

Earth: WMD-Free and Climate Stable Planet; Or Arid Plutonium Plantation?

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Speaker:

It is time to celebrate that many leaders are calling for the abolition of weapons of mass destruction (WMDs)—including the growing call from within the nuclear weapons states for those nations to get rid of nuclear weapons.ⁱ This growing consensus is worthy of embrace!

Unfortunately, contrary to what was likely the intention of Article IV of the Non-Proliferation Treaty, the expanding mandate to promote nuclear technology for the generation of electric power will doom this effort to **failure**. As has been well reported in the major media, uranium enrichment technology will transform uranium feedstock into either reactor fuel, or at high levels of enrichment material for nuclear weapons. Less reported is the fact that every nuclear power and research reactor using low-enriched uranium fuel produces plutonium as a by-product—that can be recovered in considerable quantitiesⁱⁱ via reprocessing of the irradiated fuel. The world has witnessed that all forms of plutonium can be used to make weapons.ⁱⁱⁱ Therefore both fuel production and fuel use make nuclear energy a “starter-kit” for nuclear weapons production. Promoting the spread of nuclear power is effectively promoting the spread of nuclear weapons capacity.

Recognition of this situation has engendered a contradictory response from leaders. Instead of turning away from enrichment and reprocessing, the new Global Nuclear Energy Partnership (GNEP), initiated by the United States^{iv} and largely supported by the International Atomic Energy Agency (IAEA)^v is an attempt to increase controls on nuclear energy since its spread is contributing to the global spread of nuclear weapons. Under the guise of offering a “consistent fuel supply,”^{vi} the program defines nuclear “supplier” states and nuclear “client” states. The suppliers are states with a developed nuclear fuel production infrastructure including uranium enrichment—and not surprisingly are primarily (but not solely) nuclear weapons states. Enriched uranium fuel or even mixed oxide (MOX) plutonium fuel would be supplied to “client” states, effectively as a lease agreement. The “supplier” states would then retrieve the plutonium-laced highly radioactive waste back from the “client.”^{vii}

This plan is effectively a global plutonium plantation with the “supplier” states reaping the harvest of deadly plutonium. What is the plan for this plutonium? Ostensibly to make nuclear fuel that would be supplied once again to the “clients.”^{viii}

In a brazen bending of logic, promoters of expanded nuclear power infrastructure, in a stated attempt to control the spread of nuclear weapons imply that handing client nations plutonium, or MOX (“mixed oxide”) fuel will reduce the risks of these nations obtaining plutonium for nuclear weapons proliferation. Plutonium fuel does not reduce proliferation risks—it increases the risk of diversion of this material for nuclear weapons since the “fresh fuel” bearing plutonium is not yet highly radioactive and therefore easy to handle. Further, mixed uranium and plutonium fuel (MOX) is easy to separate chemically resulting in usable fissile plutonium, unlike low-enriched uranium fuel where the only means of obtaining a greater concentration of the fissile material is via further enrichment. Another important point is that plutonium fuel is far more deadly in the

event of a reactor accident, due to the greater concentrations of transuranic elements. The latent cancer deaths arising from a major reactor accident, such as Chernobyl, could be as much as double in proportion to the percentage of MOX fuel in the reactor core at the time of such an event.^{ix}

Article IV of the NPT, the mandate of the IAEA, and agreements made between the IAEA and the World Health Organization are documents of their time and reflect historically specific moments in science and in politics. Assumptions made in 1945 or 1968 about nuclear technology have to be reevaluated in a world that has experienced Chernobyl and Three Mile Island. It is high time that the people of the world have access to accurate information about these world-changing events. It is time to ensure that there is a World Health Organization that is a leader in supplying information on health, disease, and mortality in the nuclear age—not covering up the impacts of these horrendous and deadly events.^x This is ever more important as the nuclear weapons states—and others—are moving to reinvest in nuclear infrastructure at home and promoting it as the solution to nearly every crisis facing the planet.

A lesson we must learn from the last 60 years of nuclear fission: once an atom has been split, it is no longer “peaceful.” Radiation is intrinsically destructive—whether we use the destructive force to fight disease, to produce mutations intentionally or document the mutagenic impacts of routine releases from nuclear operations, or calculate the consequences of nuclear accidents and attacks. It is worth commemorating the fact that the majority of this mutagenic androgenic radioactivity—worldwide—is in the waste leftover from making electricity (more than 95%).^{xi} We have created an enormous concentration of radioactivity for which not a single nation has yet implemented a viable permanent “solution.” This planetary burden will be handed down for the next 12,000 generations^{xii} of our species. If we are lucky it will be contained and not released into the living systems of this planet. Reprocessing only makes this mess worse, and will in the end only dilute and defer the waste problem. We must work together to end this dirty practice.

Sadly, responsible management of radioactive waste is already not the case, and tragically, it is disproportionately Indigenous Peoples who are being violated by destructive radiation from uranium mining operations on every continent. In addition to this death sentence for so many, there has been an enormous violation of human rights, Sovereignty and self-determination in the recurring targeting of Indigenous communities to take the deadly wastes resulting from the use of uranium for both nuclear weapons and nuclear power. This genocidal practice has even been “justified” by several dominant societies that produced the waste and wanted to dump it on someone else, by citing the “Earth stewardship” commitments expressed by some First Peoples.^{xiii} This immoral policy and practice must end, not expand. We must work together to ban the taking of uranium out of the ground, and clean up the areas already devastated by uranium mining and processing. It is vital to reestablishing sovereignty and self-determination in the Nuclear Age that bans on uranium mining and reprocessing be universal.

The reevaluation of Article IV and the Atoms for Peace initiative is **urgent**—not only because of the daily generation of evermore of this waste that is dangerously mutagenic forevermore—it is also urgent because the primary public reason (excuse) used by promoters to justify this contradictory and counter-productive approach to non-proliferation is a matter that is also extremely urgent: the Climate Crisis.

Just as nuclear energy is intrinsically contra-indicated as a “solution” to nuclear proliferation, so too is it a false solution to Global Climate Change. The danger of investment in false solutions—particularly very expensive ones—is that it will deter investment in real solutions such as energy efficiency in nations such as the USA and renewable infrastructure that are very much needed.^{xiv}

The recent decades of dormancy of nuclear energy^{xv} in many nuclear states can be explained by the fact that it was discovered, through experience that nuclear energy is not cheap, it is not clean, and it is not safe. In fact, the only thing that nuclear can compete with is the newly “discovered” costs associated with the Climate Crisis, which does not confer upon it an automatic stamp of approval as a preferred means to address reduction of greenhouse gas emission. In fact, expanding the nuclear generating infrastructure would take too long, cost too much, contribute additional carbon and other emissions and very possibly not perform reliably as temperatures rise and weather becomes more turbulent. Every summer since the heat wave of 2003 has seen a growing number of nuclear power stations off-line due to the ambient temperature of the cooling water supply (rivers, lakes and even the ocean have been too warm to cool the condenser in the power generating unit^{xvi}). Any claim to greenhouse gas reduction and climate stabilization by investment in new nuclear power generating should be substantiated.

The claim that nuclear is carbon neutral overlooks the enormous fossil fuel use in the construction of the reactor and the processing of the fuel.^{xvii} This carbon debt, combined with the long lead-times for siting, approval, and construction of new nuclear reactors pushes the first offset of carbon from any other source to a minimum of 20 years out—and by some calculations even farther. Given that the current world-wide supply rate for new pressurized water (Western-style) reactor vessels is only four a year^{xviii} – it becomes clear that nuclear is not qualified to address the immediacy of the climate challenge—there is no way that the leading carbon-emitting nations could cut their emissions via nuclear power in time—even if the capacity is increased—it will take too long.

Additionally, building new reactors is not qualified to combat the climate crisis on the basis of cost—efficiency buys more results in lower emissions by a factor of 7–10 and wind by a factor of 2–3.^{xix} Today, nuclear cannot compete with even the retail prices for solar panels (photovoltaic or PV power generation from the sun). The electric power capacity that would be obtained by buying a new nuclear power reactor is more than twice the cost for the same capacity from PV using *retail prices* for the photovoltaic solar cells.^{xx} There is no basis for saying that nuclear is qualified as a cost-effective “solution” to the climate crisis. Finally, in a water-stressed world, where water is warming, no thermal generating system should be treated as a preferred power source.^{xxi}

Leaders have adopted nuclear energy as a panacea—a solution for nearly every crisis; nonetheless, it will not solve nuclear weapons proliferation, it will not solve world hunger, it will not solve the climate crisis, it will not take us to Mars. It will cause cancer, birth defects, waste we do not know how to live with and WMD proliferation from that waste, and bankrupt us as the Climate Crisis worsens. It is time to reevaluate our investment in this technology and the article of this treaty which is designed to promote the spread of this unsustainable technology.

ⁱ See for instance: "Toward a Nuclear-Free World." Wall Street Journal, January 15, 2008. Op/Ed by George Shultz, William Perry, Henry Kissinger and Sam Nunn. Posted as of April 10, 2008 at:

http://online.wsj.com/article/SB120036422673589947.html?mod=opinion_main_commentaries

ⁱⁱ A typical 1000 MegaWatt nuclear power reactor produces almost 300 Kg of plutonium a year. See:

<http://www.nirs.org/factsheets/plutombomb.htm> and Dr. Arjun Makhijani, January 22, 2001. Plutonium End Game (outline), page 19 – A Brief History of Commercial Plutonium, web posted at: <http://www.ieer.org/reports/pu/peg.pdf> See also: David Albright and Lauren Barbour: Separated Inventories of Civil Plutonium Continue to Grow, May 1999. Posted at: <http://www.isis-online.org/publications/puwatch/putext.html>

ⁱⁱⁱ For instance the United States, India and North Korea have tested nuclear devices derived from reactor materials.

^{iv} See: <http://www.gnep.energy.gov/>

^v See: <http://www.iaea.org/NewsCenter/News/2007/gnep.html>

^{vi} For instance, see: <http://www.stanleyfoundation.org/resources.cfm?id=289>

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^{viii} For a detailed critique of the flaws of this program see Dr. Edwin Lyman, "Global Nuclear Energy Partnership: Will it Advance Nonproliferation, or Undermine It?" posted at <http://www.npec-web.org/Frameset.asp?PageType=Single&PDFFile=20060700-Lyman-GNEP&PDFFolder=Essays>, the reader is also invited to watch for the June edition of Scientific American (also available on-line) for an article by Dr. Frank von Hippel of Princeton University.

^{ix} Dr Edwin Lyman, now at the Union of Concerned Scientists has published a series of papers on his findings on MOX source term. An example is "The Impact of the Use of Mixed-Oxide Fuel on the Potential for Severe Nuclear Plant Accidents in Japan" October, 1999, posted at: <http://www.nci.org/j/japanmox.htm>.

^x For a current critique of the WHO and Chernobyl, see Alison Katz, "Chernobyl: the Great Cover-up" in the April 2008 Le Monde diplomatique, web posted at: <http://mondediplo.com/2008/04/14who>

^{xi} For instance see: US Department of Energy, Integrated Spent Fuel Database, 1994, pie chart on page 47. This report pertains to the USA which is only about ¼ of the global inventory – but most other nations with nuclear energy will have an even greater percentage of total radioactive waste from the generation of electric power.

^{xii} Convention is 10 – 20 half-lives for the period of hazard. This is actually a very short estimate for the period of hazard posed by the constituents of this waste.

^{xiii} For instance the US Nuclear Waste Negotiator in 1993 addressed the National Council of Native Americans and invoked the speech attributed to Chief Seattle and the practice of planning for the Seventh Generation. Similarly the Pangea plan for a global dump on Indigenous Land in Australia invokes the long-term stewardship of the aboriginal culture.

^{xiv} See Amory Lovins, "More Profit With Less Carbon" September 2005, Scientific American for a comparison of greenhouse gas reduction from renewable energy and energy efficiency compared to investment in new nuclear power generating capacity.

^{xv} See graph on page 2 of "Nuclear Facts" posted at: <http://www.newint.org/issue382/facts.htm>

^{xvi} Here is a selection of news reports of nuclear power reactors being taken off-line due to elevated temperatures of the cooling water supplies:

May 20, 2007 "Climate Change Puts Nuclear Energy in Hot Water" International Herald Tribune, <http://iht.com/articles/2007/05/20/business/nuke.php?page=2>

June 8, 2007 "Court Blocks Yankee's Warm Water Discharge" Rutland Herald (VT) <http://www.rutlandherald.com/apps/pbcs.dll/article?AID=/20070608/NEWS04/706080387> July 31, 2007 "US Heat Wave..." Bloomberg.com <http://www.bloomberg.com/apps/news?pid=20601087&sid=aNtzVaLcANc8&refer=home>

August 17, 2007 "TVA Reactor Shut Down: Cooling Water Drawn From River Too Hot" reported on WAFF48 News <http://www.waff.com/global/story.asp?s=6944527> and "Heat Wave Ignites Problems in ET" Knoxnews <http://www.knoxnews.com/news/2007/aug/18/heat-wave-ignites-problems-in-et/>

August 23, 2007 "Rising Temperatures Undermine Nuclear Power's Promise" Union of Concerned Scientists <http://www.nirs.org/climate/background/ucsrisingtemps82307.pdf>

July 30, 2006 "Heat Wave Shuts Down Nuclear Power Plants" The Observer (London) <http://observer.guardian.co.uk/world/story/0,1833620,00.html>

July 27, 2006 "Heat Wave Shows Limits of Nuclear Energy" IPS <http://www.ipsnews.net/news.asp?idnews=34121>

August 10, 2006 "Hot Temps Chill Nuclear Power's Appeal" Christian Science Monitor, posted at <http://www.cbsnews.com/stories/2006/08/10/tech/main1881980.shtml>

¹⁹ Summary of findings given in: <http://www.nirs.org/reactorwatch/mox/nirmscguirecatawbacontentions.htm>

²⁰ U.S. Nuclear Regulatory Commission, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," NUREG-1150, 1990.

²¹ For a review of French reactors off line due to heat listen to NPR's Morning Edition August 21, 2007:
<http://www.npr.org/templates/story/story.php?storyId=13818689>

Although many of these articles are about US reactors, France has had reactors off-line many summers since the 2003 heatwave that forced a record number to idle. Sweden too has reported reactors off-line or at low power due to warm water.

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^{xviii} There is one maker of pressurized water reactor vessels in the world today – Japan Steel works. The out-put of these enormous forged steel containers is currently 4 a year. See: Yoshifumi Takemoto and Alan Katz, “Samuri-Sword Maker’s Monopoly May Cool Nuclear Revival” Bloomberg.com March 13. Posted at:

<http://www.bloomberg.com/apps/news?pid=20601109&sid=aaVMzCTMz3ms&refer=exclusive>

^{xix} Amory Lovins is one source – see note xiv.

^{xx} See Olson, Mary 2008 “Got Solar!” Web posted at: <http://www.nirs.org/southeast/gotsolar.pdf>

^{xxi} For a brief on nuclear power and water, see Union of Concerned Scientists “Got Water?” by David Lochbaum. 2007. Posted at: http://www.ucsusa.org/clean_energy/nuclear_safety/got-water-nuclear-power.html