

Why Nuclear Power Must Go

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From the very beginning, unlocking the power of the atom for “peaceful” energy production was about waging war to its logical endpoint: the power to destroy life on a planetary scale.

People around the world were aghast at the apocalyptic destruction wreaked on Japan during a few hellish minutes when the United States dropped the nuclear bombs codenamed Little Boy and Fatman on the cities of Hiroshima and Nagasaki in August 1945. The immediate loss of life, in the tens of thousands, coupled with the invisible and long-term effects of radiation sickness and cancers, brought the world up against the sharp razor edge of the nuclear age.

Subsequently, during the Cold War, NATO’s nuclear war policy was officially named MAD: Mutually Assured Destruction, a point parodied in the outstanding black comedy *Dr. Strangelove: Or How I Learned to Stop Worrying and Love the Bomb*.

If nuclear weapons were to have a future, perfecting them as the ultimate weapon of mass destruction needed a justification other than annihilating humans. Moreover, the plutonium typically used in fusion-based hydrogen bombs — hundreds and even thousands of times more destructive than an atom bomb — is not an element that occurs naturally on earth. It is a byproduct of fission, splitting uranium atoms to unleash and harness energy, that takes place inside nuclear reactors. Hence, without a nuclear power program, presented as the peaceful generation of unlimited, cheap and safe energy, it’s not possible to realistically produce the required amount of plutonium for nuclear weapons.

The first nuclear plants in the United Kingdom commissioned in the 1950s, at Calder Hall and Chapelcross, were explicitly for the production of plutonium for Britain’s nascent nuclear weapons program; generating electricity was a secondary consideration.

In 1954, Lewis Strauss, chairman of the US Atomic Energy Commission, imagined a nuclear-powered paradise: “Our children will enjoy in their homes electrical energy too cheap to meter. ... It is not too much to expect that our children will know of great periodic regional famines in the world only as matters of history, will travel effortlessly over the seas and under them and through the air with a minimum of danger and at great speeds, and will experience a lifespan far longer than ours, as disease yields and man comes to understand what causes him to age.”

Hammer of God

The interconnection between nuclear power and nuclear weapons is inescapable. Because nuclear

weapons are designed to be the Hammer of God, the ultimate arbiter of power, any country that is under external threat will logically seek to develop nuclear weapons as a deterrent, which was their stated benefit and contribution to “world peace.”

North Korea, following George Bush’s post-September 11 declaration that it was a member of the “Axis of Evil,” concluded it needed to develop and test a nuclear weapon, which it realized with an underground nuclear detonation in October 2006. Iran, the second member of the reputed Axis (Saddam Hussein’s Iraq having been the third), has been under intense US pressure for nearly a decade to abandon its civil nuclear power program despite having the legal right to pursue such a course.

Interestingly, thinly veiled threats that the United States or Israel may bomb Iran’s nuclear facilities are predicated on the links between military and civilian nuclear programs. This has been one of the main arguments of the anti-nuclear movement: that peaceful nuclear energy programs drive an ever-more terrifying arms race. Indeed, there are four nations with undeclared stockpiles of nuclear weapons developed from civil programs, and it is no coincidence that they are in some of the most militarized and dangerous areas of the world: Israel, Pakistan, India and North Korea.

The Next Fukushima?

With the deepening calamity at the Fukushima Daiichi nuclear power plant in Japan, there has been a great deal of focus on the possibility of other nuclear power accidents around the world.

According to a new report by the Union of Concerned Scientists cited by the Christian Science Monitor: “Nuclear plants in the United States last year experienced at least 14 ‘near misses’, serious failures in which safety was jeopardized, at least in part, due to lapses in oversight and enforcement by US nuclear safety regulators... While none of the safety problems harmed plant employees or the public, they occurred with alarming frequency — more than once a month — which is high for a mature industry.”

In the United States, 23 of the 104 operational nuclear reactors are built on the same 1960s design by the same company, General Electric, as the reactors at Fukushima. They have been recognized to have serious design faults since the 1970s and have been regularly retrofitted (patched up) to address design vulnerabilities that are routinely discovered and that could lead to a core breach and the release of radioactive isotopes.

Many plants sit on geologically active faults, in coastal locations or close to large sources of fresh water. The 36-year-old Indian Point nuclear power plant, located 35 miles from midtown Manhattan, has a history of safety problems and sits on two fault lines. The US government has warned its citizens to stay at least 50 miles away from Fukushima, while Japan has limited the evacuation and exclusion zone to 12 miles. If Indian Point were ground zero, creating a 50-mile buffer — which the chairman of the US Nuclear Regulatory Commission recommended to Congress in case of an accident comparable to Fukushima — would mean evacuating and relocating some 20 million people. Undertaking such a plan has been called a “fantasy”, and the agency in charge would be the Department of Homeland Security, which oversaw the government response to Hurricane Katrina’s pummeling of the Gulf Coast in 2005.

California has a 99.7 percent chance of being hit with a magnitude 6.7 earthquake or greater within the next 30 years. Nuclear plants in California with the same design as Fukushima’s are only built to withstand magnitude 7 to 7.5 quakes, while the one that hit Japan on March 11 was 9.0. We know a larger earthquake is possible because the 1906 earthquake that tore San Francisco apart measured

8.3. California would not be immune to a powerful tsunami such as the one responsible for the multiple meltdowns in Fukushima, and as crazy as it sounds, one nuclear power plant, the San Onofre facility located south of Los Angeles, is built right on the beach.

Instead of waiting for another devastating nuclear accident to occur in the United States rivaling the one at Three Mile Island in 1979, we need to push the government to abandon plans both to relicense old plants for another 20 years and build new ones.

Chain Reaction

Producing electricity by splitting apart uranium atoms is an inherently unstable process that can lead to a runaway nuclear reaction at any moment. The “controlled” chain reaction inside the core has to be relentlessly monitored to keep it within tolerable limits, particularly regarding pressure and temperature. Hence the need to keep the core cooled at all times and have control rods ready to drop into place at a moment’s notice, multiple back-up systems and fail-safe devices, at least two containment vessels, an evacuation plan, measures to prevent radiation leaks, regular testing of workers and the surroundings and so on.

This instability at the heart of nuclear power, combined with long-lived and extremely toxic waste, leads to the second insurmountable issue: its expense.

Boondoggle

The nuclear power industry knows it is an economic boondoggle, which is why it demands cast-iron guarantees of limited liability for accidents and huge government subsidies before considering construction of new plants. The Bush administration bestowed \$18.5 billion in loan guarantees on the industry, and the Obama administration doubled down with \$36 billion more.

Yet the nuclear industry is asking for \$100 billion more. It also requested an extension of tax credits without plant-size restrictions, an investment tax credit and a worker training and manufacturing tax credit, as well as reductions in tariffs on any imports of required materials and components.

Citibank, which has rarely met a risky investment it didn’t like, issued a report in 2009 that found little reason to cheer the industry. Titled “New Nuclear: The Economics Say No,” [1] it noted, “the risks faced by developers [of new nuclear plants] ... are so large and variable that individually they could each bring even the largest utility company to its knees financially.”

The Price-Anderson Nuclear Indemnities Act, first passed in 1957 and last renewed in 2005, restricts any costs payable by utility companies in the event of a nuclear accident to \$12.6 billion. Anything above that amount — which would be easily exceeded by any major accident — is covered by the public.

A comprehensive 2003 report by MIT, “The Future of Nuclear Power,” [2] outlined the huge obstacles to expanding nuclear power: “prospects for nuclear energy as an option are limited, the report finds, by four unresolved problems: high relative costs; perceived adverse safety, environmental, and health effects; potential security risks stemming from proliferation; and unresolved challenges in long-term management of nuclear wastes.”

A 2009 updated report [3] mentions that the current support program is “not yet effective and needs to be improved,” referring to increased government subsidies. According to a report cited in *Scientific American* [4], the costs to the taxpayer of building 100 new nuclear power plants, over the

lifetime of the plants, over and above costs associated with alternatives if they had been pursued, comes to a staggering \$1.9-4.1 trillion. As nuclear plants are notorious for cost overruns, the higher figure is much more likely.

The MIT report also undermines one common pro-nuclear power argument favored by environmentalists such as George Monbiot:

“At least it’s not coal.” The study states, “if more is not done, nuclear power will diminish as a practical and timely option for deployment at a scale that would constitute a material contribution to climate change risk mitigation.”

In short, without embarking on a frenzy of construction that surpasses the global programs of the 1970s and ’80s, nuclear power cannot make a meaningful contribution to mitigating climate change. The International Atomic Energy Agency, whose mission is to promote nuclear power, is even more skeptical: “Nuclear power is not a near-term solution to the challenge of climate change. The need to immediately and dramatically reduce carbon emissions calls for approaches that can be implemented more quickly than building nuclear reactors.”

Blowing in the Wind

Wind farms take only 18 months to come on line; nuclear plants typically take in excess of 10 years. The last nuclear power plant to come on line in the United States, at Watts Bar in Tennessee, took 23 years to build and cost \$6.9 billion. Numerous studies ranging from ones in the Wall Street Journal to independent energy analysts have put the cost of nuclear power at 12 to 20 cents per kilowatt hour. In contrast, those same studies put the cost of renewable energy at an average of six cents for the same output.

Governments around the world are not fond of nuclear power for its supposed environmental benefits or for its reliability, safety or economic superiority. Ruling elites want more nuclear power because of its connection to nuclear weapons production, the desire for Great Power status and the quest for energy independence.

There are many other reasons to phase out nuclear power, such as the growing mountain of long-term waste: the US government proposes to sequester waste for 1 million years — five times as long as homo sapiens have existed. Other drawbacks include the persistent and large cost overruns during construction, the astronomical expense of decommissioning of nuclear power plants, the heavily polluting and energy intensive mining and refining of nuclear fuel from uranium ore, the dangers of transporting nuclear fuel for reprocessing, the international trade in nuclear waste and the highly centralized nature of the power system which means, as Fukushima has demonstrated, if one facility goes down it takes out an enormous chunk of the electricity supply.

As nuclear plants have to be continuously operated as close to full capacity as possible to even come close to justifying their costs, they directly displace clean renewable sources of energy such as wind and solar. Like nuclear power, they are best suited for base-load supply, which means they supply the minimum power needed for a block of customers. In addition, if governments relicense nuclear plants for another 20 years and build new ones that operate for 60 years more, then there will be no “transition” to clean power until almost the end of this century.

It’s also a myth that nuclear power cannot be replaced by truly green energy. Many scientific studies show that it is possible to construct wind, solar, geothermal and tidal sources of energy that don’t generate radioactive waste, lead to resource wars, have low carbon footprints and don’t require

massive amounts of farmland, energy and water, unlike agro-fuels such as corn-based ethanol. Furthermore, the technology already exists to tap these genuine renewable sources for all of our electrical needs. To be fair, it would take 20 to 30 years of intensive manufacturing, engineering and construction to build the necessary generation, transmission, storage and distribution systems.

Ultimately, the problem is social and political, not a matter of science and technology. In that regard, it's not just Republicans, but Obama and the vast majority of Democrats who are in the pro-nuclear camp even in the face of catastrophe, and they steadfastly favor "clean" coal, more offshore oil drilling in the Gulf and the Arctic and increasing agro-fuel production. If we want a transition to a sane and clean energy policy, we will have to independently organize and fight for it.

The newspaper Naomi Klein calls "utterly unique," full of insightful dispatches from around the world, The Independent offers a fresh take on today's events.

Chris Williams

P.S.

* The Independent, Tuesday 26 April 2011:

<http://www.truth-out.org/why-nuclear-power-must-go/1303840209>

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Footnotes

[1] <http://ipsnews.net/news.asp?idnews=50308>

[2] <http://web.mit.edu/nuclearpower/>

[3] <http://web.mit.edu/nuclearpower/pdf/nuclearpower-update2009.pdf>

[4] <http://nucleargreen.blogspot.com/2009/06/scientific-american-inthe-era-of.html>