

## VIDEO TRANSCRIPT FOR “DOOMED TO COOPERATE”

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On-screen text:

Doomed to Cooperate: Averting Post-Cold War Nuclear Dangers  
a discussion with Siegfried S. Hecker

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Well, probably the best way to start is what happened in 1991. And that is on December 25th of 1991 Gorbachev dissolved the Soviet Union. And at that moment the nuclear risks and danger in the world just changed dramatically. Because before that we were centering the Cold War. And so, the concern was nuclear weapons in the hands of governments, and particularly Soviet Union and the United States and the potential annihilation through a nuclear exchange. So when the Soviet Union was dissolved, essentially collapsed into 15 independent states. Then that nuclear danger and threat changed dramatically to all of a sudden we were no longer worried about the potential mutual annihilation. And the nuclear weapons in the hands of the government but we were worried what happens to those enormous nuclear assets that the Soviet Union had getting out of the hands of the governments. In other words, how can the government of Russia and the other states actually protect their nuclear weapons, their nuclear materials, their nuclear people? How to make sure that there aren't exports that we have worry about.

So that was the dramatic moment that happened with the complete change in the nuclear risk. So the best way to describe what we actually did is to describe the dangers when the Soviet Union fell apart. And so, sort of colloquial terms we put a -- in the spirit of what I call four loose nuclear dangers. So the first what was called loose nukes. And that is the potential of a nuclear weapon actually getting away. And the Soviet Union at one point had, like, 39,000 nuclear weapons. I mean, so that's enormous. Then the second problem was loose nuclear materials. And that is the fuel, the bomb fuel, which would either be plutonium or highly enriched uranium. The Soviet Union as best as we know had well over a million kilograms of that bomb fuel. And what's important to remember there it only takes six kilograms of plutonium to build a Nagasaki sized bomb. You know, essentially the shape and the size of a grapefruit. And perhaps a few tens of kilograms of highly enriched uranium, that's all it takes to destroy a city. And they had over a million kilograms.

So the question is what was going to happen to all that material? The third were what I would I call loose nuclear experts. That is what happens to the million people that were in the soviet nuclear complex that all of a sudden faced this traumatic change in their government? Well first of all, their government going bankrupt. You know, so that economic problems, political changes, societal and cultural changes. Those institutions that provided the security for the nuclear complex all of a sudden being in really difficult times. And the fourth was what I call loose nuclear exports. What's the potential now of either people, institutions, or the government selling their nuclear assets, you know, to others around the world? So those were the four loose nuclear dangers.

The cooperation was to prevent those problems. So in other words how do we make sure that the nuclear weapons, which were actually stationed in eastern Europe and the other republics

of the Soviet Union, actually come back safely and securely into Russia? How do we make sure that they could actually be disassembled safely? And then, the bomb materials be stored safely and securely? The nuclear materials, which were spread all over the eleven time zones of the Soviet Union. How do we make sure that they can secure and safe guard, account for all those nuclear materials? And the people, how do you make sure they actually employed and stayed within Russia rather than going off? And at that time the way it was labeled by the US government was the concern about brain drain. In other words, a soviet nuclear scientist, see they're going to places like Iraq, Iran, North Korea, who are selling their capabilities. And then, the same about exports.

So what we did in lab to lab -- what lab to lab meant were the scientists from the nuclear weapons institutions in the United States, the nuclear weapons labs. In the United States that was Los Alamos National Laboratory for which I worked. And I was director at the time of the dissolution of the Soviet Union. Lawrence Livermore National Laboratory here in the bay area, and Sandia National Laboratories. They had arm in Albuquerque New Mexico and one here in California. Those were the US labs. And the Russians had the exact identical counterparts of that -- to those three laboratories.

So it was the scientists at these laboratories that then -- they understood these dangers better than anybody in the whole wide world. Because we created those weapons, we developed them, we helped to build them, we had the responsibility for those weapons. The same for the materials. And so, we felt it was our responsibility to now try to help each other safe, secure, all nuclear assets. In terms of lab to lab this sort of special arrangement that we had where we worked directly with their laboratories even though supported by the government. And we looked back in the hay days of that where the labs were actually pushing the government. You know, urging them to take steps. We're sort of the 1990s. And then, in the 2000s the governments both, on both sides, both Washington and Moscow took more and more control of the program. They were always funding it, they of course had to approve it, but they took more and more control. And then, also later in the 2000s the Russian government started to sort of taper off their enthusiasm for these cooperative programs. Because these cooperative programs that we ran were essentially all paid for by the US government. So the US government supplied the funds. And over the years for example, in nuclear materials, protection, control, and accounting, US government spent \$4 billion over 20 years, and much of that in Russia and the other states of the former Soviet Union. So the Russians, particularly in the 2000s, they decided that it wasn't worth it to have the Americans in their facilities anymore. They felt sufficiently secure with their nuclear materials that they began to scale back on the direct interactions and made it more and more difficult for the American scientists to actually get into the Russian facilities.

So even before the real problem with the US-Russian relations, which occurred after Crimea and annexation, and the Ukraine crisis. These programs where we worked together -- altogether under an umbrella it was called cooperative threat reduction programs. And it was called the Nunn-Lugar programs for the two senators that initiated that in 1991. Essentially that program was brought to termination and the materials protection, control, and accounting program was ended in 2014. And then, now in 2015 most of the direct connection between the weapons laboratories has been severed, to some extent discouraged by Washington because of Russia's political moves. And then, severed by Moscow in response to Washington's action.

So unfortunately today there's very little of that nuclear cooperation, either lab to lab or even more of the government controlled interaction, and that's a real pity. In a book that I just finished, actually working with the Russians, to tell the story of 25 years of lab to lab

cooperation. In almost every one of these four nuclear danger areas both Russians and Americans make the important case that we must continue to cooperate, that work is never finished when you're talking about nuclear safety and nuclear security. And so, we all lament the fact that in essence this nuclear cooperation, which is for the better for both countries and for the whole world, is being held hostage to the political crisis.