

WMD Nuclear warfare

Reviewed by

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Nuclear warfare

On August 6, 1945, a nuclear bomb exploded in Hiroshima, killing some 70,000 people within the day. In total, almost a half of the city perished from the effects of the bomb, half in the heat, radiation, fires and building collapses following the blast, and another half before the end of the year from injuries and radiation, bringing the total number of deaths to some 150,000. Since then, the world has lived in the shadow of a war unlike any other in history. Although the tension between nuclear states has diminished since the end of the Cold War and disarmament efforts have reduced arsenals, the prospect of a nuclear war remains present, and might be closer today than it was a decade ago. Its immediate effect would be the catastrophic destruction of lives and cities, and debilitation, illness and deaths from radiation, but another concern is the risk that the dust released from nuclear explosions could plunge the planet into a mini ice-age, with dramatic ecological consequences, severe agricultural collapse, and a large proportion of the world population dying in a famine.

How much do we know?

Depending on their yield, technical characteristics and mode of explosion, today's more powerful nuclear weapons will cause 80 to 95 per cent fatalities within a radius of 1 to 4 kilometres from their point of detonation, with very severe damage being felt for up to six times as far. The largest arsenals are currently held by the United States and Russia who control approximately 6,500 warheads each. Seven other states are known to possess nuclear weapons or are widely believed to possess them: the United Kingdom, France, China, India, Pakistan, North Korea and Israel. Various scenarios of intentional use are currently imaginable but nuclear weapons could also be released by accident, triggering an inadvertent nuclear war – as has almost happened a number of times since 1945. In addition to their destructive effect at the point of impact, nuclear explosions may cause what is known as a 'nuclear winter', where clouds of dust and sulphates released by burning materials obscure the sun and cool the planet for months or years.

According to one model, an all-out exchange of 4,000 nuclear weapons, in addition to the enormous loss of lives and cities, would release 150 teragrams of smoke, leading to an 8 degree drop in global temperature for a period of four to five years, during which time growing food would be extremely difficult. This would likely initiate a period of chaos and violence, during which most of the surviving



world population would die from hunger.

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What are key factors affecting risk levels?

- Continued efforts towards arsenal reduction will reduce the overall level of nuclear risk. Attention to geopolitical tensions and rising nationalism, along with continued efforts towards global conflict management, particularly among nuclear states, will reduce the underlying risk of an intentional nuclear war. In addition, controlling and limiting horizontal proliferation will limit the number of potential nuclear conflict scenarios and is highly likely to reduce the overall risk level.
- The risk of accidental use depends largely on the systems in place to launch missiles and the growing threats of cyberattacks on command and control systems. Hundreds of nuclear weapons are currently in a state of high readiness and could be released within minutes of an order. Building in longer decision-making time and broader consultation would reduce the risk of unauthorised launches or accidental launches based on misperception or false alarms.
- Increased awareness and understanding of the grave effects that nuclear weapons have on human life, economic infrastructure, governance, social order and the global climate would motivate efforts to avoid such catastrophic harm to our societies.