



Factsheet #5: Proliferation

Just the Facts: The Five Fatal Flaws of Nuclear Power

International treaties leave non-weapons states free to use and develop sensitive nuclear technology such as uranium enrichment and spent nuclear fuel reprocessing. While such technologies are ostensibly employed to create fuel in power reactors, they may be easily adjusted or redirected to produce weapons-grade fissile material. Moreover, power reactors themselves produce plutonium, which may be used in bombs. Once the nuclear genie is out of the bottle, it becomes impossible to restrict its use to “peaceful” purposes.

In practice, there is no way to segregate nuclear technologies employed for “peaceful” purposes from technologies that may be employed in weapons—the former may be, and have been, transformed into the latter. The myth of the “peaceful atom” is belied by the easy modification of a nuclear energy infrastructure to create the material required for a nuclear bomb.

THE FATAL FLAW OF THE NON-PROLIFERATION TREATY (NPT)

While it is considered one of the most successful international arms-control agreements ever instituted, the Treaty on the Non-Proliferation of Nuclear Weapons—commonly known as the Nuclear Non-Proliferation Treaty or “NPT”—suffers a fatal flaw: Article IV of the NPT allows and even encourages signatories to develop nuclear technology for “peaceful purposes,” such as for the production of electricity, calling such use the “inalienable right” of all parties to the treaty. Article IV further encourages NPT signatories to engage in the “fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy.” Non-nuclear-weapons states are *especially* encouraged to participate in commercial nuclear power development.

The International Atomic Energy Agency (IAEA) is designated as the regulator of this activity, charged with the task of preventing the “diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices,” but in such a way so as not to hamper the development of nuclear technology in non-weapons states, even allowing “the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes.” This potential illicit use of such fuel-cycle technology is now becoming manifest in the case of North Korea and perhaps Iran, prompting the head of the IAEA, Mohamed ElBaradei, to envision the near-term possibility of as many as 30 “virtual” nuclear-weapons states that could “move within months into converting their civilian capacity or capability into a weapons program.”¹



North Korean leader Kim Jong-il. North Korea withdrew from the NPT in 2003 and is now pursuing nuclear weapons.

Furthermore, Article X of the NPT gives signatories the right to withdraw at their discretion, requiring only three-months of advance notice. Thus non-weapons countries may fully develop nuclear technology while a party to the treaty, being subject to the inspections and protection of the IAEA, but then withdraw without having to forsake their acquired nuclear technology. Such is precisely the case with North Korea, which withdrew from the international pact in January 2003.

THE CASE OF IRAN

Non-nuclear weapons states that have been discouraged by Western states from developing fuel-cycle technologies such as uranium enrichment and spent fuel reprocessing may view renewed U.S. interest in such technology capacity as hypocritical—making them less likely to fully abide by the terms of the NPT. Iran, a party to the NPT, has recently been a subject of international concern, as it is suspected of developing nuclear weapons capabilities as part of its nuclear program. Yet Iran has defended its right to enrich uranium under the NPT, and it has returned American accusations with criticisms of the Bush administration’s own failure to hold up its end of the bargain by conducting research into new nuclear weapons, spurning the Comprehensive Test Ban Treaty to prohibit explosive tests of nuclear devices, and unilaterally retreating from the Anti-Ballistic Missile Treaty with

Russia. The NPT requires weapons states to take steps towards total disarmament.

THE SCHIZOPHRENIC CHARACTER OF THE IAEA

Charged at once with promoting and regulating the international nuclear industry, the IAEA has the confused mission of promoting the broad dispersion and application of nuclear technology while trying to curb the spread of nuclear weapons. But the easy and perhaps inevitable migration of "peaceful" applications to illicit ones makes this dual mission impossible.

One of IAEA's major programs ("Nuclear Power, Fuel Cycle and Nuclear Science") exists to forward the development of member states' nuclear programs, including fuel cycle facilities, and is described as a "fundamental mandate" of the Agency. This division had an annual budget of more than \$24 million in 2005, about 9% of the IAEA's total budget for that year. While most of the IAEA budget goes to security and monitoring, at least \$43 million or 15% of the IAEA's annual budget for 2005 went to various programs promoting nuclear technologies, many of which involve uranium enrichment and waste reprocessing, which can be diverted for illicit use.²

MOHAMED ELBARADEI'S PROPOSED MORATORIUM ON NEW FUEL CYCLE FACILITIES

Mohamed ElBaradei, the director general of the IAEA, has proposed a five year moratorium on the construction of new fuel cycle facilities, particularly uranium enrichment plants, in order that the Agency may attain a greater degree of control over the spread of fissile nuclear material, considered to be the essential "choke point" to prevent the development of nuclear weapons.³ But ElBaradei's proposal is opposed by major Western nuclear weapons states—including the United States, Japan, and France—which have fuel cycle projects in the works.

In the United States, two companies—USEC and the European firm Urenco—have applied to the U.S. Nuclear Regulatory Commission for permits to build and operate uranium enrichment facilities, precisely the sort of operation ElBaradei wants to curtail. Despite the fact that Urenco is a European company that has been implicated in security breaches that led to the establishment of the A.Q. Khan nuclear technology black market that fueled the nuclear programs of states like Pakistan, North Korea, and Iran,⁴ the U.S. Department of Energy (DOE) has waived the standard foreign ownership, control, or influence (FOCI) review for Urenco.⁵

PATHWAY TO PLUTONIUM

Reprocessing—a technology that separates uranium and plutonium from irradiated fuel—runs counter to efforts to curtail the proliferation of nuclear weapons technologies and materials. Separated plutonium is easier to steal and employ in nuclear weapons than plutonium in highly radioactive irradiated fuel, because the intense radiation

of the latter form prevents easy acquisition of the plutonium. It is widely recognized by nuclear power experts that the "once-through" fuel cycle—without reprocessing—is the only truly proliferation-resistant form of fuel production.⁶

Since the mid-1970s, the U.S. has maintained an official policy against the reprocessing of spent nuclear fuel, due to proliferation concerns. But recent trends indicate an increasing interest by the U.S. in this risky technology as a "fuel management program." Plutonium separated from irradiated fuel can be used in some nuclear reactors in a form called mixed oxide (or MOX) fuel. In the past three years, the DOE has received more than \$190 million for research and development of new reprocessing technologies for commercial irradiated nuclear fuel, and President Bush's fiscal year 2006 budget request to Congress for this program includes another \$70 million. Further, the NRC has just licensed a MOX fuel fabrication facility and has authorized the use of such fuel in a nuclear plant in South Carolina.⁷ While the initial source of fuel would come from dismantled weapons from the U.S. stockpile, the production and use of MOX fuel from dismantled weapons could lead to an institutional push to reprocess irradiated fuel from commercial reactors.

Finally, the concern over the glut of easily-diverted, reprocessed MOX fuel is the fact that demand has not kept pace with supply, resulting in a surplus approximately 200 metric tons of separated commercial plutonium worldwide from reprocessing.⁸

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- ⁴ Adam Zagorin, "Nukes: To Pyongyang from Nashville?" *Time Online Edition*, Jan. 21, 2003, <<http://www.time.com/time/nation/article/0,8599,410102,00.html>>. See also Marilyn Berlin Snell, "Dangerous Liaisons," *Sierra*, May/June 2005: 30-36.
- ⁵ Marshall O. Combs, U.S. Department of Energy, letter to Roy P. Zimmerman, U.S. Nuclear Regulatory Commission, March 31, 2005.
- ⁶ See, for example, Massachusetts Institute of Technology, *The Future of Nuclear Power*, 2003: "Radiation exposure from spent fuel that is not reprocessed is a strong, but not certain, barrier to theft and misuse" (22).
- ⁷ U.S. Nuclear Regulatory Commission, "NRC Authorizes Construction of Mixed-Oxide Fuel Fabrication Facility at Savannah River Site," press release, March 30, 2005; "NRC Authorizes Use of Mixed Oxide Fuel Assemblies at Catawba Nuclear Power Plant," press release, March 3, 2005.
- ⁸ MIT: 22.

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