

FAX

Date December 9, 1996

Number of pages including cover sheet 6

TO: John Holdren,
George Burns, Lee Butler, Paul Doty,
Steve Fetter, Alexander Flax,
Richard Garwin, Rose Gottemoeller,
Spurgeon Keeny, Joshua Lederberg,
Matthew Meselson, Kumar Patel
Wolfgang Panofsky, Jonathan Pollack,
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National Academy of Sciences

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REMARKS:

Urgent

For your review

Reply ASAP

Please Comment

Attached is a copy of the letter to President Clinton from John Holdren and others regarding eliminating U.S. excess weapons plutonium. Also attached is a copy of the today's Washington Post article announcing the Clinton Administration's plan to get rid of 50 tons of plutonium.

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December 3, 1996

The President
The White House
Washington DC 20500

Dear Mr. President:

Thank you for the opportunity to serve on the U.S.-Russian Independent Scientific Commission on Disposition of Excess Weapons Plutonium, which recently provided you and President Yeltsin with its interim report. We believe that the elimination of the excess stockpiles of U.S. and Russian weapons materials left over from the Cold War deserves high priority on the U.S. national security and nonproliferation agendas, and we were honored to be chosen to provide recommendations on this important subject.

We are writing now, in our individual capacities, to urge you to approve as quickly as possible the dual-track approach for eliminating U.S. excess weapons plutonium — use of some of the plutonium in mixed-oxide fuel in a limited number of existing U.S. power reactors and immobilization of some of it in glass or ceramic along with high-level radioactive wastes — as recommended for both the U.S. and Russia in our bilateral commission's report. This dual-track approach was also recommended by the National Academy of Sciences Panel on Reactor-Related Options for Disposition of Excess Weapons Plutonium and by the Secretary of Energy's Advisory Board, and it has been strongly supported by the Department of Energy's own in-depth studies.

Although some have expressed concern about potential proliferation liabilities of putting weapons plutonium in civilian reactors and are counseling delay for still further study, we are convinced that delay is against the security interests of the United States and the world, and that the nonproliferation arguments are overwhelmingly in favor of the dual-track approach. The plain fact is that delay on the U.S. side would mean delay on the Russian side as well. That would mean, in turn, prolonging the exposure of an immense quantity of Russian weapons plutonium to significant dangers of diversion (for re-use in Russian weapons) or theft (for use in somebody else's). It also would mean that both the United States and Russia would postpone signalling to each other and to the rest of the world their intention to "lock in" their progress in disarmament by transforming this material in ways that would make it far more difficult to use again in nuclear weapons. Such a signal is important to the prospects of further nuclear arms reductions (including bringing second-tier nuclear powers into the process), and it is important to nonproliferation.

It is essential to pursue *both* tracks — mixed-oxide fuel in some civil reactors and immobilization with high-level wastes — in *both* countries, for at least four reasons:

- First, both options face technical and institutional obstacles that will need to be overcome, and it cannot be predicted *a priori* which set of obstacles will prove more time-consuming; moving ahead on both tracks increases the chance of having at least one implementable option without excessive delay.
- Second, while weapon-grade plutonium mixed with wastes in glass is about as difficult for third countries or terrorists to use for weapons as is plutonium in spent reactor fuel, the weapon-grade plutonium in glass would be somewhat easier for the United States or Russia to re-incorporate into their own arsenals if they chose. Thus vitrification alone sends a less reassuring signal about U.S. and Russian intentions to pursue irreversible reductions than does a dual-track approach. In fact, there is much reason to think that the Russians will not eliminate their plutonium stockpile at all if the United States implements only immobilization, leaving all U.S. plutonium weapon-grade — the Russians might then merely store their stockpile of weapons plutonium indefinitely, which is what we should most wish to avoid.

The President

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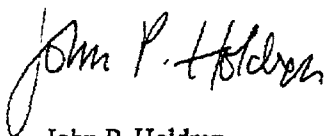
- Third, only the dual-track approach is likely to be able to muster the bipartisan domestic support that will be needed to fund U.S. plutonium disposition, or the international support that will be needed to help fund plutonium disposition in Russia.
- Fourth, if the United States opts out of the reactor option, we will lose any leverage we might have had over the conditions and safeguards accompanying the use of Russian plutonium in their reactors. It is critically important for the United States to play a leadership role in an international effort to implement the reactor option in Russia, and this will be extremely difficult to do if we reject the reactor option for our own plutonium.

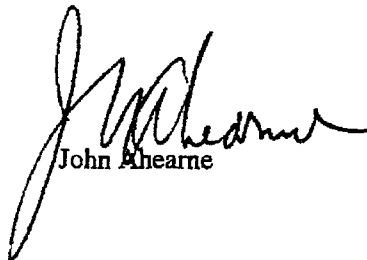
(The unfortunate November 22 *New York Times* article on this subject mentioned only the fourth of these arguments.)

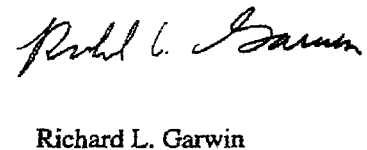
We understand the concerns of those who oppose any option that involves the use of plutonium as fuel in civilian reactors, fearing that this might undermine the U.S. policy of not encouraging the civilian separation and use of plutonium in other countries. Indeed, some of us were among the authors of the 1977 volume which is widely regarded as the basis for this policy decision in the Carter Administration. We believe, however, that the dual-track approach is entirely consistent with these long-standing U.S. policies. The dual-track approach is about getting rid of an existing dangerous stockpile of separated plutonium, not about separating more. Using reactors to achieve this objective would not lead to a new domestic reprocessing and plutonium recycling industry; nor would it increase the incentives for other countries to reprocess and recycle plutonium. It is precisely because of the dangers of separated plutonium that the United States should plan on using both of the best technologies at its disposal -- reactors and immobilization with wastes -- to get rid of it.

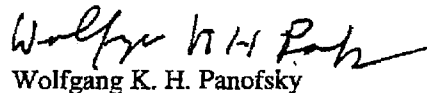
What is needed now is a clear decision to move forward on both tracks. To put off a decision and simply continue research would cast doubt on the leadership your Administration has shown in this area to date. Putting in place an effective plan for eliminating these stockpiles of excess weapons plutonium will help keep this material out of the hands of terrorists and rogue states, and it will contribute to locking in nuclear arms reductions; such a plan would be an outstanding legacy for your Administration to leave our children and grandchildren.

Respectfully,


John P. Holdren


John Ahearne


Richard L. Garwin


Wolfgang K. H. Panofsky


John J. Taylor



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The Energy Department's Pantex plant near Amarillo, Tex. handles the interim storage of plutonium.

The complex plutonium storage methods are outlined in the Department of Energy's Criteria for Safe Storage.

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U.S. to Burn, Bury Toxic Plutonium From Weapons

By *Thomas W. Lippman*

Washington Post Staff Writer

Monday, December 9, 1996; Page A01

The Clinton administration will announce today a two-track plan to get rid of 50 tons of highly radioactive surplus plutonium from the nation's dwindling stockpile of nuclear weapons.

Some of the toxic material will be "immobilized"--encased in glass or ceramic blocks and consigned to a permanent underground repository. The rest is to be combined with conventional nuclear power plant fuel and burned in commercial electricity-generating plants under the plan, which was made available to The Washington Post.

Both disposition methods in the \$2 billion program involve immense technical, economic and political uncertainties. But the Energy Department, after a three-year study, concurred with the National Academy of Sciences that they are preferable to all 34 other known methods of plutonium disposition. In reaching the decision, the administration followed the process prescribed by law for actions that have a major environmental impact.

Scientists recommended pursuing more than one option because, according to the NAS report, "it is crucial that at least one of these options succeed . . . and because the costs of pursuing both in parallel are modest in relation to the security stakes." In selecting two methods, the Energy Department discarded such options as launching the plutonium into space or sinking it in the ocean. The department also rejected as too dangerous the "do-nothing" alternative, keeping the plutonium in secure storage.

Keeping the material in storage would be easiest and cheapest, officials said, but that would perpetuate the danger that the material could fall into the hands of terrorists or rogue nations. It also could make Russia suspicious that the United States plans to retrieve the plutonium someday for use in new weapons.

Publication of the Energy Department's "preferred alternatives" for disposing of the plutonium marks a milestone in the history of nuclear weapons. Material produced in secrecy over four decades at a cost of untold billions of dollars for the purpose of destroying the Soviet Union

will now itself be destroyed--in a public process, in cooperation with Russia and under international supervision.

Plutonium, the basic building block of nuclear weapons, is extracted by a chemical process from uranium fuel irradiated in a nuclear reactor. It is highly toxic, radioactive and flammable in some forms.

The United States produced about 98 tons of it before ending production in the late 1980s. As little as 15 pounds can be fashioned, relatively easily, into a crude nuclear explosive device, according to scientists.

U.S. defense strategy assumes that this nation will maintain a reduced nuclear arsenal indefinitely. But with the size of that arsenal shrinking rapidly, the government had to decide what to do with the surplus plutonium.

The decision to either destroy it by burning it as nuclear fuel or to immobilize it in glass or ceramics ends a debate over whether the material is an asset or a liability. Given the cost of producing it, some people--especially in Russia--wanted to reuse it for its energy content.

Others, including many senior officials of the Clinton administration and arms-control activists, wanted it destroyed by any method that did not involve using it as fuel. But the administration finally concluded that some fuel use is necessary.

Alerted that the administration was contemplating some use of plutonium as mixed-oxide or "MOX" fuel in power plants, some arms-control activists already have begun to campaign against it. They argue it will open the door to routine commercial use of plutonium here and in other countries.

Much of the material assembled by the administration for today's announcement is designed to address that argument. While some plutonium "may ultimately be burned in existing reactors, every possible means will be pursued to ensure that federal support for this unique disposition mission does not encourage other civil uses" of plutonium or the extraction of plutonium for reuse from conventional spent fuel at power plants, a summary of the plan states.

The administration is planning to release a Dec. 3 letter to President Clinton from a panel of prominent nuclear scientists who say it is "essential to pursue both" forms of disposition--conversion to MOX and vitrification--because vitrification alone will not satisfy Russia, however appealing it may be to the anti-MOX arms-control community.

"In fact," the letter says, "there is much reason to think that the Russians will not eliminate their plutonium stockpile at all if the United States implements only immobilization." The Russians "might then merely store their stockpile of weapons plutonium indefinitely, which is what we

should most wish to avoid."

Among the signers were John F. Ahearne, former chairman of a federal nuclear weapons safety commission, and Wolfgang H.K. Panofsky, a physicist at Stanford University.

According to a senior Energy Department official, the United States and Russia agreed recently to put their plutonium storage and disposition programs under supervision of the International Atomic Energy Agency. He and other officials stressed that every aspect of the plutonium disposition program was designed with an eye toward assuring Russia that the United States really is out of the plutonium business and encouraging the Russians to follow a similar course.

However, even if this political argument in favor of MOX fuel disposition prevails over the objection that it violates a long-standing U.S. policy against commercial use of plutonium, the MOX fuel option still faces a long list of difficulties before it can be implemented.

Technically, it is feasible, scientists agreed. The plutonium would be mixed with conventional uranium fuel in a new plant scheduled to be in operation by 2013, then burned over 17 years in any of the nuclear power plants in this country or Canada.

At least 18 U.S. utilities have expressed interest, officials said. All would expect to be paid handsomely by the government for the regulatory and public-relations grief they would surely encounter when they apply for a Nuclear Regulatory Commission license to burn MOX fuel.

One official involved in preparing the disposition plan said it would be so easy to stir up community opposition with a "plutonium is coming to your neighborhood" campaign that he doubted any U.S. utility would ever commit itself to MOX fuel.

That is why the Energy Department has "retained the option" of shipping the MOX fuel to Canada for consumption in that country's heavy-water reactors "in the event that a multilateral agreement to use [Canadian] reactors is negotiated among Russia, Canada and the United States," according to the plan.

As the U.S. stockpile of nuclear weapons heads down from an estimated peak of 12,000 to a target of 3,500 in 2003, about 1,400 weapons a year are being disassembled at the Energy Department's Pantex plant near Amarillo, Tex.

Most of the plutonium declared surplus by Clinton consists of the bowling ball-sized "pits," or triggers, from these disassembled weapons. These pits have been piling up in temporary storage at Pantex while the government decided what to do with the plutonium.

The rest of the surplus plutonium consists of scraps, waste and experimental amounts at other Energy Department sites, including Rocky Flats, Colo., and Hanford, Wash. According to Energy Department officials, this scrap material is not usable in MOX form and must be immobilized in glass or ceramic form for disposition.

The plutonium disposition plan is to be presented today as part of a comprehensive plutonium management strategy that also calls for expanding and upgrading Pantex and for removal of all plutonium from Rocky Flats, which is just outside Denver. Pits at Rocky Flats would be transferred to Pantex, beginning next year, and other Rocky Flats plutonium would be shipped to the Energy Department facility at Savannah River, S.C.

Overall, the number of sites where plutonium is stored and handled eventually would be reduced from seven to three or four, including Pantex, Savannah River and the Los Alamos National Laboratory in New Mexico.

The Energy Department decided against transferring plutonium to sites that do not have any now. This eliminated the Nevada Test Site as a possible location for storage or processing.

Because the United States has stopped testing nuclear weapons, the fate of the test site was the subject of a separate study. According to Energy Department officials, "subcritical" nuclear tests--in which explosive force is induced chemically rather than through a controlled chain reaction--will continue for the purpose of assessing warhead safety.

In addition, officials said, the Energy Department expects to sign a contract this month for the development of the nation's largest solar-powered electric generating station at the Nevada site.

Under the plutonium management plan, Rocky Flats would lose about 2,000 jobs as plutonium operations are phased out. The big job gainer would be Savannah River, which is projected to gain 9,500 jobs by 2013, when the MOX fuel fabrication plant and ceramic immobilization facility to be built there are operational.

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Lodgaard

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11 December 1996

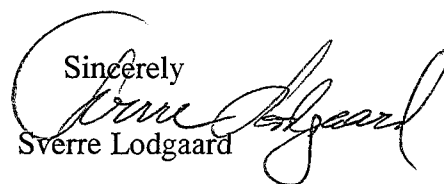
Dear Prof. Meselson,

I am pleased to inform you that, as of 1 January 1997, I will assume my new functions as Director of the Norwegian Institute of International Affairs. My address in Oslo will be

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N-0033, Oslo
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It is with a deep sense of gratification that I think of my work at UNIDIR, and of my cooperation with you. Geneva is an excellent location for applied research on security and disarmament matters. Indeed, the Institute is benefitting greatly from close contacts with the UN and its member governments as well as with non-governmental organizations and academic institutions represented here. The personal and professional relationships that I have been so fortunate to develop during my four year tenure are invaluable, and I hope to continue to build on them in the years ahead.

I want to thank you for your contributions to the work of the Institute and, generally, for the interest that you have shown in our activities. I hope I will have the opportunity to work with you on issues of common interest also in the future.

Sincerely

Sverre Lodgaard

Prof. Matthew Meselson
Fairchild Biochemistry Laboratory
Harvard University
7 Divinity Avenue
Cambridge MA 02138
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