

THE WORLD CANNOT AFFORD TO IGNORE THIS NEW STUDY

Climate Scientists Warn of Global Humanitarian Catastrophe Following Limited Nuclear Exchange Between India and Pakistan

Studies published more than a decade ago showed that a war between India and Pakistan involving 100 Hiroshima sized bombs targeted on urban industrial centers could kill 22 million people directly in less than a week. The fires triggered by these weapons would cause worldwide climate disruption and a global famine that would put two billion people at risk. (1)

A new study in *Science Advances* updates those earlier reports and shows what will happen if there is a nuclear war today, or in the near future, involving the much larger nuclear arsenals available to India and Pakistan. (2) The findings are deeply sobering and underline the urgent need to eliminate nuclear weapons.

The study examines a specific scenario in which India employs 100 nuclear weapons against urban targets in Pakistan and Pakistan uses 150 warheads against urban Indian targets, and it considers a range of consequences depending on the size of the weapons used.

If all the weapons are relatively small Hiroshima sized 15 kiloton bombs, 50 million people would be killed as a direct result of the explosions, fires and prompt radiation effects. If the weapons had a yield of 50 kilotons, 100 million would die, and if 100 kiloton weapons were used the immediate death toll would be 125 million.

Bomb sizes (kt)	Immediate death toll (millions)	Global average temperature drop (°C)	Average precipitation decline (%)	Total Net Primary Productivity decline (%)	
				In oceans	On land
15	50	3.0	20	10	15
50	100	4.5	25	15	25
100	125	5.5	>30	20	30

Table 1.- Predicted consequences of a limited nuclear conflict involving 250 warheads (100 against Pakistani cities, 150 against Indian cities).

The global climate effects would be even more catastrophic. A war involving 15 kt weapons would drop average global surface air temperature by 3° C, a war fought with 50 kt weapons would drop temperatures 4.5° C, and 100kt weapons would cool the entire planet an average of 5.5° C. The decline in temperature would be much more severe over land areas than over the oceans, and there would be significant regional differences. For example, in the case of a war involving 50 kt weapons the temperature decline in much of North America and Eurasia would be about 10° C, nearly twice the global average.

This global cooling would also cause significant declines in precipitation because colder temperatures cause less water to evaporate from the oceans and fall back to Earth as rain or snow. The average global decline in precipitation would range from 20% for a war involving 15 kt weapons to more than 30% for a war fought with 100kt weapons.

The study does not look in detail at the effects on individual food crops but does examine the impact on Net Primary Productivity (NPP), the total amount of sun light converted to plant growth through photosynthesis. Oceanic NPP declines by 10% after a war fought with 15kt weapons and by 20 % for a war with 100kt weapons. On land masses NPP declines 15 to 30%; in some regions of North America and Eurasia the decline is about 50%. This would result in severe disruption of natural ecosystems and disastrous decreases in food production. The impact on food supplies

would be much more severe than that predicted in earlier studies of a more limited nuclear war, which showed that two billion people would be at risk in a global nuclear famine. (1)

The original studies on limited nuclear war and nuclear famine were largely ignored by the nuclear-armed nations, which continue to base their national security policies on the assumption that they can maintain their nuclear arsenals indefinitely and nothing will ever go wrong. The world cannot afford to ignore this new study.

Many security experts around the world have warned that the danger of nuclear war is growing. (3) There have already been numerous near misses when nuclear armed states began the process of launching their nuclear weapons in the mistaken belief that they were already under attack. (4) Nuclear war was not avoided on these occasions because we had foolproof technology, or wise leaders or sound nuclear policies. It was avoided because, in the words of former US Defense Secretary Robert McNamara, "We lucked out...it was luck that prevented nuclear war." Current nuclear policy is essentially nothing more than a hope for continued good luck.

A growing international movement is demanding fundamental change in nuclear policy. It rejects the notion that "nuclear deterrence" is a stable system that will assure that nuclear weapons will never be used. And it rejects the idea that nuclear weapons make us more secure, recognizing that, in fact, nuclear weapons are the greatest immediate threat to humanity.

In 2017, partly in response to previous research from the same team, 122 nations voted to adopt the UN Treaty on the Prohibition of Nuclear Weapons which bans the production, development, transport, financing and possession of nuclear weapons. The TPNW will enter into force when 50 nations have ratified it creating a new international norm against the possession of these weapons.

In the United States, more than 250 municipalities, state legislatures, faith communities, peace and environmental organizations and other civic groups have endorsed the Back from the Brink campaign which seeks the fundamental change in US nuclear policy needed for the US to lead an international effort to eliminate these weapons before they eliminate us.

References

(1) Nuclear Famine report <https://ippnw.org/pdf/nuclear-famine-two-billion-at-risk-2013.pdf>

(2) Science Advances [link pending]

(3) Reuters <https://www.reuters.com/article/us-un-nuclear/risk-of-nuclear-war-now-highest-since-ww2-u-n-arms-research-chief-says-idUSKCN1SR24H>

(4) UCS <https://www.ucsusa.org/nuclear-weapons/hair-trigger-alert/close-calls>