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OPINION

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India and Pakistan Remind Us We Need to Stop the Risk of Nuclear War

The U.S. needs to set an example for the rest of the world by taking our nuclear missiles off hair-trigger alert and negotiating a reduction of our arsenal

BY ALAN ROBOCK & LILI XIA

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Nuclear weapons ▾

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We are living in a scary time. After [a terrorist attack that killed at least 26 people, mostly Indian tourists, in Kashmir](#) in April, India blamed the attack on Pakistan, threatened [to cut off that nation's water supplies](#) and [followed up](#) in May [with airstrikes](#). Pakistan has promised a “[measured but forceful response](#),” threatening a wider war endangering everyone.

India and Pakistan [each have about 170 nuclear weapons](#). A nuclear war between India and Pakistan would produce smoke from fires in cities and industrial areas. That smoke would rise into the stratosphere, the atmospheric layer above the troposphere where we live, which has no rain to wash out the smoke. [Our research](#) has found that the smoke would block out the sun, making it cold, dark and dry at Earth's surface, choking agriculture for five years or more around the world. The result would be global famine.

Like it or not, humanity still has a nuclear dagger pointed at its throat. But there is another choice that starts with the U.S. If we take our land-based missiles off their hair-trigger alerts and negotiate with Russia to reduce our nuclear arsenal, we could set an example for the rest of the world. If we eventually sign the [Treaty on the Prohibition of Nuclear Weapons](#), the U.S. could provide an example to Iran and other nations with an interest in building their own nuclear arsenal.

The alternatives are terrifying. One of us (Robock) published [an article in *Scientific American*](#) 15 years ago describing how a war in South Asia, like the one now possible between India and Pakistan, could produce global climate change and threaten the world's food supply, but we did not know how large that threat would be. In the years since then [we have calculated](#), for a range of smoke amounts released from nuclear war, the specific effects on agriculture in each nation. From there, we estimated how the people would fare under the assumption that their stored food was gone, trade was halted, and they kept the

same agricultural activity. A nuclear war between India and Pakistan could kill one to two billion people through starvation in the two years after the war. The U.S. and Russia have more than 8,000 nuclear weapons. A nuclear war between the U.S. and Russia could kill more than six billion people around the world in the following two years. The direct impacts of blast, radiation and fire on those attacked by nuclear weapons would be horrific, as we know from what happened in Hiroshima and Nagasaki during World War II, but 10 to 20 times more people would die from famine.

Many people assume that there will never be another nuclear war, since it has now been 80 years and several generations since the last one. They also have been told that nuclear deterrence must be maintained to keep us safe. Yet threats to use nuclear weapons from Russia and North Korea, and even from the U.S. president, have worried many. The New START treaty, the only remaining arms control agreement between the U.S. and Russia, expires next year. China is rapidly increasing its nuclear arsenal.

President Trump just proposed a budget for the next fiscal year with a 13 percent increase for the Defense Department. This is exactly the wrong direction for the U.S. A substantial part of the defense budget is for a “modernization” of our nuclear arsenal. Our nuclear “triad” is composed of land-based missiles, submarine missiles and nuclear bombs that could be dropped from airplanes. We already have all of these, and they cannot be used without the risk of killing almost all the people on the planet. They need to be removed, not modernized.

Deterrence is a myth. The theory is that we will not be attacked because we will attack an enemy if they attack us, thus deterring them. But in order for it to work, they have to believe that we will act as a suicide bomber. That is, that we will attack an enemy, producing so much smoke that we will be unable to

grow any crops for more than five years and thus all starve to death. This is not mutual assured destruction (the so-called “MAD” theory). It is self-assured destruction (SAD).

The upcoming Independent Study on Potential Environmental Effects of Nuclear War, a report from the U.S. National Academies of Science, Engineering, and Medicine due out this summer, the first such report since 1985, will make this danger more plain.

The rest of the world well understands the risk we all face. In 2017, after three international conferences on the humanitarian consequences of the use of nuclear weapons, including the indirect effects on food supply based on our work, the United Nations passed the Treaty on the Prohibition of Nuclear Weapons, which prohibits possession, manufacture, development and testing of nuclear weapons, stationing and installment of nuclear weapons or assistance in such activities, by its parties. The treaty came into force on January 22, 2021. There are currently 94 signatories and 73 states parties, but the nine countries, notably including the U.S., with nuclear weapons have not signed it and are trying to ignore the will of the rest of world.

The International Campaign to Abolish Nuclear Weapons (ICAN), which led the effort to get this treaty, was awarded the 2017 Nobel Peace Prize “for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons and for its ground-breaking efforts to achieve a treaty-based prohibition of such weapons.”

For deterrence to succeed, there must be no use of nuclear weapons by accident, terrorists, computer malfunctions, hackers or unstable leaders. We have come close many times. As Beatrice Fihn, executive director of ICAN, said in her Nobel Peace Prize Lecture on December 10, 2017, “If only a small fraction of today’s nuclear weapons were used, soot and smoke from the

firestorms would loft high into the atmosphere—cooling, darkening and drying the Earth’s surface for more than a decade. It would obliterate food crops, putting billions at risk of starvation. Yet we continue to live in denial of this existential threat.... The story of nuclear weapons will have an ending, and it is up to us what that ending will be. Will it be the end of nuclear weapons, or will it be the end of us? One of these things will happen. The only rational course of action is to cease living under the conditions where our mutual destruction is only one impulsive tantrum away.”

When Carl Sagan, a leader in [early nuclear-winter research](#), was asked if he didn’t want to keep our nuclear weapons as a deterrent, [he said](#): “For myself, I would far rather have a world in which the climatic catastrophe cannot happen, independent of the vicissitudes of leaders, institutions, and machines. This seems to me elementary planetary hygiene, as well as elementary patriotism.” We agree.

This is an opinion and analysis article, and the views expressed by the author or authors are not necessarily those of Scientific American.

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