to level 6, which is also the evaluation of the French and U.S. authorities. This would give a more realistic picture to the public in Japan and allow for appropriately intensified contingency planning.

Efforts to stabilize the damaged reactors have only been partly successful; cooling with seawater may have created its own problems. A significant blockage of the space between the fuel rods with salt deposits could slow cooling water flow even if fresh water can be pumped in. The re-start of normal pumping faces formidable technical and safety problems.

"Tokyo Electric Power Company (TEPCO) and the Japanese government must inform the public of their estimates of the releases so far and the potential scale of additional releases, provide updates that are as complete as possible, and create appropriate contingency plans for the public."

Last week, IEER noted that damages from severe spent fuel accidents in the U.S. could range from $900 million to $700 billion (http://www.ieer.org/comments/Daiichi-Fukushima-reactors_IEERstatement.pdf). Vermont Yankee, for example, contains more spent fuel in its pool than all four stricken pools at the Fukushima Daiichi plant. Yet the Nuclear Regulatory Commission has not ordered any additional actions to protect this material.

"The Nuclear Regulatory Commission should order all aged spent fuel in the U.S. to be moved from pools to hardened dry storage," said Dr. Makhijani. "It should suspend all licensing and relicensing proceedings until the long-term safety review is complete. It should also review the nearly certified reactor designs, like the AP1000. It is lamentable that the NRC extended the license of the Vermont Yankee reactor, which is the same design as the stricken Fukushima units, while the Japanese crisis is still going on and there has been no time to learn its lessons. I am shocked the NRC did not even order the emptying of all of Vermont Yankee's older spent fuel into dry cask storage, as a condition of the license extension."