



Reducing plutonium storage risks in light of September 11, 2001

The terrorist attacks of September 11, 2001 pointed up potential risks associated with a variety of facilities both in the United States and abroad. The security of plutonium, which is highly radioactive and can also be used to make nuclear weapons, surely belongs in any short list of the top priorities for attention. Yet, while the U.S. government has taken some action to increase the security around plutonium storage installations, it has done nothing to do restore the most important single program that could greatly reduce plutonium storage risks. That program is called plutonium immobilization. Its proposed budget stands at exactly zero, as it was before September 11.

A great deal of plutonium that became surplus to military requirements after the end of the Cold War is stored in a variety of forms and buildings at several nuclear weapons production sites in the United States. The same is true of Russia, which also has a large stock of commercial plutonium, also usable for nuclear weapons. While prevention of attack through improved security is imperative, it is also necessary to minimize the consequences of an attack should one occur. By the latter criterion, current methods of plutonium storage are sorely inadequate. It is necessary to put plutonium into a different physical form that would (i) limit to as small an area as possible and (ii) enable easier recovery with less danger to workers and the public, even in case of an attack similar in scale to that of September 11.

Immobilization is an approach that mixes plutonium with a non-radioactive material and puts the mixture into a ceramic form that is highly resistant to fire and dispersal in the form of fine particles. The ceramic hockey-puck like storage form is put into a steel cylinder and molten glass is then poured around it. The resulting steel canisters with glass logs containing the plutonium-laced ceramics can then be stored underground on-site at one or more large nuclear weapons plants in silos a few tens of feet deep. With carefully thought out technical specifications, the offsite consequences could be minimized even in case of an attack on the scale of September 11. Minimizing the potential for severe offsite impacts would also be the best preventive measure against attack, since it would make plutonium storage sites unattractive as terrorist targets. The risk of theft or illicit sale would also be greatly reduced.

Plutonium immobilization uses technology that is reasonably well understood and is similar to that now used for high-level radioactive liquid waste, which is, in some ways, more difficult to process than plutonium. For instance, glass logs containing high-level waste are produced and stored in individual silos at the Department of Energy's Savannah River Site in South Carolina.

The Bush administration eliminated funding for immobilization of plutonium because it wanted to focus on the conversion of surplus weapons plutonium into a nuclear reactor fuel. Not only that, the U.S. also proposed to finance a similar plutonium fuel program in Russia. The entire policy was already problematic before September 11. But to persist now with in a plan that would put plutonium fuel on the highways and in commercial nuclear power sites in the United States and Russia is very risky, to say the least. It is to ignore one of the most important lessons of September 11 worst case scenarios that are plausible should not be ignored.

The problem of current U.S. plutonium policy goes even deeper. The Bush administration is not only persisting with a plutonium fuel program it inherited from the Clinton administration, but it proposes, as part of its energy plan, to spend money on developing commercial plutonium fuel as a normal part of the



U.S. nuclear power system. This would reverse a quarter century of bipartisan nuclear non-proliferation policy through five previous administrations and exacerbate both proliferation pressures and vulnerabilities to terrorist attack.

It is stunning that the terrible events of September 11 have not led to an urgent reappraisal of plutonium storage, fuel, and plutonium-related energy policies. Cancellation of plutonium fuel programs and the re-institution of a plutonium immobilization program are among the most compelling needs of the time. The urgency is heightened by the upcoming summit of Presidents Bush and Putin, which will be occurring in a climate of cooperation not seen in some years. A change of direction at home would create a unique opportunity for President Bush to begin discussing with President Putin the terms of cooperation for a new joint U.S.-Russian plutonium security initiative based on immobilization that would reduce nuclear dangers for both countries and for the world.

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