

What is plutonium MOX fuel? The fantasies and the reality...



MOX is made from a mixture of plutonium and uranium oxides (/nuclea is used in nuclear reactors in Japan, Switzerland, Germany, Belgium, an

Nuclear reactors normally burn enriched uranium fuel. When MOX is u enriched uranium is replaced by the MOX fuel.

The reason for the manufacture of MOX was a political one - the countries involved like Japa to-trade-in-mox) had to be seen to be doing something about their useless stockpiles of plutoni spent nuclear fuel.

To understand the history and rationale behind British Nuclear Fuel's (BNFL) production of j (MOX) is one of the best ways to understand an industry living in a nuclear fantasy world, or the reality of the deadly business they are involved in.

- **Fantasy: producing MOX fuel to burn in nuclear reactors will use up our growing st**

Reality: To eliminate the plutonium, MOX fuel must be reprocessed and re-used many tim each time the MOX is used and reprocessed, the quality of the plutonium is degraded, mak re-use. Also, the share of MOX in a reactor core is around 30%. The other 70% of the core fuel, in which new plutonium is formed. The result: a net increase of plutonium.

- **Fantasy: recycling nuclear fuel is a good thing.**

Reality: separating out plutonium at the Sellafield THORP plant creates 180 times the volu with. The highly radioactive by-products are held in inadequate storage facilities and disch the most radioactive in the world.

- **Fantasy: producing MOX will save nuclear waste storage costs.**

Reality: Spent MOX fuel is much more radioactive because it contains on average five tim uranium oxide fuel. After 10 years, the heat generation from spent MOX fuel is twice as hi fuel. After 100 years, it is three times higher. Given the very long half-life of Pu-242 (380, (2.14 million years), it is much more complicated to store MOX than normal spent fuel. In

high level waste problem, MOX creates even bigger waste problems: it needs more and lo much longer; it is more dangerous; and the costs are therefore higher.

- **Fantasy: it will be cheaper to produce Mox fuel than enriched uranium suitable for n**
Reality: recent studies in Germany show that MOX fuel is four to five times more expensi considering the reprocessing costs of separating the plutonium in the first place.
- **Fantasy: no additional safety concerns over MOX fuel.**
Reality: MOX in a reactor is more unsafe because plutonium is more reactive and this hott localised melting of fuel in the reactor. Nuclear reactors have to be adapted and re-licens fuel is replaced with MOX. Wrong size pellets can also vibrate or expand, rupturing the fu meltdown.
- **Fantasy: the Sellafield MOX plant will be an economic benefit for the UK.**
Reality: The operation of the Sellafield MOX plant was forecast to make £200m profit. Bu over £460m.
- **Fantasy: plutonium MOX is no threat to non-proliferation because, even if it was rep weapons-grade material.**
Reality: In June 1994, U.S. Energy Secretary Hazel O'Leary declassified further details of using reactor-grade plutonium, which successfully produced a nuclear yield. The British G recognised this test, as it used British reactor-grade plutonium from Sellafield.
- **So how are BNFL doing so far?**
The first shipment of MOX from Europe to Japan in 1999 ended in an international nuclea the MOX had been deliberately falsified by BNFL. The total cost of this episode to the tax million.

Article tagged as: *Mox Fuel, Nuclear Power, Plutonium*