



# Nuclear Power and the Lethal Link to Nuclear Weapons

## INTRODUCTION

All civilian reactors produce plutonium, the trigger for a nuclear weapon. Despite this, nuclear energy is offered as an “inalienable right” to countries who have signed the nuclear Non-Proliferation Treaty and pledged not to develop nuclear weapons. This is a disingenuous policy that has already failed in Iran which reportedly had been pursuing a second pathway from nuclear power to nuclear weapons. In fact, some experts argue that the continued global expansion of nuclear power discourages the nuclear weapons states from disarming. Conversely, countries with nuclear power point to the lack of disarmament by the weapons states as a reason to transition to weapons themselves. Export of civilian nuclear technology has historically led to the acquisition of nuclear weapons and provides the material, infrastructure and technology to achieve this. The presence of separated and unseparated plutonium from commercial nuclear power will make reversion to a nuclear armed state more likely even if abolition of nuclear weapons is achieved. Thus nuclear abolition cannot be sustainable if there is use of nuclear energy at the same time.

## Reactors to Bombs

- Nuclear reactors produce plutonium and uranium that can be used in crude nuclear weapons. A typical 1000 MW reactor produces enough plutonium each year for 40 nuclear bombs.<sup>1</sup>
- An average nuclear power plant contains 1,000 times as much long-lived radioactivity as was released by the Hiroshima bomb, and is a sitting-duck target capable of releasing a huge inventory of radioactivity into the air and water.<sup>2</sup>
- Nuclear power is the only source of energy whose technology is “interchangeable and interdependent” with that of nuclear weapons development. This at once sets it apart as by far the most dangerous way to make electricity.<sup>3</sup>
- Uranium enrichment is needed for both nuclear power and nuclear weapons production. When uranium is enriched up to 5% U-235 it is reactor-grade. When enriched to around 90% U-235 it is weapons-grade or highly-enriched uranium (HEU.) However, uranium enriched to 20% or higher is considered weapons-usable and even at 5% most of the work needed to achieve weapons-grade has already been done.<sup>4</sup>
- There are three De Facto nuclear weapons states that developed weapons programs outside the NPT - India, Pakistan and Israel. North Korea detonated a nuclear bomb in October 2006 after withdrawing from the NPT and is believed to have at least eight additional nuclear weapons. All four countries developed their arsenals from civilian nuclear origins. South Africa, which has since abandoned its weapons program, developed weapons from its civilian nuclear program.<sup>5</sup>
- Iran, currently enriching uranium “for peaceful purposes,” was also on the path to nuclear weapons at least until 2003, according to U.S. intelligence reports and could still divert its uranium enrichment to weapons manufacture.
- As many as 32 countries that do not now have nuclear weapons possess sufficient fissionable nuclear materials to construct weapons, some in a relatively short period of time. These countries possess the raw materials needed to

construct nuclear weapons, for the most part obtained from their civilian nuclear reactor programs.<sup>6</sup>

- At least 13 countries in the Middle East and the military dictatorship in Burma, have expressed interest in acquiring nuclear power. Proliferation experts agree that these desires have little to do with energy needs and are founded in regional security concerns and nuclear weapons posturing.<sup>7</sup>
- Reprocessing irradiated nuclear fuel results in large inventories of separated plutonium which can feed a nuclear weapons arsenal. Officials in Japan, with a substantial reprocessing operation, have publicly touted their country's capacity to make nuclear weapons from the plutonium from its irradiated reactor fuel.<sup>8</sup>

### **Nuclear-Provoked Aggression**

- The presence of an actual or even suspected nuclear power program can provoke unfriendly countries into pre-emptive acts of aggression or even war. Examples are: U.S. saber rattling over Iran's uranium enrichment program; Israel's 1981 bombing of Iraq's Osirak reactor; Israel's September 2007 bombing of a suspected clandestine nuclear facility or weapons cache in Syria.
- The pretext for the U.S. invasion of Iraq was that Iraq had "weapons of mass destruction" including nuclear weapons. While later proven false, the potential presence of nuclear weapons was the excuse for a pre-emptive strike that has led to a protracted, bloody and costly war – more than \$510 billion at press time<sup>9</sup> - with the potential to reach \$3 trillion according to some experts.<sup>10</sup>
- As developing countries shift to nuclear weapons production from their civilian nuclear programs, political conditions can become more volatile. A study looking at a theoretical "small-scale" regional nuclear conflict between India and Pakistan found that the changes to the climate would be catastrophic and long-lasting even in countries far removed from the nuclear exchange.<sup>11</sup>

### **The Challenge of Verification**

- The international system of safeguards, inspection and verification – to ensure that states developing nuclear power programs do not also develop nuclear weapons – was long ago recognized – and has proven to be – ineffective with Iran a case in point.<sup>12</sup>

### **"Loose Nukes"**

- Although an accidental launch of nuclear missiles between Russia and the U.S. is still possible, greater concern now lies in the potential for non-state aggressors to acquire and use nuclear weapons. Revelations about the nuclear black market dealings of the A. Q. Khan network have heightened anxieties about the potential for terrorists to explode a nuclear device in a major city or next to a nuclear power plant.<sup>13</sup>
- The continued expansion of nuclear energy increases the odds that terrorists will acquire the materials they need for nuclear weapons. The refusal by nuclear weapons states to disarm leaves nuclear weapons vulnerable to theft. Two recent incidents in the U.S. where nuclear weapons or components were transported unwittingly, reveals the flaws in nuclear weapons security.<sup>14</sup>
- A book about nuclear terrorism concluded that the detonation of a single 10 kiloton nuclear bomb in a major city center would destroy every structure and living being "from the epicenter of the blast to a distance of approximately one-third mile. A second circle of destruction extending three-quarters of a mile from

ground zero would leave buildings looking like the Federal Office Building in Oklahoma City. A third circle reaching out 1 mile would be ravaged by fires and radiation.”<sup>15</sup>

### Crossing the Military-Civilian Divide

- The Global Nuclear Energy Partnership (GNEP) introduced by the George W. Bush administration centers on "reprocessing"—the extraction of plutonium and uranium from used, or "spent," fuel from commercial nuclear reactors. By extracting weapons-usable plutonium from highly radioactive spent fuel, reprocessing makes it easier for terrorists to obtain this dangerous material.<sup>16</sup>
- GNEP includes a proposal by which certain "supplier" nations, including the United States, would lease nuclear fuel to other nations, in exchange for commitments that the recipient nations would not seek nuclear fuel production facilities of their own. This will reinforce the existing divide between the nuclear "haves" and "have-nots" which is not conducive to global security. Furthermore, such restrictions could instead induce a rush to acquire domestic uranium enrichment capabilities.<sup>17</sup>
- The attempt to reintroduce reprocessing – the chemical separation of plutonium and uranium from waste reactor fuel – breaks a longstanding barrier between military and civilian uses of fissile materials. Due to proliferation concerns, both the Ford and Carter administrations banned reprocessing in the U.S.<sup>18</sup>
- The U.S. Department of Energy is moving forward with a plant to manufacture mixed-oxide or MOX fuel. MOX would be manufactured using plutonium from dismantled nuclear weapons, once more blurring the dividing line between the military and civilian nuclear sectors.<sup>19</sup>

### Nuclear Proliferation and Climate Change

- The use of nuclear weapons, whether accidental or deliberate, could change the climate more abruptly and catastrophically than global warming with no time to adapt, decimating agriculture worldwide and resulting in mass starvations.<sup>20</sup>
- Wars are a distraction from addressing climate change, especially if they escalate into conflicts using nuclear weapons. The presence of a nuclear energy program can provoke war and conflict making nuclear power counterproductive to addressing climate change.
- The effects of climate change itself – severe droughts, floods and forced population migrations – could exacerbate tensions between nations. Those possessing nuclear weapons, should the stresses become extreme, may find the temptation to use them irresistible. If a large-scale exchange occurred, the result could be a catastrophic change in the weather – a nuclear winter – which could end human life on earth as we know it.<sup>21</sup>

#### END NOTES

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<sup>1</sup> Thomas Cochran. Natural Resources Defense Council.

<sup>2</sup> The Bulletin of the Atomic Scientists, January-February 2002.

<sup>3</sup> Committee on Atomic Energy, Acheson-Lilienthal report, 1946, p.4.

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<sup>4</sup> Ibid.

<sup>5</sup> [http://en.wikipedia.org/wiki/List\\_of\\_states\\_with\\_nuclear\\_weapons](http://en.wikipedia.org/wiki/List_of_states_with_nuclear_weapons)

<sup>6</sup> *Atmospheric effects and societal consequences of regional scale nuclear conflicts and acts of individual nuclear terrorism*, Atmospheric Chemistry and Physics, Toon et al, 2007.

<sup>7</sup> The Middle East's Nuclear Surge, Joe Cirincione and Uri Leventer, *International Herald Tribune*, August 13, 2007. And at: <http://www.iht.com/articles/2007/08/13/opinion/edcirin.php>

<sup>8</sup> *Japanese Nukes Could Counter China - Politician*. Reuters. April 6, 2002. And at: <http://nucnews.net/nucnews/2002nn/0204nn/020408nn.htm#022>

<sup>9</sup> [http://www.nationalpriorities.org/costofwar\\_home](http://www.nationalpriorities.org/costofwar_home)

<sup>10</sup> *The Three Trillion Dollar War: The True Cost of the Iraq Conflict*, by Joseph E. Stiglitz and Linda J. Bilmes. Published by Allen Lane.

<sup>11</sup> *Climatic consequences of regional nuclear conflicts*, Atmospheric Chemistry and Physics. Robock et al, 2007.

<sup>12</sup> President Truman (U.S.), and Prime Ministers Atlee (Great Britain) and King (Canada), 1945. And: *IAEA Cannot Say if Iran's Nuclear Program is Peaceful*, Voice of America, November 15, 2004. And at: <http://www.globalsecurity.org/wmd/library/news/iran/2004/iran-041115-367ba274.htm>

<sup>13</sup> *The Legacy of A.Q. Khan*, Council On Foreign Relations, September 5, 2006. And at: [http://www.cfr.org/publication/11316/legacy\\_of\\_aq\\_khan.html](http://www.cfr.org/publication/11316/legacy_of_aq_khan.html). And see:

[http://en.wikipedia.org/wiki/Abdul\\_Qadeer\\_Khan](http://en.wikipedia.org/wiki/Abdul_Qadeer_Khan)

<sup>14</sup> *In Error, B-52 Flew Over U.S. with Nuclear-Armed Missiles*, By Josh White, Washington Post, September 6, 2007. And at: <http://www.washingtonpost.com/wp-dyn/content/article/2007/09/05/AR2007090500762.html>. And: *Nuclear Parts Sent To Taiwan In Error*, by Josh White, Washington Post, March 26, 2008. And at: <http://www.washingtonpost.com/wp-dyn/content/article/2008/03/25/AR2008032501309.html>

<sup>15</sup> *Nuclear Terrorism: The Ultimate Preventable Catastrophe*, by Graham Allison. And at: <http://www.nuclearterrorism.org>

<sup>16</sup> Union of Concerned Scientists comments on GNEP Environmental Impact Statement. And at: [http://www.ucsusa.org/assets/documents/global\\_security/LymanDOEanoicomments5806.pdf](http://www.ucsusa.org/assets/documents/global_security/LymanDOEanoicomments5806.pdf)

<sup>17</sup> *Risks and Realities: "The New Nuclear Energy Revival,"* by Sharon Squassoni, Arms Control Association, May 2007. And at: [http://www.armscontrol.org/act/2007\\_05/squassoni.asp](http://www.armscontrol.org/act/2007_05/squassoni.asp)

<sup>18</sup> *Nuclear Fuel Reprocessing: U.S. Policy Development*, Anthony Andrews, Congressional Research Service, November 29, 2006. And at: <http://www.fas.org/sgp/crs/nuke/RS22542.pdf>

<sup>19</sup> *What Is Mox?* And at: <http://www.nirs.org/factsheets/basicmoxinfo.htm>

<sup>20</sup> Ibid Toon et al. And ibid Robock et al.

<sup>21</sup> Ibid.

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