

# On the Bright Side

## So Long to Japan's "Breeder" of Radioactive Waste

The Monju fast-breeder nuclear reactor in central Japan is the latest to join the long line of failed attempts to prove breeder technology. Even though Monju has been largely shutdown since a bad accident in 1995, proponents of the "sodium cooled" technology still promised miracles like perpetual power generated by producing more reactor fuel than was used. Monju limped along in cold shutdown after the accident, until 2018 when Japan's Nuclear Regulation Authority put the final nail in its coffin and approved a plan for decommissioning—just like similar dead-end projects in the US, UK, Germany and France. One headline in *Asian Review* read, "Japan to shut troubled 'dream' nuclear reactor: The decades-old plant cost almost \$10 billion and hardly ever operated." It operated only 250 days in the 14 years since its 1994 start up.

Japan expects to spend over \$3.5 billion to decommission the giant machines which it estimates will take 30 years, (four years just to remove its 530 fuel rods) and engineers estimate the process will create 26,700 tons of radioactive waste. There is no process yet designated for removal of the 760 tons of radioactive liquid sodium coolant. The operators still have no licensed and approved destination for the high-level waste fuel rods, beyond placing them in an onsite cooling pool.

The theory behind breeder reactors was to produce more fuel than they use. Liquid Metal Fast Breeder Reactors like Monju were to use plutonium fuel rods to produce more plutonium. Most breeder experiments, such as Monju, are cooled

by liquid sodium, the "liquid metal," an extremely dangerous chemical that ignites on contact with air and explodes on contact with water. The designers aspired to create a "plutonium economy" to make nuclear power viable long after the supply of uranium was depleted. Another breeder pipe dream was that the reactors would reduce the volume of solid radioactive waste by extracting plutonium from waste uranium fuel rods and turning it into fuel. The Achilles heel in this plan is its generation of huge volumes of liquid high-level waste.

Even after 60 years and tens of billions of dollars invested, not a single breeder reactor experiment has succeeded. "Despite its theoretical attractiveness in converting non-fissile into fissile material, the breeder reactor has turned out to be a far tougher technology than thermal reactors. Unfortunately the dream of breeder reactors has remained a theory. The magic of fuel multiplication has not yet been realized on any meaningful scale." This assessment, written nearly 20 years ago by Arjun Makhijani and Scott Saleska in *The Nuclear Power Deception*, has been confirmed over and over again. Nevertheless, Russia, India and China continue to invest in the concept. —*The Mainichi*, Aug. 30, 2018; *Nikkei Asian Review*, Apr. 6, 2018; *Japan Times*, Dec. 6, 2017. —*KL & JL*

## Walkatjorra Walkabout to Ban Uranium Mines in Western Australia

In the state of Western Australia a group that reached over 50 at times left Wiluna by foot led by Wangkatja Indigenous elders of the Goldfields region. For the eighth year in a row the Walkatjorra Walkabout hiked through four areas threatened with uranium mines to amplify the voice of indigenous traditionalists and local organizations that have



Kado Muir, at left, of the Western Australia Nuclear-Free Alliance joined the walkabout. Photo by the Australian Broadcasting Corp.

struggled for decades to remain nuclear-free.

In 2017, a state ban on uranium mining was declared by the government of Western Australia except for four proposals at Kintyre, Yeelirrie, Wiluna and Mulga Rock. The strength of local anti-mining movements has set back all four mining plans, none of which have received final approval. While there is no uranium mining in Western Australia, the walkers want it banned completely before any of the proposals are developed. The 155-mile walk ended in Leonora Sept. 3. Along the way walkers met with communities that could be impacted by the mines and shared stories from their struggles. "The Walkatjorra Walkabout is a pilgrimage across Wangkatja country in the spirit of our ancestors, so together, we as present custodians, can protect our land and our culture for future generations. My people have resisted destructive mining on our land and our sacred sites for forty years," said Kado Muir, one of the walkers. —To support or join the Walkabout next year see: [walkingforcountry.com](http://walkingforcountry.com)

## Another Worker Exposed at Hapless Idaho Radioactive Waste Handling Site

A worker was exposed to dangerously high levels of radiation after an accident on June 5 at a Department of Energy facility in Idaho—the Radioactive Waste Management Complex, which is run by Fluor Idaho, a DOE contractor—where there have been multiple accidents in recent years.

The facility is part of the Department of Energy's 890-square-mile "Idaho site," which includes the

Idaho National Laboratory, used by the federal government for radioactive waste disposal since the 1950s. In recent years, it has been the focus of concerns from state officials and watchdog groups who are alarmed at the volume of radioactive material being held there.

Erik Simpson, a spokesperson for Fluor Idaho, told Yahoo News that the company is conducting an "in-

vestigation of the event" and that "the worker was reaching across the glove box tray, the worker felt a prick in the forearm. The employee immediately stopped work and discovered a puncture wound had penetrated the PPE," Simpson said, referring to "personnel protective equipment."

Simpson, who did not name the worker, said "medical attention was provided" and "the employee was released back to work and will continue to be monitored."

## Climate Too Hot for Nuclear Power

Andy Rowell asks a beautifully rhetorical question in the Aug. 10 *Earth Island Journal* online: "For the last decade the nuclear industry has been telling us it is the solution to climate change. But if their reactors can't work in our rapidly warming world, are we just building a whole new generation of expensive white elephants?"

Indeed, Reuters reported Aug. 4 that Paris's Electricity of France (EDF) shut down four nuclear reactors at three sites due to the heat wave. EDF, the mostly government-owned utility, shut down the reactors because of the scorching summer heat wave that slammed Europe raising temperatures in the Rhone and Rhine Rivers. Temperatures reached 98.6°F in the Rhone valley, home to 14 power reactors. Highs in Spain and Portugal in early August stayed around 104°F and reached 47°C or 116.6°F.

The European heat wave's warming of seawater forced Finland's two Loviisa reactors, about 65 miles outside Helsinki, to reduce power in July, just as it did in 2010 and 2011, Reuters reported. The July 2006 heat wave also forced European reactor operators to reduce or halt production due to dramatic increases in the temperature of river water. *The Guardian* reported then that Spain shut down its reactor on the River Ebro. Reactors in Germany also cut output, and several in Germany and France were permitted to temporarily violate temperature limits on hot water returned to rivers.

In 2003, temperatures in French rivers reached record highs that also forced the temporary powering down of four reactors. France's nuclear oversight authority then gave some reactor operators permission to return the river water at temperatures not normally allowed, a move that critics said would endanger fish and add to global warming.

Meanwhile, rising sea levels threaten to shutter one-out-of-four of the world's 460 power reactors currently built on coastlines. John Vidal reports in the Aug. 21 edition of *Hakai* magazine that experts have warned that even newly built seawalls may not provide sufficient protection. Vidal interviewed Pete Roche, a former adviser to the UK government and Greenpeace, who pointed out that the seawall at the \$25-billion Hinkley Point C nuclear station being built in southwest England "does not adequately take into account sea-level rise due to climate change."

"In fact," Vidal reports, research by *Ensis*—a nonprofit environmental magazine published at the University of Minnesota—suggests that "at least 100 US, European, and Asian nuclear power stations built just a few meters above sea level could be threatened by serious flooding caused by accelerating sea-level rise and more frequent storm surges."

The two St. Lucie reactors in Florida are among the US coastal nuclear sites considered most vulnerable to storm surges. While no US reactors have been "in imminent danger of a meltdown because of a storm surge," Vital notes, there have been many close calls. "Three US reactors were temporarily shut down because of Hurricane Sandy in 2012 and a fourth, Oyster Creek in New Jersey, was put on alert when water levels rose dramatically, according to the US Nuclear Regulatory Commission."

Not that the NRC is concerned about storm surges: In August 2017, as Hurricane Harvey pummeled east Texas, environmental groups called for the immediate shutdown of the two South Texas Project nuclear reactors near Bay City. Instead, the twin, 42-year-old behemoths were kept running at full capacity throughout the disaster, the wettest tropical cyclone on record in the United States. —*JL*

According to a friend, the accident occurred when a "piece of metal cut through" the worker's hazardous materials suit and lab coat. The friend described the incident as a "freak event" and said the worker underwent surgery on her forearm, which was the "penetration site." The worker also was treated with chelation therapy to "flush her of plutonium and americium," her friend said. Chelation is a medical procedure that removes toxic metals from the body.

This accident comes on the heels of a situation in the complex in April, when four barrels containing radioactive sludge ruptured. [See "Rad Waste's 'Gaseous Ignition,'" in *Summer Nukewatch Quarterly*.]

According to the Associated Press, the DOE has missed multiple deadlines to move waste out of Idaho and has paid approximately \$3.5 million in fines.

In 2011, there was a high-profile incident at the Idaho National Laboratory where 16 employees were exposed to plutonium dust. The Center for Public Integrity found that the 2011 incident came after warnings from staffers about dangerous conditions at the facility. The CPI also found that the 2011 incident "was preceded by two other serious instances of radioactive contamination at the lab ... and that it was also followed by two additional, avoidable radioactive contaminations there."

Despite these issues, the DOE is planning to ship 7,000 cubic meters of radioactive waste from a site in Washington to the Idaho National Lab. Local politicians and the Snake River Alliance are fighting that plan.

Snake River Alliance Nuclear Program Director Beatrice Brailsford told Yahoo News, "We'll always have nuclear waste. That's already happened. But we should not be compounding the problem."

—*This is a edited version of a June 16, 2018 article by Hunter Walker for Yahoo News.*