Global Nuclear Energy Partnership: Environmental and Security Risks

2009

In 2003 the Bush Administration launched the Global Nuclear Energy Partnership (GNEP), which it also called the Advanced Fuel Cycle Initiative. GNEP is designed to revive the practice of reprocessing irradiated nuclear fuel to separate out the plutonium. At the same time, however, it would endanger the environment, encourage nuclear bomb-making, squander U.S. taxpayer and ratepayer dollars, and deepen the nuclear waste problem.

Reprocessing is the fundamental link between a nuclear reactor and a plutonium bomb. Irradiated, or "spent," fuel is separated into its constituent ingredients. One of the ingredients, plutonium, can be used to make new reactor fuel — or nuclear bombs. Since separated plutonium encourages nuclear weapons proliferation, President Ford halted the export of reprocessing technologies. President Carter outlawed U.S. commercial reprocessing in 1976. Although that domestic ban was lifted more than 20 years ago, reprocessing is so expensive that the U.S. nuclear power industry has not resumed it.

Under the GNEP plan, some "supplier" countries would produce nuclear reactor fuel for "receiver," countries that would agree to forgo uranium enrichment and plutonium reprocessing. Once fuel rods were irradiated, they would be removed from the reactors and sent back to the suppliers for eventual reprocessing.

GNEP Would Increase Contamination

Reprocessing produces large amounts of very dangerous liquid waste that is intensely radioactive, toxic, thermally hot, and difficult to contain. The tanks used to store this liquid high-level waste must be cooled or the waste will explode. In 1957, one such tank blew up in Russia, contaminating 6,000 square miles. Liquid high-level waste from Cold War reprocessing presents the greatest contamination threat and cleanup challenge in the U.S. nuclear weapons complex. At Hanford, Washington; Savannah River, South Carolina; and the Idaho National Laboratory, millions of gallons of liquid waste sit in aging "tank farms," all of which have leaked, threatening crucial water resources. The situation is no better in France, which is frequently touted as the nuclear role model. A 2001 report from the European Parliament's Scientific and Technological Options Assessment stated that 80% of the collective radiation dose from the entire French nuclear power industry comes from commercial waste reprocessing.

GNEP Would Encourage Nuclear Bomb-Making

GNEP proponents claim it is a way to control nuclear materials proliferation, but the opposite is true. Irradiated fuel that has not been reprocessed is "self protecting" because it is heavy, bulky, and intensely radioactive. But separated plutonium is a concentrated powder; less than 20 pounds are required to make a bomb. Loss or theft is hard to guard against in the complex plutonium separation factories because it is very difficult to track this very dangerous material through each step of the process. Despite cautions from Congress, the Department of Energy (DOE) continues to promote GNEP around the world, worsening the proliferation risk.

One GNEP plan is to "burn" reprocessed plutonium in "fast" reactors, which are prone to accidents and cost up to half again as much as most of the reactors used for electricity in the U.S. today. Worldwide, fewer than 20 fast reactors have produced electricity. Use of fast reactors and reprocessing will only add to the current surplus of separated, weapons-usable plutonium, already 250 tons – enough to make approximately 30,000 nuclear bombs.

GNEP Would Waste Billions of Dollars

DOE has not provided a total cost estimate for GNEP. But in 1996, the National Academy of Sciences estimated that reprocessing the current U.S. spent fuel inventory could easily add $100 billion to our nuclear tab. Each of the new fast reactors would cost several billion more. Approximately $150 billion more will be needed to bring some level of cleanup to the three U.S. weapons sites and the commercial site in West Valley, NY, that all reprocessed spent fuel. These are all costs the taxpayer – not the nuclear power industry – bears.

GNEP Would Not Solve the Nuclear Waste Problem

With its efforts to open a spent fuel and high-level waste repository at Yucca Mountain, Nevada, clearly failing, DOE is trying to paint GNEP as a "recycling" solution. But reprocessing spent fuel does not conserve resources or reduce waste. Reprocessing spent fuel once, as is the case in France, does not appreciably reduce the space needed in a deep geologic repository, while producing other radioactive wastes that remain hazardous for thousands of years. Even if spent fuel were repeatedly reprocessed and burned in dangerous fast reactors, there would still be waste that requires geologic disposal.

Current Situation

Skepticism about GNEP has increased since it was first proposed. Congress has cut funding, prohibited construction of full-scale plants, and tried to limit DOE's overseas lobbying for the program. In light of the myriad problems that would be unaffected or worsened by GNEP, Congress should build on its past efforts and end the ill-conceived Global Nuclear Energy Partnership.

RECOMMENDATIONS

- Terminate GNEP funding because reprocessing would increase the amounts of waste requiring disposal, is extremely costly, and poses a proliferation risk.
- Terminate funding for international cooperation on reprocessing, including ongoing research and development with non-nuclear weapons states such as South Korea.

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