

Reprocessing Is Not the “Solution” to the Nuclear Waste Problem

Splitting atoms to make electricity has created an enormous problem: waste bearing 95% of the enormous radiological burden of the Atomic Age. Nuclear weapons production, industrial activity, research and medicine combined, create only 5% of this problem.

Every nuclear power reactor annually generates 20 to 30 tons of high-level waste, which is the fuel itself after it is removed from the reactor core. Like fuel, the waste is a solid ceramic pellet, stacked inside a thin metal tube or “cladding.” In addition to residual uranium, the waste is about 1% plutonium that is formed inside the fuel rods by the reactor. The waste also contains about 5% highly radioactive fission products like cesium, strontium and iodine. The waste is millions of times more radioactive than “fresh” uranium fuel. Unshielded, it delivers a lethal dose in seconds and will remain a hazard for at least 12,000 generations.

High-level waste is piling up at reactor sites, stored outside of containment in pools, and in large containers called dry casks. A growing security threat, storage has been repeatedly approved to enable continued reactor operation, and therefore continued nuclear waste production, making risks greater.

The US Department of Energy has devoted nearly 20 years to the development of a high-level dump at Yucca Mountain, a geologically unstable, sacred site of the Western Shoshone people in Nevada. The State of Nevada and the Shoshone Nation have vigorously opposed this dump. Growing evidence substantiates that the Yucca site will fail in the fundamental goal of a repository: to isolate radioactivity from our environment. A second, industry owned, alternative for centralizing the waste on an Indian Reservation in Utah is meeting enduring opposition from that state. Both Yucca and Private

Fuel Storage would trigger “Mobile Chernobyl” – the largest nuclear waste shipping campaign in history – with so many transport miles that accidents are inevitable and security is an oxymoron.

Disregarding Hard-Won Wisdom

The Bush/Cheney administration and its congressional allies are reversing over 30 years of rare common sense in nuclear policy. In the 1970s it was decided that irradiated nuclear fuel, and the plutonium it contains, should be treated as *waste*—not a resource, in part due to the catastrophic failure after only six years of operations at the only commercial reprocessing site to operate in the US. The site, at West Valley NY, is still not cleaned up – and the projected cost is over \$5 billion.

Every reprocessing site (France, UK, and Russia have the largest sites) is an environmental catastrophe, with massive releases of radioactivity to air and water; high worker radiation exposures; and residues that are harder to handle than the terrible waste it begins with. Reprocessing creates stockpiles of nuclear weapons usable plutonium, and is commercially unviable without large, direct subsidies.

Presidents Ford and Carter banned reprocessing as a nuclear weapons non-proliferation measure; while Reagan lifted the ban, no commercial US interest has pursued this expensive boondoggle. President Bush would have taxpayers pay for the relapse to reprocessing.

At the end of 2005, Congress awarded \$50 million to the U.S. Department of Energy (DOE) with instructions to make a new waste-reprocessing plan. DOE is directed to use one of its sites—in 2006 it is to hold a “competition” and the “winner,” to be announced in 2007,

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will get the new reprocessing site. Congress specified that the site be opened by 2010.

Reprocessing Destabilizes Waste

The fuel rods are taken out of the assemblies, chopped up and then dissolved in nitric acid. The resulting highly radioactive and caustic stew is then processed to remove the plutonium and the uranium, leaving the highly radioactive fission products in the liquid. While there are methods to attempt to re-stabilize this material, there has been a fundamental loss in the stability of the dry ceramic pellet in the metal clad fuel rod.

False Claims

1. **Reprocessing is NOT recycling.** The contamination by fission products makes waste fundamentally different from its parent. It is not possible to make the original uranium fuel again from high-level waste.
2. **Reprocessing does not reduce radioactivity.** No credible expert says reprocessing reduces total radioactivity; some less informed sources imply this. Reprocessing does not reduce the amount of radioactivity other than to spread it around the landscape, thereby “diluting” it (which food chains re-concentrate) without reduction.
3. **Reprocessing does not reduce waste volume.** To the contrary, fuel pellet volume is magnified by a factor of 100–100,000. The resulting “dilution” allows its reclassification from “high-level” to “low-level” waste, but it’s still deadly.

The “Midas-Touch” in Reverse

The King Midas story of childhood teaches about the hazard of greed. Radioactive waste contaminates everything it comes in contact with--but instead of turning it all to gold, everything it comes in contact with also turns to expensive, dangerous radioactive waste!

Kicking The Can

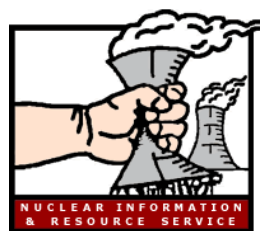
A supposed goal of reprocessing is to use plutonium for reactor fuel. The most common form is MOX (short for mixed oxide), made

from plutonium and depleted uranium. While today’s reactors can use MOX fuel, it is both **riskier** and **more hazardous**: MOX is harder to control, and twice as deadly as uranium fuel if it gets out of control. MOX does not “solve” the waste problem since reprocessing MOX fuel is even harder than reprocessing uranium fuel, and is not done anywhere. Dr. Frank Von Hippel likens MOX use to “kicking the can down the road” – not dealing with the waste problem at all.

Plutonium Destabilizes Our World

High-level nuclear waste contains so much lethal radioactivity that the plutonium inside the waste fuel rods is effectively safeguarded. Recovering the plutonium makes it available for weapons use. For the United States to reverse over 30 years of policy against using civil plutonium also reverses the moral authority with which the US calls on other nations to refrain from this activity. North Korea and Iran are the most recent examples of countries ready to join the “nuclear weapons club.” Reprocessing is a direct contradiction to US reprimands of these nations for nuclear proliferation.

Far from putting the atomic genie back in the bottle, reprocessing creates millions of gallons of highly radioactive, caustic, destabilized high-level waste that history shows will leak; be evaporated; residues put into glass that may or may not isolate the radioactivity for even a generation; and now, under a new policy, be left forevermore on the reprocessing site, mixed only with grout in a thin effort to delay it from contaminating soil, water, food and our bodies. This is no solution to the real problem of radioactive waste. -- *Mary Olson, January 2006*



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