

NEW NUCLEAR REACTORS: Too Costly, Dirty, & Dangerous



Meltdown disasters hit three Fukushima nuclear reactors. Floodwaters surround Nebraska's reactor. Earthquake shakes a Virginia reactor twice as hard as it was designed to withstand.

The nuclear industry's response to these recent events? Vigorous resistance to tighter safety measures and continual demand for billions of dollars more in massive taxpayer-backed subsidies and ratepayer bailouts. Simultaneously, nuclear reactor owners and promoters continue to manipulate legitimate public concern about climate change and energy insecurity, claiming that reactors are safe, clean, and affordable. In fact, nuclear generated electricity is a serious risk to human and environmental health, national security, and business and family finances.

Nuclear Reactors are Too Expensive

- ▶ The runaway cost estimates for new reactors has quadrupled¹ since the early 2000s. Even the most prevalent reactor design cost estimates have gone from less than \$2 billion² per unit to over \$8 billion.³ Other new reactor designs now range from \$13 to 15 billion per unit.⁴
- ▶ New reactors are estimated to cost homeowners and businesses between 12 cents and 20 cents per kilowatt hour on electric bills—more than cleaner, safer alternatives.⁵ John Rowe, the CEO of Exelon (the country's largest nuclear utility) and the former head of the nuclear industry's trade group, states: **new nuclear reactors are "not economic."**⁶
- ▶ In poll after poll, Americans select federal nuclear reactor subsidies as the number one budget item to cut.⁷ According to the Union of Concerned Scientists, taxpayer- and ratepayer-shouldered nuclear subsidies

over the past 50 years have been so large in proportion to the value of the energy produced that *"in some cases it would have cost taxpayers less to simply buy kilowatts on the open market and give them away."*⁸

High-risk federal loan guarantees shackle taxpayers with the responsibility for bailing out the debt ridden nuclear utilities by paying back their loans when the projects fail. \$18.5 billion is already authorized for nuclear loan guarantees;⁹ the nuclear industry is pushing for more than \$100 billion in guarantees.¹⁰ According to the Congressional Budget Office, the failure rate for nuclear projects is *"very high—well above 50 percent."*¹¹ Moody's has called reactors a *"bet the farm"* investment.¹²

Nuclear Reactors are Dangerous

- ▶ Nuclear reactors have an operational history of horrific disasters and breathtakingly close calls, including:
 - ▶ **FUKUSHIMA:** The massive 9.0 earthquake and tsunami that struck on March 11, 2011, rocked the six reactor Fukushima nuclear station. Four reactors experienced hydrogen explosions and three of them had full meltdowns. Today, the crisis is still on-going, as despite all efforts, the reactors are still not in cold shutdown. **Recovery is estimated to cost more than \$300 billion¹³ and anticipated to take decades.¹⁴**
 - ▶ **CHERNOBYL:** An estimated 220,000 people were forced to leave their homes forever, and the radioactive fallout from the accident made 11,260 square kilometers of agricultural land and forests in Belarus and Ukraine **permanently unusable**. The Ukrainian, Russian, and Belarusian governments estimated in 2005 that the projected death toll from Chernobyl's radioactivity poisoning will be 25,000 of the 600,000 citizens involved in fire-fighting and cleanup operations.¹⁵



JASON MINSHULL



DIGITAL GLOBE



DOBRESUM

FROM LEFT: *The abandoned city of Pripyat and Chernobyl in the distance; four ruined reactors at Fukushima; Three Mile Island reactors*

- ▶ **THREE MILE ISLAND:** A 1997 University of North Carolina study found that citizens living downwind of the reactor during the accident were two to ten times more likely to contract lung cancer or leukemia than those upwind of the radioactive fallout.¹⁶
- ▶ Nuclear reactors are potential terrorist targets and are not designed to withstand attacks using large aircraft, such as those hijacked by terrorists on September 11, 2001.¹⁷ An independent scientific analysis found that a major attack on the Indian Point Reactor outside New York City could result in 44,000 deaths in the near-term from acute radiation sickness and more than 500,000 eventual deaths from cancer among individuals within 50 miles of the reactor.¹⁸ **The estimated economic impact of such a strike ranges from more than \$1.1 trillion to more than \$2.1 trillion in the worst case scenario.**¹⁹
- ▶ Nuclear reactors and nuclear weapons are inherently linked:
 - ▶ The same process used to manufacture low-enriched uranium for nuclear fuel also can be employed for the production of highly enriched uranium for nuclear weapons. As it has in the past, expansion of nuclear power is **highly likely** to lead to an increase in the number of both nuclear weapons states and “threshold” nuclear states that could quickly produce weapons by utilizing facilities and materials from their “civil” nuclear programs. Expanded use of nuclear reactors will increase the risk that they will be used to construct clandestine weapons facilities, as was done by Pakistan.
 - ▶ Uranium and plutonium can also be used to make a nuclear bomb. Plutonium, which is found only in extremely small amounts in nature, is produced in large quantities in nuclear reactors. Reprocessing spent fuel to separate plutonium from the highly radioactive barrier in spent fuel rods increases the risk that **reactor-generated plutonium can be diverted or stolen for the production of nuclear weapons or radioactive “dirty” bombs.**

Nuclear Reactors are Dirty

- ▶ Each year, the U.S. nuclear reactors create 2,000 metric tons of high-level radioactive waste²⁰ and 12 million cubic feet of low-level radioactive waste.²¹ Seven decades after the beginning of the Atomic Age, a safe, permanent, proven method for isolating such waste has yet to be discovered.
- ▶ About 65,000 metric tons of highly radioactive spent fuel already has accumulated at U.S. reactor sites.²² Each reactor produces 25–30 metric tons of spent fuel a year.
- ▶ Plans for the only proposed permanent U.S. repository site, Yucca Mountain in Nevada, have been cancelled, as it could not safely contain the radioactivity and protect the public. **Even if Yucca Mountain were to open, by 2010, the U.S. had already created enough spent fuel to fill up the costly site.**²³
- ▶ Uranium miners experience higher rates of lung cancer, tuberculosis, and other respiratory diseases. To date, more than \$550 million has been paid out to in compensation (per the Radiation Exposure Compensation Act) to 5,590 uranium miners with serious illnesses and cancers as a result of their occupational exposure to radiation.²⁴

For footnotes, visit: <http://www.psr.org/nuclear-bailout/references-for-new-nuclear.pdf>

PSR[®]

PHYSICIANS FOR SOCIAL RESPONSIBILITY[®]

U.S. affiliate of International Physicians for the Prevention of Nuclear War, recipient of the 1985 Nobel Prize for Peace

1875 Connecticut Avenue, NW, Suite 1012 • Washington, DC 20009
Telephone: (202) 667-4260 • Fax: (202) 667-4201 • Web: www.psr.org

