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Dear National Leaders at the Nuclear Security Summit:

We Nobel Laureates applaud you for your efforts to secure vulnerable nuclear and radiological materials around the world and to further reduce the risks of nuclear and radiological terrorism. We underscore that these threats cross national boundaries and thus require the concerted work of all nations to prevent these terrorist acts from happening. In particular, we note that in the highly polarized politics in the United States, preventing nuclear and radiological terrorism has been one of the rare points of bipartisan support. We praise the George W. Bush administration for its Global Threat Reduction Initiative begun in May 2004 and the Barack Obama administration for extending this and related nuclear security programs and for convening the Nuclear Security Summits having started in 2010.

While we encourage you to move forward on all fronts, in this letter we call attention to three technical challenges that if fully resolved, could result in eventually driving the risk close to zero in three important sectors. First, as security experts have agreed, highly enriched uranium (HEU) is the fissile material with the greatest ease of use in an improvised nuclear explosive. More than 80 percent of the world's HEU is devoted to military purposes including nuclear weapons and naval nuclear propulsion. We understand politically why certain nations have resisted phasing out military HEU. We urge serious technical studies be done to investigate the transition from HEU to low enriched uranium (LEU) fuels, which cannot be used directly in weapons, in the naval nuclear propulsion sector.

In a related sector, we note that the U.S. National Academies of Sciences, Engineering, and Medicine issued a report in January that outlines a roadmap for converting or shutting down the remaining 74 research reactors worldwide (including eight in the United States) that continue to use HEU. Over the past four decades, more than 90 research reactors have been converted to LEU or shutdown. Given the urgency of preventing nuclear terrorism, we strongly recommend sufficient national and international technical and non-technical resources be devoted to addressing the remaining HEU-fuelled reactors over the next decade. Also because more than a dozen of these reactors are operating in Russia, it is essential to reengage Russian technical experts and officials despite the recent downturn in political relations.

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Finally, we point to progress made by several governments and companies in developing commercially viable means of irradiation using techniques other than highly radioactive sources for blood treatment, cancer treatment, as well as medical and other scientific research. These highly radioactive sources include thousands of Curies (or more than 37,000 Gigabecquerels) of cesium-137 or cobalt-60 and would result in massive disruption and huge economic consequences if dispersed in a city. More concerted international work is needed to make commercially useful non-radioactive source alternative technologies that provide comparable benefits while eliminating the risk of radiological terrorism in this sector.

We urge you to devote the necessary resources to make further substantial progress in the coming years to real risk reduction in preventing nuclear and radiological terrorism.

Sincerely,

Dr. Burton Richter
Stanford Linear
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1976 Nobel Prize in
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Dr. Peter Agre
Johns Hopkins Malaria
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Johns Hopkins Bloomberg
School of Public Health
2003 Nobel Prize in
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Dr. Robert Curl, Jr.
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2004 Nobel Prize in
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