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Tells the Facts, Names the Names

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The Problems with the Pro-Nuclear Left

by Joshua Frank, Facebook Twitter Reddit, Email

Image by Frédéric Paulussen.

Last June, Bhaskar Sunkara, founding editor of *Jacobin*, praised the potential of nuclear energy, writing in *The Guardian*, "Nuclear is an idea whose time came and seemed to have passed, but may indeed have a future. For those of us looking for a solution to climate change, the least we can ask is that no plants like Indian Power close until we have a clean, dependable and scalable alternative already in place."

Central to Sunkara's argument was that we can easily separate the science of nuclear power from the technology of atomic weapons. "Some of the paranoia is no doubt rooted in cold war-era associations of peaceful nuclear power with dangerous nuclear weaponry. We can and should separate these two, just like we are able to separate nuclear bombs from nuclear medicine."

Sadly, Sunkara is echoing dangerous myths and perpetuating naive and simplistic anecdotes to support the pro-nuke cause. First, nuclear power and atomic bombs, like the tiny elements that create them, are intricately linked. The Army Nuclear Power Program, which began in 1954 and ran through 1976, was initially conceived to promote and develop mobile nuclear power technology for the United States military. The project churned out hundreds of nuclear power operators and facilitated the further development of nuclear capabilities and reactor designs. Additionally, the US government's role in any

future nuclear power development will also be a calculated one. More nuclear power plants mean more facilities to enrich and reprocess uranium. More of these plants means more materials for nuclear weapons. And in the US, nuclear power is more expensive than wind and solar and is only competitive if the market is leveled through taxpayer-backed subsidies, which in turn support nuclear arms proliferation. In a 2011 report by the Union of Concerned Scientists titled "Nuclear Power: Still Not Viable Without Subsidies," the authors explained:

Just as coal production generates carbon and other externalities that need to be integrated into pricing if economies are to make sound energy choices, the link between civilian nuclear power and nuclear weapons also cannot be ignored. As noted by Sharon Squassoni, director of the Proliferation Prevention Program at the Center for Strategic and International Studies, the 'dual-use [civilian and military] nature of nuclear technology is unavoidable. For the five nuclear-weapons states, commercial nuclear power was a spinoff from weapons programs; for later proliferators, the civilian sector has served as a convenient avenue and cover for weapons programs.' By artificially accelerating the expansion of civilian programs, subsidies to nuclear technology and fuel-cycle services worldwide exacerbate the already challenging problems of weapons proliferation. To date, the negative externality of proliferation has not been reflected in the economics of civilian reactors.

Carbon Un-Neutral

While Sunkara ignores the concerning relationship between nuclear weapons and nuclear power, they get a lot more wrong as well. Most importantly, despite the common misconception, atomic energy is not, and has never been, a carbon-free fuel source. Figures are often cited, typically from industry-funded PR, that nuke power will reduce CO2 emissions by upwards of 50 percent. This is blatant misinformation.

When each cycle of energy development is taken into account, nuclear falls well behind solar and wind with regard to CO2 emissions. These life cycle analyses (LCA) find that nuclear power, when every stage is taken into account, actually has a larger carbon footprint than natural gas plants, and almost double that of wind energy, and a significant amount more than solar. How is this even possible if nuclear energy itself does not produce CO2 emissions? It's because there are carbon dioxide emissions at every stage of the nuclear fuel chain. From plant and reactor construction, uranium mining, milling, and fuel fabrication to the transport of waste, emissions always trail behind. Physicist Keith Barnham points out that proponents of nuclear power flagrantly ignore this reality and brush aside the fact that uranium mining is extremely carbon-intensive. "Nuclear fuel preparation begins with the mining of uranium-containing ores, followed by the crushing of the ore then extraction of the uranium from the powdered ore chemically. All three stages take a lot of energy, most of which comes from fossil fuels," writes Barnham. "The inescapable fact is that the lower the concentration of uranium in the ore, the higher the fossil fuel energy required to extract uranium."

Then there's also the reality that existing uranium mines are nearing the end of their lifespans. Andrea Wallner of the Austrian Institute of Technology writes that:

Newly constructed nuclear power plants are supposed to have an operational life time of 60 years and a lead time between planning and operation of a facility of 10 to 19 years. Nuclear power plants which are currently being planned, would reach their end of expected life time in the period of 2080 – 2090; power plants now starting to operate, would be shut-down at the end of 2070…[Estimates assume that the] currently

operated uranium mines would be exhausted between 2043 and 2055. If we assume this scenario to occur, it would not be possible to supply a nuclear power plant built now with uranium until the end of its lifetime.

Mining Sacred Lands

The mining of uranium itself is an energy-demanding, brutal process and in the United States, it is also a neo-colonial practice. Uranium is a phenomenal element that provides insights into the formation of our planet. This radioactive metal has a half-life of 4.5 billion years, meaning it sticks around for a long, long time, even by geological standards, and paints a picture of the earliest days on Planet Earth. The largest uranium deposits in the United States are located on the Colorado Plateau, home of the Navajo people. During the height of the country's nuclear weapons program, the government extracted 250,000 metric tons of usable uranium from 100 million tons of uranium ore. The mines, which were full of radioactivity, were largely worked by indigenous Navajo. During the height of the country's uranium craze of the 1970s, there were 12,000 miners employed in the U.S., and a disproportionate number, upwards of 5,000, were of Navajo descent.

Paid very little, at times less than minimum wage, these miners would enter deep uranium shafts and chip away at the walls, often 1,500 feet below the earth's crust. The miners would fill their wheelbarrows with shovels full of this uranium ore, all while choking on soot and dust particles. It was dark. There was no ventilation. It was tremendously difficult, perilous work.

"The bitter tasting dust was all pervasive, coating their teeth and causing chronic coughing. They ate in the mines and drank water that dripped from the walls. The water contained high quantities of radon—a radioactive gas emanating from the ore," writes epidemiologist Eric Feigl-Ding of the Federal of American Scientists. "Radon decays into heavy, more radiotoxic isotopes called 'radon daughters,' which include isotopes of polonium, bismuth, and lead. Radon daughters' alpha particle emissions are considered to be about twenty times more carcinogenic than x-rays. As they lodge in the respiratory system, especially the deep lung, radon daughters emit energetic ionizing radiation that can damage cells of sensitive internal tissues."

Radon exposure causes lung diseases, the dangers of which were well-known to scientists and the medical community decades prior to World War II. But the Navajo and other miners were deemed expendable. Many developed lung cancers as a result; one estimate put the risk at thirty times greater for those who worked the mines as opposed to those who did not. The government later recognized their afflictions, and with the 1990 Radiation Exposure Compensation Act, paid out $100,000 per victim and issued a formal apology, but the damage was done.

In addition to the impact on Navajo health, their land, too, was ravaged. Upwards of three billion metric tons of waste was created as a result of uranium extraction on Navajo lands, a dizzying amount that continues to poison native communities throughout the Southwest to this day. Any call for new nuclear power development, especially from advocates on the left, mustn't ignore these past horrors or the potential that this ugly imperialistic past could repeat itself. Today, the US imports most of the uranium it uses in nuclear processes, and many reports note this same deleterious impact that uranium extraction has on those who mine it and the land that contains it. Uranium mines are notoriously poisonous operations, no matter how they are managed or regulated. Heap-leach mining, which uses sulphuric acid and cyanic salts in its processes, poisons water supplies. Underground uranium mines produce uranium yellowcake, which often ends up in large, toxic dumps. Surface and open-pit mining, often

deemed the best method for digging this stuff out of the ground, has plenty of risks, aside from the blatant landscape alteration. As with utilizing mountaintop removal to extract coal in Appalachia, open-pit uranium mines increase erosion and have the potential to kill entire waterways during landslide events. Such an incident occurred in 1979 on Navajo land, when a dam broke, flooding the Puerco River near Church Rock, New Mexico with 94 million gallons of radioactive waste. CO2 emissions aside, mining for uranium is a nasty, destructive enterprise, yet it's vital to nuclear power generation.

Atomic Dumps

Then there's the issue of what to do with all the waste that atomic energy produces. The radioactive leftovers have to go somewhere, but they can't just go anywhere. The Yucca Mountain Nuclear Waste Repository, which is currently closed, remains on the short-list for atomic dump sites. But it's a dangerous gambit. Geological faults run through the proposed site, which would include a 1,000-foot shaft, dug deep into the mountain. Yucca is also a sacred site to the Western Shoshone, who vigorously oppose the mine and have thus far been victorious. Proponents of nuclear power like to pretend future nuke plants won't produce as much waste as the rickety old ones, that the amounts are small and manageable, yet the reality is that they will still produce waste, and nobody knows exactly how much. Where will it all go? We know the poor and disadvantaged, and often indigenous, will end up dealing with the consequences. Currently, the US produces nearly more than 2,000 metric tons of radioactive waste every year. No energy source that produces radioactive waste that lasts millennia ought to be part of the climate solution.

Waste concerns aside, the risks of nuclear power production are substantial, and while there are many negative impacts of wind and solar, especially in the mining of materials used in renewable batteries, they appear less significant when up against the potential hazards inherent in every aspect of nuclear technology. Whether any renewable energy source is truly sustainable is a vitally important discussion. The dirty mining of rare earth minerals poses a real threat to indigenous communities and the environment, whether it's the Pebble Mine near Alaska's Bristol Bay or in lithium mines in the mountains of Bolivia. Yet, one thing is for certain, if we are to envision a future that is free of nuclear weapons, we must also contemplate a world that is free of its technology, which means nuclear power must one day also become obsolete.

So how are we to address our energy needs and also battle climate change? Can we actually eliminate the use of fossil fuels and not swap them out for nuclear power? While it's constantly debated, there are plenty of scientists who believe it's possible for the world to be carbon-free without the use of nuclear power. An April 2021 report "The Sky is the Limit," released by the UK-based non-profit Carbon Tracker, shows how solar and wind energy generation does not only have the potential to meet the world's growing energy demand, these two renewables have the potential to exceed our electricity needs 100 times over. Carbon Tracker concludes there is absolutely no need for any new nuclear power; in fact, we could decommission all existing plants. We just need to tap into the power of the sun. For example, every rooftop in the U.S. could house solar panels, installation of which would create tens of thousands of green jobs, far more than nuclear plant construction ever would.

"The world does not need to exploit its entire renewable resource—just one percent is enough to replace all fossil fuel usage," says report co-author Harry Benham. "Each year we are fueling the climate crisis by burning three million years of fossilized sunshine in coal, oil, and gas while we use just 0.01% of daily sunshine."

We have no choice. We must think outside the box if we are to protect our natural resources and put the brakes on our runaway climate. Nuclear power, despite what Bhaskar Sunkara and others maintain, is not, and will never be, a part of the world's carbon-free energy future. The risks of nuclear power generation are simply far too great.

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