



NUCLEAR PROLIFERATION
PREVENTION PROJECT

 The University of Texas at Austin

Nuclear Facilities and Terrorism

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Implications of the Rokkasho Reprocessing Plant Operation
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The NPPP engages in research, debate, and public education to ensure that civilian applications of nuclear technology do not foster the spread of nuclear weapons to states or terrorist groups.

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Two Terrorist Threats at Rokkasho

1. Steal plutonium to manufacture **nuclear weapons.**
2. Attack spent fuel pools to inflict **radiological sabotage.**



Plutonium Amounts (kg) at Rokkasho

Planned Annual Extraction	8000
Diversion Detectable (95% confidence)	246
Amount Needed for Bomb	< 8



“Reactor Grade” Plutonium Can Produce Bomb Yields Like Nagasaki

“Subnational group using designs and technologies no more sophisticated than those used in first-generation nuclear weapons could build a nuclear weapon from reactor grade plutonium that would have an assured, reliable yield of one or a few kilotons (and a probable yield significantly higher than that).”

– *U.S. Department of Energy, 1997*



Terrorists Could Make Nuclear Weapons from Reactor-Grade Plutonium

“Such a device could be constructed by a group not previously engaged in designing or building nuclear weapons...Devices employing metal in a crude design could certainly be constructed so as to have nominal yields in the 10 kiloton range.”

– *J. Carson Mark, et al., “Can Terrorists Build Nuclear Weapons?,” 1987*



Radiological Sabotage Scenario

1. Terrorists attack spent fuel pools to breach structure, drain cooling water, and ignite fire – e.g., using commercial aircraft as al-Qaeda did on Sept 11, 2001.
2. Fire damages spent fuel's cladding, allowing gaseous and aerosolized radioactive waste to escape from the damaged pool building.
3. Wind disperses radioactive material across much of Japan.



Rokkasho Attack Could Dwarf Fukushima Damage

- Rokkasho spent fuel pools have dozens of times more irradiated fuel than each Fukushima reactor core.
- At Fukushima, only a small fraction of the radioactive material in the fuel cores escaped from the reactors, yet METI estimated the damage at ¥21.5 trillion.
- Attacking Rokkasho's spent fuel pools might disperse much more radioactive material.



Lessons

1. Cancel commercial start of Rokkasho.
2. Transfer Rokkasho's spent fuel from pools to dry casks.



Plutonium for Energy?

<https://sites.utexas.edu/prp-mox-2018-japanese>

エネルギーのための プルトニウム?

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[今、本は出版されています：“エネルギーのためのプルトニウム?”. 無料のコピー（電子または紙）はこちらをクリックしてください。最初の章を日本語に翻訳]

[新しい記事が公開されました：“日本のプルトニウム政策が間違っている”. 記事は日本語に翻訳されています]





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