

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

## The Radioactive Waste Burden

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

Every nuclear power reactor annually generates 20-30 tons of high-level nuclear waste since the irradiated fuel itself is the waste when 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, making it 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 human generations.

## No End in Site

High-level waste is piling up at reactor sites, stored outside of containment in pools, and in large dry containers called casks. A growing security threat, storage has been repeatedly approved to enable continued reactor operation, and therefore continued nuclear waste production, making risks greater. Now new reactors are being proposed, even though there is no credible solution for the approximately 120,000 tons of waste the first generation of reactors will produce.

The U.S. Department of Energy (DOE) 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 led by a consortium called Private Fuel Storage (PFS) meeting enduring opposition from that state. Both Yucca and PFS would trigger a “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 intent on reversing over 30 years of extraordinarily rare common sense in nuclear policy. In the 1970s it was decided that irradiated fuel and the plutonium it contains, should be treated as *waste*–not as a resource. This was in part due to the catastrophic failure after only one year of operations at West Valley, New York–the only commercial reprocessing site to operate in the U.S. West Valley’s reprocessing mess is still not cleaned up – and the projected cost is over \$5 billion.

Every reprocessing site (France, UK, Russia, and soon Japan have the largest sites) is an environmental catastrophe, with massive releases of radioactivity to air, land 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 unviable without large taxpayer subsidies. President Carter banned reprocessing as a nuclear non-proliferation measure; while Reagan lifted the ban, no commercial interest has pursued this expensive boondoggle, since it is not a profitable enterprise. Our current president apparently intends for taxpayers to pay for the relapse to reprocessing.

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

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new reprocessing site. Congress specified (another promise?) that the site should 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.

## Completely False Claims

1. **Reprocessing is NOT recycling.** The formation of fission products in the fuel rods makes high-level waste fundamentally different from the uranium it came from. It is not possible to remake the original fuel again from high-level waste – thus it is not a cycle.
2. **Reprocessing does not reduce radioactivity.** No credible expert says reprocessing reduces total radioactivity; some less informed sources imply this. Reprocessing does change not the amount of radioactivity – except to smear it around a large surface area, thereby diluting it without any actual reduction of radioactivity.
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 the reclassification from “high-level,” to the so-called “low-level” waste category, which is 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 is turned to expensive, dangerous radioactive waste!

## Kicking the Can...

A stated goal of reprocessing is to use plutonium for reactor fuel. The most common form is MOX (short for ‘mixed oxide’), made from plutonium and uranium 238 (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 control is lost. MOX does not “solve” the waste problem since reprocessing MOX fuel is even harder than reprocessing uranium fuel, and not widely done. Princeton’s 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. Separating out the plutonium makes it available for weapons use. For the United States to reverse more than 30 years of policy against recovering civil plutonium also reverses the moral authority with which the U.S. 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. The clear intention of the Bush / Cheney team to return to full-scale production of new nuclear weapons adds to this atomic hypocrisy.

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 retain 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 keep it from contaminating soil, water, food and our bodies. This is **NO SOLUTION**.

--Mary Olson, January 2006



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