

Untold story

Of Fukushima and Chernobyl

Peter Saunders

[Chernobyl deaths are many times the official figures and Fukushima not unanticipated.]

The explosions and fires at the Fukushima Daiichi reactors, almost exactly on the twenty-fifth anniversary of Chernobyl, have made most of concerned people even more worried about the hazards of nuclear energy. The nuclear lobby see things differently: the explosion at Chernobyl was due to the poor design and incompetent operation of the reactor under the Soviet system, and hardly anyone died as a result; as for Fukushima, it was hit by a tsunami far larger than anyone could possibly have anticipated, and the good management of its owners, the Tokyo Energy and Power Company (TEPCO) and the brave efforts of the Japanese emergency services ensured that little harm was done.

That story is very far from the truth.

Chernobyl

The Chernobyl Forum, a group dominated by the International Atomic Energy Agency (IAEA) whose purpose is to promote nuclear technologies, puts an upper limit of about 4,000 deaths due directly to Chernobyl and another 5,000 to which it may be a contributory factor. Many advocates of nuclear power, including the recent convert George Monbiot, maintain that apart from the fewer than 100 deaths shortly after the incident, the only harmful effect was about 7,000 cases of thyroid cancer among children, almost all of whom made full recoveries; and that even these could have been prevented had the Soviet authorities acted promptly to distribute iodine and stop the sale of contaminated milk.

However, there is solid evidence that both the mortality and morbidity (non-fatal illnesses) caused by Chernobyl were much higher. Drawing on records mostly in Slavic languages and not readily available in the West, but also some from Western Europe, scientists in the former Soviet Union have shown that the death toll was far greater than the world at large has been led to believe. Estimates by the Russian and Belarus Academies of Sciences and the Ukrainian National Commission for Radiation Protection are in the hundreds of thousands. The most detailed study currently available in English is that of Yablokov, Nesterenko and Nesterenko. In a report of 327 pages and with hundreds of references, they conclude that there will be about a quarter of a million cancer deaths and that several hundred thousand people in the former Soviet Union have already died from cancer and other conditions caused by Chernobyl.

Like most of the pro-nuclear camp, Monbiot said nothing about the work of Yablokov and co-workers in his original article; and may well not have known about it. When it was drawn to his attention, he dismissed it out of hand on the grounds that this work, which he described as "the only document that looks [sic] scientific", had been the subject of a "devastating review" in the journal *Radiation Protection Dosimetry*. Anyone who takes

the trouble to look up the review will find it very hard to understand how Monbiot could possibly call it "devastating"; for it actually says in the last paragraph: "The subject is not yet closed." Monbiot, who accuses other people of cherry picking the evidence, somehow neglects to mention that in the same issue of the journal, immediately before the review he is referring to, there is another review that supports the general conclusions of Yablokov and coworkers.

Fukushima

What happened at Fukushima was not exactly unanticipated. Tsunamis, powerful waves caused by earthquakes under the sea, are relatively frequent in Japan because there is a major geological fault just off the east coast. TEPCO claimed that while Fukushima Daiichi, like most Japanese nuclear installations, is on the coast, it was safe because the reactors were protected by a seawall above the level that a tsunami could reach. In fact, the 2011 tsunami reached about 8.2 m above TEPCO's prediction. Ten years ago, a group of Japanese scientists applied modern techniques to studying the Jogan tsunami of AD 869, which had come ashore at almost the same place. They concluded that the water had reached more than four kilometres inland across the Sendai plain, even further than this year's. They also found that there had been at least two earlier massive tsunamis, one about 900 years before the Jogan tsunami and the other about 800 years before that.

Because earthquakes involve the sudden release of pressure that builds up over a long period of time, major events tend to occur at roughly regular intervals. The scientists wrote: "The recurrence interval for a large scale tsunami is 800 to 1100 years. More than 1100 years have passed since the Jogan tsunami, and, given the recurrence interval, the possibility of a large scale tsunami striking the Sendai plain is high."

Six years later, when engineers from TEPCO were assessing the possible danger to their reactors, they explicitly ignored that and all other data of events before 1896 on the grounds that these could be less reliable owing to "misreading, misrecording and the low technology available for the measurement itself." That was how they were able to conclude that the Fukushima plant was not at risk from any imaginable tsunami.

There was also too much spent fuel stored on site. This is common at nuclear plants everywhere because the designers have generally assumed that the waste would be taken to a permanent store as soon as it was cool enough to move safely. No such stores exist yet anywhere in the world, and while the fuel rods can be put into strong metal casks for the time being (this is usual in Germany), most are left in cooling ponds that were not designed for medium term storage, and are less well protected and require a reliable supply of electricity and water. At Daiichi, there were cooling ponds on the upper floors of the reactor buildings, and in particular the one in No. 4 Reactor led to two explosive fires. There was a serious danger that these ponds would run dry, and this was only averted by the use of fire engines and even helicopters to get water into the ponds.

Only two weeks before the tsunami, TEPCO had admitted to safety inspectors that it had failed to inspect 33 pieces of equipment at the plant, including a backup power generator. In 2002, TEPCO admitted that it had falsified safety records at the No. 1 Reactor at Fukushima.

Windscale

Chernobyl and Fukushima are the most serious nuclear incidents so far, but they are not the only ones in which poor design and management have led to deaths from nuclear radiation. In October 1957, for example, there was a fire at the Windscale (now Sellafield) nuclear installation in the northwest of England. It was later estimated that the radiation released in the fire caused about 100 cancer deaths in Britain. The radiation released at Chernobyl was about a thousand times that at Windscale, which makes it implausible that the number of deaths due to that explosion could be as few as 4,000, still more than the fewer than a hundred claimed by writers like Monbiot.

The government played down the scale of the incident so as not to alarm the public or threaten the nuclear weapons programme. It heavily censored Sir William Penney's report and spun it to put the blame on the personnel rather than the plants. Fifty years later, however, an editorial in the *Journal of Radiological Protection* described Windscale as "an accident waiting to happen."

On the fiftieth anniversary of the Windscale fire, Paul Howarth, now Managing Director of the UK National Nuclear Laboratory, was asked if Windscale could happen again. He replied: "No, there are much greater levels of safety, our level of understanding is greatly improved and the technology is fundamentally different."

There has not been a similar accident at Windscale, though there have been other incidents, such as the leak in 2006 of over 83,000 litres of acid containing uranium and plutonium at the Thorp facility. This went undetected for eight months.

Fukushima demonstrates that while the technology and understanding have indeed improved, the attitude of the nuclear industry has not. It still fails to heed warnings of weaknesses of design, it is still not punctilious enough about safety, it still tells the public as little as it can get away with, and it still does all it can to play down the consequences of incidents that occur. And, like other industries such as biotechnology and pharmaceuticals, it is quick to dismiss inconvenient evidence on the grounds that it hasn't been peer reviewed, or the measurements weren't as reliable as they might have been, or whatever.

As Fukushima demonstrates, nuclear power is inherently dangerous. It is also not economical; no nuclear plant has ever operated without a government subsidy and no one seriously expects that any will in the future. The subsidy may be visible or it may be concealed as a cheap loan, a permanent low-carbon premium, an open cheque for the cost of disposing of the waste, or in some other form. Furthermore, people do not need it even as "part of a basket of technologies": on the most optimistic estimates, nuclear energy could not produce more than eight percent of the UK's total energy requirement in the foreseeable future. This could easily be made up by renewables if governments choose to invest in wind, solar, biogas and other technologies that already exist and are becoming ever more efficient and cost effective.

Countries that shift their investment from nuclear to renewables now will reap the further economic benefit of becoming leaders in the key technologies of the twenty-first century. ☑☑☑

—Third World Network Features

[Following the disaster at the Fukushima nuclear power plant, Japan's Prime Minister has announced that Japan will abandon plans to build new nuclear reactors and will review its energy policy, giving more emphasis on renewables, according to press reports]