

Fukushima: Six Years On

By John LaForge
Spring 2017 *Quarterly*

March 11 marks the 6th anniversary of the world's worst nuclear reactor disaster: the 2011 meltdown of three large power reactors on the Pacific Coast of Japan—Fukushima Daiichi—following a staggering 9.0 magnitude earthquake—the biggest in recorded Japanese history—and its 50-foot tsunami. The “station blackout” or total loss of electric power and cooling in six reactors, and the consequent hydrogen explosions and uncontrolled overheating and “melt-through” of three reactors, has resulted in the most devastating and complicated radiation catastrophe in history.

Fukushima is regularly misreported as less drastic than the single-reactor catastrophe at Chernobyl, in Ukraine, in 1986. But France's Institute for Radiological Protection and Nuclear Safety, reported five years ago that Fukushima was already the biggest single spill of man-made radioactive materials into the marine environment ever seen or recorded.¹ At least 300 tons of highly contaminated runoff have poured daily into the Pacific ever since.

Dr. Helen Caldicott says in the documentary short *Fukushima: Beyond Urgent*, that aired Feb. 13 says, “Japan is by orders of magnitude many times worse than Chernobyl.” In *Crisis Without End* (2014), Caldicott warned: “The Fukushima disaster is not over and will not end for many millennia. The radioactive fallout, which has covered vast swaths of Japan, will remain toxic for hundreds of thousands of years. It cannot simply be ‘cleaned up,’ and it will continue to contaminate food, humans, and animals.”

The disaster of “Fukushima squared” (earthquake + tsunami + station blackout times three melted reactor cores) was caused by deliberate decisions made by General Electric, Tokyo Electric Power Co. and the government: to build reactors in earthquake zones; to place emergency back-up generators in flood-prone basements; and to ignore long-standing warnings about inadequate seawall protection.

For these reasons, Nukewatch never calls what's happened at Fukushima an accident. Rather, we believe with Mayor Tamotsu Baba, of the town of Namie, who said in August 2011 that his “people were unnecessarily exposed...” and that the government's withholding of warnings about radioactive fallout was comparable to “murder.”²

Radiation-caused illnesses, cancers and fatalities that result from reactor disasters (Windscale in England, Three Mile Island in Pennsylvania, Chernobyl in Ukraine, and Fukushima) are scientifically predictable and known in advance. Researcher Arnie Gunderson noted two years ago that “Two reports recently released in Japan, one by Japanese medical professionals and the second from Tokyo Electric Power Corp., acknowledged that there will be numerous cancers in Japan, much greater than normal, due to the radioactive discharges from the triple meltdown at Fukushima Daiichi... I believe, as do many of my colleagues, that there will be at least 100,000 and as many as one million more cancers in Japan's future as a result of this meltdown... The second report received from Japan proves that the incidence of thyroid cancer is approximately 230 times higher than normal in Fukushima Prefecture... So what's the bottom line? The cancers already occurring in Japan are just the tip of the iceberg. I'm sorry to say that the worst is yet to come.”³

Japanese authorities now overseeing Fukushima's disaster response are pressuring citizens to live in or return to areas that are contaminated with up to four times the annual radiation exposure allowed in similarly contaminated areas around Chernobyl.⁴ Thousands of Japanese incinerators are burning thousands of tons of contaminated debris collected in clean-up efforts—spreading radiation to the winds; and millions of tons of

related debris will reportedly be used in road construction throughout Japan, exposing highway workers and nearby residents to long-term radiation risks.

On this somber anniversary, we remember the 19,000 people killed by the tsunami, the 160,000 evacuees who fled radiation zones contaminated by wreckage, and the infants, children and parents who endlessly endure examinations and treatments for thyroid problems stemming from the disaster.

The total cost of decommissioning the destroyed reactor complex and providing compensation to victims has repeatedly doubled. A December 2016 estimate puts the cost at \$250 billion.⁵

The *Japan Times* reported this February that “Scientists still don’t have all the information they need for a cleanup that the government estimates will take four decades.... It is not yet known if the fuel melted into or through the containment vessel’s concrete floor, and determining the fuel’s radioactivity and location is crucial to inventing the technology to remove the melted fuel.”⁶

According to Dr. Shuzo Takemoto, a professor of Geophysics at Kyoto University, “The problem of Unit 2... If it should encounter a big earth tremor, it will be destroyed and scatter the remaining nuclear fuel and its debris, making the Tokyo metropolitan area uninhabitable. The Tokyo Olympics in 2020 will then be utterly out of the question.”⁷

Dr. Caldicott wrote this February, “should there be an earthquake greater than 7 on the Richter scale, it is very possible that ... structures could collapse, leading to a massive release of radiation as the building falls on the molten core[s] beneath.”⁸

“Voluntary” evacuees to lose housing support

Some 27,000 so-called “voluntary evacuees”—people who fled their homes in areas beyond mandatory evacuation zones after the disaster began—were to lose their six-year-old housing subsidies at the end of March, 2017.

Thousands of Japanese, wary of government assurances that radiation was limited to official exclusion zones, chose to leave their homes. Many families reported suffering health problems beyond the officially contaminated area, including nose bleeds and nausea.

A local Fukushima Prefecture government spokesman told the news agency AFP that areas not covered by the original evacuation orders have been deemed safe, so housing subsidies were no longer necessary. “The environment is safe for leading a normal life and that means we are no longer in a position to provide temporary housing,” he told AFP.⁹

Greenpeace has said “This amounts to economic coercion of those individuals and families that are victims of a nuclear disaster they had no part in creating. The group called on the Japanese government to cease its return policy, provide full financial support to evacuees, and “allow citizens to decide whether to return or relocate free from duress.”¹⁰

Groundwater from the mountains behind Fukushima gushes into the quake-smashed reactor foundations, pours over the melted fuel and becomes highly contaminated. This water then runs to the Pacific Ocean which is undergoing the largest radiation dump in recorded history.

A deeply trenched and drilled underground wall of ice that was supposed to divert ground water away from the reactors failed. Nuclear Engineering International reported last August 23 that according to experts, “little or no success was recorded in the wall’s ability to block the groundwater and the amount reaching the buildings has not changed after the wall was built.”

The Pacific covers more than 30% of the Earth’s surface, and with a surface area of more 62 million square miles, its basin is larger than the landmass of all the continents combined.

Part of the reason that whole-sea contamination can result from Fukushima was revealed last February when radiation gauges for the first time got near the melted fuel.

What the Tepco called “astounding” and “unimaginable” levels of radiation were recorded in January and February inside reactor 1. The radiation reading 530 sieverts per hour in January and 650 sieverts/hr on Feb. 9, Tepco said.¹¹

News accounts first called this a “spike” in radiation levels, since the highest reading even during the disaster’s first days was 73 sieverts/hr.

The Washington Post reported that Azby Brown of the citizen science group Safecast, said “It doesn’t necessarily signify any alarming change in radiation levels at Fukushima. It’s simply the first time they’ve been measured that far inside the reactor.”¹²

On Safecast’s website, Brown wrote: “While 530 Sv/hr is the highest measured so far at Fukushima Daiichi, it does not mean that levels there are rising.” Kevin Kamps of Beyond Nuclear also said “The 530 sieverts or 53,000 rems per hour has probably been there the whole while since March 2011.”

Further, the 530 sievert reading was taken some distance from the melted fuel, so the actual level could be 10 times higher than recorded, according to Hideyuki Ban, of Japan’s Citizens’ Nuclear Information Center, who spoke to the Washington Post.

Dr. Caldicott writes that “These facts illustrate why it will be almost impossible to ‘decommission’ units 1, 2 and 3 as no one could ever be exposed to such extreme radiation.”

Exposure to just one sievert is enough to result in infertility, hair loss and cataracts. According to the National Institute of Radiological Sciences, a mere four sieverts can kill a person.

Notes

¹ “Fukushima Disaster Produces World’s Worst Nuclear Sea Pollution,” Maritime Executive.com, Oct. 28, 2011

² “Japan Held Nuclear Data, Leaving Evacuees in Peril,” *New York Times*, Aug. 9, 2011

³ GreenMediaInfo.org, Nov. 18, 2015

⁴ Editorial Board, “Fukushima’s voluntary evacuees,” *Japan Times*, Dec. 3, 2016

⁵ “Tepco: Fukushima nuclear clean-up, compensation costs nearly double previous estimate at \$250 billion,” Australian Broadcasting Corp./ABC News Online, Dec. 16, 2016

⁶ Emi Urabe, “Fukushima Fuel-Removal Quest Leaves Trail of Dead Robots,” *Japan Times*, Feb. 17, 2017

⁷ Shuzo Takemoto, “Potential Global Catastrophe of the Reactor No. 2 at Fukushima Daiichi,” Feb. 11, 2017

⁸ “The Fukushima Nuclear Meltdown Continues Unabated,” *Independent Australia*, Feb. 13, 2017

⁹ AFP, Straight Times, Jan. 17; and Japan Today, Jan. 18, 2017

¹⁰ Greenpeace, “Nuclear Scars: The Lasting Legacies of Chernobyl and Fukushima,” March 2016, p. 22

¹¹ Japan Times, Feb. 9, 2017

¹² Washington Post, Feb. 8, 2017