

# What To Do With All The Nuclear Waste

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This week the International Atomic Energy Agency (IAEA) visited Fukushima Daiichi, to investigate the accident, and TEPCO's emergency response actions. At Fukushima, massive amounts of high radioactive waste have been created, with no clear plan for long-term or permanent storage. Spent nuclear fuel is about 95% Uranium, another 1% consists of heavy elements such as curium, americium, and plutonium. See [Bloomberg Report](#)

As of May 18th 2011, almost 100,000 tons of radioactive water had leaked out of containment at Fukushima. The data also shows that the amount of radiated water may double by the end of December.

As a comparison, it is estimated that the United States has 71,862 tons of waste, according to state-by-state numbers obtained by the Associated Press. Illinois has 9,301 tons of spent nuclear fuel at its power plants, the most of any state in the country, according to industry figures. It is followed by Pennsylvania with 6,446 tons; 4,290 in South Carolina and roughly 3,780 tons each for New York and North Carolina. For long term storage the United States Government had looked to design a storage facility at Yucca Mountain, designed to hold 77,160 tons.

"Tepco knows more than they've said about the amount of radiation leaking from the plant," Jan van de Putte, a specialist in radiation safety trained at the Technical University of Delft in the Netherlands, said yesterday in Tokyo. "What we need is a full disclosure, a full inventory of radiation released including the exact isotopes."

On May 20th, 2011 Prime Minister Naoto Kan spoke to the Japanese parliament, and admitted that "The government failed to respond to TEPCO's mistaken assumptions, and I'm deeply sorry."

### Japan looking to store waste on-site to save money at risk of population

While publically acknowledging the dereliction of duty, both the Japanese Government, and TEPCO move forward business as usual. Now speculation is being raised that Fukushima Daiichi might be designated as a "nuclear graveyard" to store the radioactive waste. This decision is in direct contrast with most nuclear experts, who are alarmed at the amount of waste that would be stored on site, in a very seismically active region.

"We are involved in intense talks on the cleanup of the Dai-Ichi plant and construction of nuclear waste storage facilities at the site is one option," said Morokuzu. The crippled plant would be an ideal nuclear fuel graveyard because building a new one would cost several

million yen, according to Muneo Morokuzu, professor of energy and environmental public policy at the University of Tokyo.

High-level waste storage is complicated, it involves solidifying the waste into borosilicate glass, and placing it inside heavy stainless steel cylinders. These casks are then transferred to interim storage sites, while they are shipped to long-term underground repositories.

WATCH THIS MOVIE!

Into Eternity - What To Do With Nuclear Waste

It is a peek inside an amazing underground facility being built in Finland to store nuclear waste, called "Onkalo" - the Finnish word for "hiding place." The project first broke ground in the 1970s and will not be completed for 120 more years. It is designed to last 100,000 years - the time it takes for nuclear waste to become safe

"It's the first time we're knowingly building a post-human structure," Madsen said by Skype from Denmark. "This problem of a hundred thousand years, and how to act responsibly may exceed what is possible for us humans to grasp."

Consider that the Egyptian pyramids are less than 6,000 years old. The oldest known man-made structure, a stone cave wall in Greece, is 23,000 years old. "There's maybe an expectation that civilization as we know it will cease to exist within this time span," Madsen said. "Therefore we cannot expect people in the future to know what radiation is. Therefore (Onkalo) has to be able to operate by itself."

The Finnish and Swedish governments are collaborating on the project because they believe it would be irresponsible to keep hazardous nuclear waste above ground, as we do currently, a fact the Japanese have paid dearly for since the earthquake and tsunami in March. The Onkalos are designed to be invulnerable to above-ground dangers such as natural disasters, war or terrorism.

"If the expansion of nuclear energy were to stop today, then when this Onkalo is finished in 120 years and sealed off, you will need another 99 facilities of the same capacity" to store the rest of the world's waste, Madsen said. "But if conservative estimates of the continued use and expansion of nuclear energy are correct, you would need 500 such facilities."

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