

June 6, 2011

Radiation Understated After Quake, Japan Says

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TOKYO — Japan said Monday that radioactive emissions from the stricken Fukushima Daiichi nuclear power plant in the early days of the March 11 earthquake and tsunami disaster might have been more than twice as large as a previous estimate, suggesting the accident was more grave than the government had publicly acknowledged.

It is unclear whether a more accurate reading of emissions levels would have promoted a swifter or wider evacuation from around the plant. Still, the lag in reporting the true extent of the emissions added to what some critics have called a litany of confusing and contradictory data and analysis from the Japanese authorities, putting officials on the defensive about whether they delayed, or even blocked, the release of information to the public.

Last month the government acknowledged that three of the plant's reactors had probably suffered fuel meltdowns, after having denied that possibility.

On Monday, Japan's nuclear regulator, the Nuclear and Industrial Safety Agency, said that the reactor pressure vessel at one of the plant's reactors appeared to have been compromised as early as five hours after the quake.

The agency also said it now estimated that the radioactive release from the plant totaled 770,000 terabecquerels in the first week after March 11. The agency had previously estimated 370,000 terabecquerels released in the first month.

A terabecquerel is a trillion becquerels, a commonly used measure of the radiation emitted by a radioactive material.

The agency suggested that the higher emissions estimate was equivalent to only about 10 percent of the radioactive materials released in 1986 by the explosion and fire at Chernobyl, still widely considered the world's worst nuclear plant disaster, in the former Soviet Union.

But the 770,000 terabecquerels figure in fact comes to about 40 percent of the official Soviet estimate of emissions from Chernobyl.

Most experts say that the true emissions from Chernobyl were 1.5 to 2.5 times as high as the Soviet Union acknowledged. Assuming that true emissions from Chernobyl were twice the official figure, the Fukushima nuclear accident has released 20 percent as much as Chernobyl, according to Japan's new estimate.

Japanese officials have stressed other differences between Fukushima and Chernobyl. At Chernobyl, a burning graphite reactor pushed radioactive particles high into the atmosphere and downwind across Europe. At Fukushima, the leak mostly produced radioactive liquid runoff into the ocean and low-altitude radioactive particles that have dispersed into the ocean, which suggests that the crisis could pose fewer health risks.

Japan's assessment has been based largely on computer models showing heavy emissions of radioactive iodine and cesium from March 14 to 16. Officials have said that the emissions peaked during those days, and have dropped sharply since.

Even at the time of the first estimate in April, Japan's Nuclear Safety Commission, an independent government panel, had called the reading too low. Its own estimate was 630,000 terabecquerels in the first month, or about 34 percent of the official Soviet estimate and 17 percent of the unofficial higher estimate.

The commission relied on a computer model that uses radiation measurements taken at various distances from a nuclear accident. The model produces an estimate of the radioactive material escaping from the source.

But the Nuclear and Industrial Safety Agency based its number on estimates of the damage to the reactors' radioactive cores. Its latest reading more accurately reflects the radioactive material spewed after hydrogen explosions at Reactors 2 and 3, the agency said.

Officials cautioned that there was a wide margin of error involved in both calculations.