Transportation of Nuclear Material: The Public Policy Debate and the Need for a Common Ground

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Thank you for the opportunity to speak at PATRAM. I have examined with great interest the range of topics on the program and I have to confess that I am no expert on any of these matters. However, as a State Department official with responsibilities for a range of international nuclear cooperation and nonproliferation questions, I have dealt with a number of issues involving the transportation of nuclear materials. I would like to review some of these with you today because I believe they could have a potentially profound impact on the smooth and efficient functioning of your industry, on international and nuclear cooperation in the peaceful uses of nuclear energy, and on the safe and secure disposition of various nuclear materials from both the civilian and military nuclear fuel cycles.

Let me approach this historically. The transportation of nuclear materials both within and between countries has been a common but significant part of the nuclear industry since its inception. Throughout the 1950s and 1960s and much of the 1970s, the movement of nuclear materials within and across borders took place, for the most part, without much notice and with little, if any, controversy. This was due to a number of factors. The nuclear industry was still in its heyday. Public perceptions were of a nuclear energy option that offered great promise of cheap power, and public doubts about the safety of nuclear energy had not yet emerged. Organized opposition to nuclear energy was not yet born or was in its nascent stage, and the nuclear materials transported were primarily of the less sensitive kind—namely, natural uranium or low-enriched uranium. A consensus also prevailed for a long time about the importance of closing the fuel cycle and the consequent use of plutonium and light-water reactors and, eventually, the use of breeder reactors. Finally, for reasons of national security, the military uses of nuclear energy were shrouded in secrecy and little was known about the operation of nuclear facilities in the military cycle.

Much has changed since those days. Three Mile Island and Chernoble shook, to a profound degree, public confidence in the nuclear energy option. The opposition to nuclear energy is now mature, well-organized and financed, and increasingly vocal on certain issues. Environmental groups and the populations in the vicinity of nuclear operations, including national defense installations, demand strict environmental and safety standards. Some nongovernmental organizations strongly resist any nuclear developments. Nuclear materials in transit are no longer restricted to natural and low-enriched uranium. In some countries, the nuclear industry has moved beyond the front end of the fuel cycle. The transport of plutonium, a weapons-usable material, has become more common, as has the shipment of highly radioactive waste. These

materials arouse a special fear among the publics and parliaments—in the case of plutonium, because of its usability in nuclear weapons; in the case of waste, because of its high radioactivity and related safety concerns. Reprocessing and the use of plutonium are no longer universally regarded as the fuel cycle of choice. The United States does not engage in reprocessing or the use of plutonium for both nonproliferation and economic reasons. Many NGOs and parliamentary officials oppose the use of plutonium on environmental as well as nonproliferation grounds.

The end of the Cold War has now removed many of the veils of secrecy surrounding the national security establishments of the United States and Russia and revealed poor regulatory and safety practices which have seriously damaged the environment and raised further doubts about the acceptability of nuclear power. The end of the Cold War has also resulted in the progressive dismantlement of nuclear weapons in both the United States and Russia and the related need to provide for the safe and secure disposition of hundreds of tons of plutonium and highly enriched uranium declared as excess to the national defense needs of these nations.

Thus, the political atmosphere has changed radically. Transparency, openness, and public discussion of nuclear matters is to be welcomed. However, I am concerned that the perceptions of nuclear energy and confidence in it have altered to the point where virtually any action in the nuclear field is subject to political or legal challenges. This could lead not only to major disruptions in an important industry but could also prove to be damaging to the safe and secure disposition of fissile materials.

Let me illustrate my point with a few examples of issues with which I have had some personal involvement. The first concerns plutonium shipments from Europe to Japan. Following the Japanese reprocessing contracts with COGEMA and British Nuclear Fuel Ltd. in the 1970s, Japan began returning its plutonium on a routine basis. During the 1970s, there were some 13 shipments of plutonium produced from British-origin material from the UK to Japan, and these went largely unnoticed. However, in 1984, when the Japanese requested the prior approval of the United States to transfer some 253 kg of plutonium (which had been produced from U.S.-origin material) from France for use in the experimental breeder reactor, the MONJU, a major political debate arose in the United States and Japan about the nature and adequacy of the physical protection measures to be applied to the shipment.

In Japan, the major issue was whether Japan could provide armed guards on the transport vessel itself. This was of such political sensitivity that the decision to provide armed guards was made at the highest levels of the Japanese government. Physical protection was also a key issue in the United States. U.S. consent was finally given to this plutonium transfer only after the White House had instructed the U.S. Navy to escort the transport vessel. Even after the shipment was successfully accomplished, physical protection continued to be a major controversial issue. The Department of Defense indicated that it would no longer provide such escort in the future. Several Congressmen wrote the President maintaining that shipment by sea would not provide adequate physical protection and insisting that the U.S. approvals of any future shipments should be conditioned on the shipments taking place by air.

Transportation of plutonium between Europe and Japan proved to be an issue of abiding concern. It played a prominent role in the negotiations of the U.S-Japan Nuclear Cooperation Agreement, which entered into force in 1988. In that agreement, the United States gave Japan long-term advance consent to reprocessing in the use of plutonium. Included in that arrangement was U.S. approval to ship plutonium from Europe to Japan. One of the annexes to the agreement specified in detail the physical protection arrangements for the transport, which required, among other things, that the plutonium be shipped nonstop by air. Congressional review of the agreement was favorable. However, Senator Murkowski from Alaska, concerned about possible overflights and possible emergency landings in Alaska, drafted legislation that required that any shipment of plutonium over the United States be in casks that would sustain a so-called "maximum credible accident." Notwithstanding previous Congressional sentiment in favor of air shipment, this legislation rendered air shipment impossible at that time and for the foreseeable future.

We then had to go back to the drawing boards and negotiated a new annex to the U.S.-Japan agreement, which provided for the sea shipment of plutonium. The new annex required that the shipment of plutonium by sea be accompanied by an armed escort vessel or an alternative security arrangement which provided for equivalent security. In 1992, Japan sought to make its first shipment, some 1.7 tons of total plutonium in oxide form, under the new agreement. Once again, the shipment took place amidst great debate and controversy. To meet the requirements of the U.S.-Japan agreement, the Japanese built a special armed escort vessel to accompany the transport vessels. The focus of the attention this time, however, was less on physical protection than it was on safety. The shipment was met by strong protest from various NGOs who campaigned heavily with all governments along all possible routes, charging that the cask would not withstand a serious accident at sea.

The State Department was literally inundated with inquiries from foreign governments expressing grave concerns about the shipment. The Congressional delegation from Hawaii objected strongly to the Japanese transporting any plutonium in the vicinity of Hawaii or making emergency port calls there. One Congressman drafted legislation which would have required that any ship carrying plutonium would not enter the U.S. harbor unless the U.S. Nuclear Regulatory Commission (NRC) certified that the cask containing the plutonium would survive a maximum credible accident. This would have barred entry into the United States of vessels carrying plutonium and would have prevented ships from exercising their rights under international law of innocent passage and force majeur. It was only after considerable effort that this legislation was amended to preserve U.S. interests as a major seafaring nation. When the shipment finally took place, it was under the glare of television cameras and with a Greenpeace ship colliding with the armed escort vessel at the outset of the voyage and then tracking the transport vessel well out into the Atlantic.

Although the shipment of the Japanese plutonium was safely completed, the episode illustrates the high visibility and controversy which attends any transport of plutonium. The Japanese have some 30 tons of plutonium in Europe, which they intend to have

fabricated into mox fuel elements in Europe and return to Japan. You cannot expect that the controversy of future shipments will be any less intense.

The shipment of Japanese high-level waste from Europe to Japan in 1994 also received a high level of attention and public criticism. Strong protests were launched against the shipment, and many governments en route expressed serious concerns about the impact an accident involving the high-level waste shipment might have on their territory and population.

Another area which I have dealt with and which has also proved highly controversial is the U.S. effort to renew its longstanding policy of managing foreign research reactor spent fuel. Until 1988, the United States has taken back spent fuel from nuclear material which it has supplied for research reactors around the world. Accepting this spent fuel became an essential element of the U.S. global nonproliferation efforts to minimize and eventually eliminate highly enriched uranium from civil nuclear commerce. Reactor operators made it clear that their willingness to convert their reactors from highly enriched uranium to low-enriched uranium was dependent upon the continued willingness of the United States to take back and dispose of this spent fuel.

The U.S. policy terminated, however, in 1988 in order to complete an environmental review. The Department of Energy (DOE), with the assistance of the Department of State, has been preparing an environmental impact statement in order to provide the basis on which to decide whether the United States can renew the policy of accepting this foreign research reactor spent fuel. This effort is an essential element of the President's nonproliferation policy in controlling and reducing stocks of fissile material. Yet, it has run into strenuous opposition from various public interest and environmental groups and State and local governments. Public hearings were often acrimonious, and local groups were outraged at the thought of bringing the spent fuel into the United States. Efforts to bring a number of spent-fuel elements into the United States in order to prevent a shutdown of certain reactors were met with a court suit. This was ultimately won, but only after serious damage was done to the U.S. credibility as a reliable nuclear partner in cooperation. Nevertheless, we must still finish the environmental impact statement and complete the renewal of the spent fuel return. The success of the national security imperative of eliminating highly enriched uranium from commercial use literally hangs in the balance.

Another issue affecting international security arises from the tons of plutonium emerging as excess from the arms reductions in the United States and Russia and the resultant dismantlement of nuclear arsenals of both countries. The National Academy of Sciences, in its study of the management and disposition of excess weapons plutonium, concluded that the existence of this surplus material constitutes a clear and present danger to national and international security. The Academy recommended, among other things, that the United States and Russia pursue long-term disposition options that will result in the plutonium being in a form such that it would be as difficult to recover for weapons use as it would be to recover it from the larger and

growing quantity of plutonium in commercial spent fuel—that is, the so-called spent fuel standard.

The United States is preparing a programmatic environmental impact statement to examine various options for the disposition of plutonium in excess of its defense needs. The United States and Russia have also begun a joint study of plutonium disposition options. We are working with the Russians to ensure that this plutonium is subject to material protection, accountancy, and control that meet rigorous international standards. However, there is no doubt in my mind that the transport and ultimate disposition of plutonium in both the United States and Russia will be the subject of great debate. Some of this debate will be reasoned; some will be irrational; some will be between reasonable people willing to compromise; some will take place between ideologues whose dialogue will be marked by inflexibility, dogma, and futility rivaled only by that of medieval theologians. As far as I am concerned, that debate has already begun.

What these examples make clear is that the shipment, use, and disposition of sensitive nuclear material, spent fuel, and highly radioactive waste products cannot be accomplished without public attention and controversy. No matter how convinced the technical community may be about the safety and security of the packaging, transport, use, and disposition of this material, the general public, the media, and elected officials continue to have grave concerns about all of these activities. And certain groups can be expected to oppose nuclear energy in general. Some will concentrate on stopping or disrupting any activities having to do with the back end of the fuel cycle. Much of the public and many elected officials remain deeply concerned about the safety of shipments and other operations and the environmental damage they might cause.

My point is not that the old days of secrecy, consensus, and public inattention to nuclear matters should continue. Those old days were in fact not "good old days" by any means. They contributed significantly, in my mind, to the present suspicion and lack of credibility that the nuclear industry continues to suffer. Moreover, given the grave importance to safety and security, there is no alternative to a thorough public understanding of the issues and a vigorous public debate over the merits, risks, and costs of various proposed actions and options. These activities cannot be carried out without the support, or at least the acquiescence, of national, State, and local governments and communities.

What concerns me is not the debate or the controversy—it is that ignorance, myopia, and dogmatism will dominate that debate. The "not in my backyard" syndrome has become commonplace in the nuclear field. These attitudes will inevitably lead to a paralysis in decision-making. If this happens, governments and industry will simply be unable to make decisions, or if we make them, we will be unable to implement them on issues of great importance and urgency to the public interest. As I noted earlier, the National Academy of Sciences described the excess plutonium arising from the dismantlement of nuclear weapons as presenting a clear and present danger to international security. I believe that the growing stockpiles of excess plutonium arriving from the civil nuclear cycle present a similar danger. It is imperative that we

reduce and eventually eliminate these stocks as soon as practical. What needs to be done is to enable governments and industry to make the kinds of decisions to carry out important national security policies.

I have no easy answers; I do not think there are any. But based on my experience in dealing with these sorts of issues in Washington over a number of years, I believe that certain steps are essential. First, Government and industry must present to the public an honest and thorough assessment of the benefits, costs, and risks of actions to be taken. Decisions on the transport, use, and disposition of these materials are simply not sustainable without public support or acquiescence. Second, decisions and actions should be taken with the highest measure of transparency and openness, consistent with the need to provide physical protection and to protect national security information. Third, Government and industry need to take the extra step in providing for safety and security. Even when there are serious professional or technical doubts about the necessity of an extra step, if it is reasonable and helps to ameliorate concerns, it would be well-worthwhile.

On the other side of the divide, some of the opponents of nuclear power need to ask themselves what they are truly trying to accomplish. I suspect that some are trying to harass and disrupt in order to bring about a collapse of the nuclear enterprise or some aspect of it, such as having no nuclear power plants or recycled plutonium. Their harassment tactics may succeed in disrupting, delaying, or terminating certain activities. But these groups really have to ask themselves what the long-term consequences are. For example, some argue that the transportation of the nuclear waste or plutonium cannot be done safely. But if society were to collectively reach that judgment, what are we going to do with the waste and plutonium? To use or dispose of these materials in a safe and secure manner will inevitably require their transportation from one location to another, sometimes within a country and sometimes across international boundaries. If these groups are successful in convincing public opinion that the transportation of these materials presents unacceptable risks, they will be doing a major disservice to the safe and secure disposition of these materials.

We are going to have to find some way to overcome the near-ubiquitous "not in my backyard" attitude that so dominates nuclear issues. We have spent enormous resources and time on a waste depository in this country and have been unable to come to a successful conclusion. Unless we develop a larger sense of civic duty, the decisions required for the disposition of plutonium from our weapons program will encounter obstacles of at least the same order of difficulty.

Finally, the decibel level of the debate has to be reduced. We cannot conduct a reasoned debate amidst the shouting that so often marks the tactics of those opposed to things nuclear. A society once described as "civil" when it is formed by men locked together in argument assumes that argument is based on certain common premises. So, let each join the debate, but if the argument degenerates into angry polemics or rises to the shrill of hysterics, you may be sure that we are headed toward either paralysis or chaos. We cannot afford either. What we need is a common ground upon which the debate can be conducted. As the program for this meeting amply attests,

there are many important and interesting technical issues that continue to require attention. But the solution to these problems may well be naught unless we are successful in resolving the public policy debate in a positive and constructive way.