

Nuclear Accident at Fukushima Daiichi Raised from INES Level 5 to 7: NISA Reevaluates Volume of Radioactive Material Released

On April 12, Japan's Nuclear and Industrial Safety Agency (NISA) announced a new provisional rating for the accident at the Fukushima Daiichi Nuclear Power Station (NPS), owned and operated by the Tokyo Electric Power Co., Inc. (TEPCO), of Level 7 (major accident) on the International Nuclear and Radiological Event Scale (INES) of the International Atomic Energy Agency (IAEA). Level 7 is the most serious on the scale, and had previously been assigned only to the Chernobyl accident in the former Soviet Union (current Ukraine) in 1986.

NISA had issued a provisional rating of Level 5 on March 18, the same as the accident at Three Mile Island in the U.S. in 1979. NISA later performed trial calculations of total amounts of radioactive materials released into the air, based on analyses by the Japan Nuclear Energy Safety Organization (JNES) of the conditions of the reactors and other equipment. It put the total releases of iodine-131 and cesium-137 at 370,000 iodine-equivalent TBq. ($370,000 \times 10^{12}$ Bq.) – i.e., hundreds of thousands of terabecquerels – and deemed the situation to be Level 7.

With assistance from JNES, the Nuclear Safety Commission (NSC) of Japan also calculated the total volumes of the radioactive materials released from the NPS into the environment between March 11 and April 5. It estimated the total iodine-131 and cesium-137 at 630,000 iodine-equivalent TBq. ($630,000 \times 10^{12}$ Bq.). According to the data released by the NSC, the cumulative released volume increased sharply on March 25, which is thought to have been caused by damage to the pressure suppression pool at Unit 2.

NISA noted that neither its estimate nor that of the NSC was much more than 10% of the total amount of iodine-131 and cesium-137 released by the Chernobyl accident (5.2 million iodine-equivalent TBq.).

Previously in Japan, the most serious accident had been the JCO criticality accident of 1999, registering Level 4 on the INES scale. The accident at Fukushima Daiichi is now the worst nuclear accident in Japan's history. Moreover, radioactive substances continue to be released into the environment. A final evaluation must await the resolution of the situation and precise determinations of causes through investigations by multiple groups of experts.

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