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ALLIANCE

for Nuclear Accountability

Reactors and Radioactive Waste Issues

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Nuclear weapons research, production and testing are not the only Department of Energy (DOE) projects that threaten the environment and taxpayer dollars. Nuclear power loan guarantees; MOX, a particularly dangerous kind of nuclear reactor fuel; reprocessing; and pollution from nuclear weapons production also pose huge risks.

Federal Loan Guarantees for New Nuclear Projects

Even before the Japanese nuclear disaster, Wall Street had no interest in financing new nuclear reactors. Investors concluded that they are too expensive and too risky. In order to kick-start construction, Congress enacted federal loan guarantees in 2005. If a reactor developer cannot repay a loan, taxpayers are on the hook for the default. According to a 2003 estimate by the Congressional Budget Office (CBO), the default rate on loans for new reactor projects is “very high – well above 50 percent.” CBO cited high construction costs, technical risks, and licensing delays as factors that will influence the risk, all of which are more significant concerns today.

In order to get a loan guarantee, a nuclear developer must pay a fee that is supposed to cover the default risk. Calculating an accurate fee, however, is extremely difficult. According to both the Government Accountability Office and the Congressional Budget Office, DOE is more likely to underestimate the fee than to overestimate it, leaving taxpayers to pay the difference when there is a default.

Mixed Oxide (MOX) Plutonium Fuel for Reactors

More than a decade ago, the U.S. and Russia agreed to eliminate a good deal of their surplus plutonium stockpiles by either immobilizing the plutonium in glass, which would then be buried, or using it to make mixed oxide (MOX) plutonium fuel for power reactors. Later, the U.S. abandoned the quicker, safer immobilization plan. DOE has now spent more than \$3 billion on the MOX program at Savannah River, South Carolina. The plant there is less than one-third complete and final cost projections have soared to \$4.9 billion. The total costs of the MOX program could be up to \$10 billion, not including operating costs.

MOX fuel, with its higher percentage of plutonium, has never been used on a commercial scale in the U.S. The special problems it poses are playing out in the Japanese nuclear disaster. The Fukushima Unit 3 partial meltdown was particularly dangerous because that reactor used MOX fuel. Before the crisis, the DOE was focusing on pushing MOX fuel for use by the Tennessee Valley Authority, including in its Browns Ferry boiling water reactor, which is the same design as Fukushima Unit 3.

There is another serious problem. Introducing weapons-grade plutonium into commerce as MOX fuel will encourage other countries to pursue reprocessing to obtain plutonium, greatly increasing the risk they will develop nuclear weapons capabilities.

Reprocessing

Reprocessing, a dirty and dangerous chemical process, is the fundamental link between a nuclear reactor and a plutonium bomb. Irradiated, or “spent,” fuel is separated into its constituent ingredients. One of them, plutonium, can be used to make MOX reactor fuel—or nuclear bombs. The current stockpile of separated civilian plutonium is one of the world’s greatest proliferation problems. Reprocessing also pollutes. Millions of gallons of deadly liquid reprocessing waste sit in aging tanks, threatening vital water resources in Washington, Idaho, South Carolina, and New York. Yet, reprocessing does not significantly reduce the nuclear waste burden, since the process itself creates new waste streams. Finally, reprocessing is uneconomical. It adds to final disposal costs, and MOX plutonium reactor fuel is more expensive than low-enriched uranium.

Even in the face of all the drawbacks of reprocessing, the Obama administration has asked for \$155 million in FY2012 for the DOE’s Fuel Cycle research and development program.

Nuclear Waste and Pollution

More than six decades of U.S. nuclear weapons research, testing, and production have left dozens of DOE sites polluted with massive amounts of radioactive and hazardous wastes. This contamination threatens millions of people living near the sites or along major waste transportation routes. Most DOE sites are now on the Superfund list of the nation’s most environmentally dangerous facilities. While some progress has been made, DOE has missed legally-agreed-to milestones, resulting in fines and penalties, increased contamination, and escalating costs. The FY2012 Budget Request estimates that cleanup will stretch at least to 2038 and as long as 2062 for a number of sites. All told the cost will be between \$275 billion and \$308 billion. Those funds are on top of hundreds of millions of dollars needed every year to cover costs at sites declared “closed.”

In the face of such daunting challenges, DOE has yet to provide a publicly accessible database of its thousands of cleanup milestones, updated baseline cost and schedules, or annual evaluations of whether performance measures are being met at each site.

DOE is finally ending the waste of billions of dollars for the flawed geologic repository at Yucca Mountain, Nevada. Now, DOE must safely remove high-level waste from leaking storage tanks, solidify it, and place it in safe and secure long-term storage at Hanford, Savannah River, and Idaho. In the meantime, additional wastes should not be sent to DOE sites because it would divert resources from addressing existing threats.

Irradiated fuel from commercial nuclear reactors should be moved into hardened on-site storage. In addition, very radioactive “low-level” waste (Greater than Class C) from commercial nuclear reactors should not go to the Waste Isolation Pilot Plant in New Mexico, because it would interfere with WIPP’s current mission, contrary to existing law and promises made to the state.

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RECOMMENDATIONS

- **Stop the tripling of the federal loan guarantee program to \$54.5 billion for new reactors and rescind the remaining \$10.2 billion. Default is likely and would result in taxpayers owing billions of dollars. Instead, support cheaper, faster, cleaner, and safer climate solutions: energy efficiency and renewables.**
- **Eliminate funding for the construction of the MOX plutonium fuel plant at the Savannah River Site. This is a massively expensive project, with annual costs of \$1 billion or more for many years to come. Seeking to introduce plutonium into commercial trade has inherent proliferation risks. Instead, fund plutonium immobilization, which costs less and can be implemented more quickly.**
- **Provide sufficient funding for environmental cleanup to assure compliance with all cleanup agreements and legacy management requirements. DOE has missed numerous mandated milestones, resulting in fines and penalties, increased contamination, and escalating costs.**
- **Stop funding for Yucca Mountain. The site has significant technical flaws. Institute a public process, including affected communities, to recommend new policies promoting scientifically sound, publicly acceptable solutions for radioactive waste.**