

Consequences of a Single Failure of Nuclear Deterrence

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Only a single failure of nuclear deterrence is required to start a nuclear war, and the consequences of such a failure would be profound. Peer-reviewed studies predict that less than 1% of the nuclear weapons now deployed in the arsenals of the Nuclear Weapon States, if detonated in urban areas, would immediately kill tens of millions of people, and cause long-term, catastrophic disruptions of the global climate and massive destruction of Earth's protective ozone layer. The result would be a global nuclear famine that could kill up to one billion people. A full-scale war, fought with the strategic nuclear arsenals of the United States and Russia, would so utterly devastate Earth's environment that most humans and other complex forms of life would not survive.

Yet no Nuclear Weapon State has ever evaluated the environmental, ecological or agricultural consequences of the detonation of its nuclear arsenals in conflict. Military and political leaders in these nations thus remain dangerously unaware of the existential danger which their weapons present to the entire human race. Consequently, nuclear weapons remain as the cornerstone of the military arsenals in the Nuclear Weapon States, where nuclear deterrence guides political and military strategy.

Those who actively support nuclear deterrence are trained to believe that deterrence cannot fail, so long as their doctrines are observed, and their weapons systems are maintained and continuously modernized. They insist that their nuclear forces will remain forever under their complete control, immune from cyberwarfare, sabotage, terrorism, human or technical error. They deny that the short 12-to-30 minute flight times of nuclear missiles would not leave a President enough time to make rational decisions following a tactical, electronic warning of nuclear attack.

The U.S. and Russia continue to keep a total of 2000 strategic nuclear weapons at launch-ready status – ready to launch with only a few minutes warning. Yet both nations are remarkably unable to acknowledge that this high-alert status in any way increases the probability that these weapons will someday be used in conflict. How can strategic nuclear arsenals truly be “safe” from accidental or unauthorized use, when they can be launched literally at a moment's notice? A cocked and loaded weapon is infinitely easier to fire than one which is unloaded and stored in a locked safe.

The mere existence of immense nuclear arsenals, in whatever status they are maintained, makes possible their eventual use in a nuclear war. Our best scientists now tell us that such a war would mean the end of human history. We need to ask our leaders: Exactly what political or national goals could possibly justify risking a nuclear war that would likely cause the extinction of the human race?

However, in order to pose this question, we must first make the fact known that existing nuclear arsenals – through their capacity to utterly devastate the Earth's environment and ecosystems – threaten continued human existence. Otherwise, military and political leaders will continue to cling to their nuclear arsenals and will remain both unwilling and unable to discuss the real consequences of failure of deterrence. We can and must end the silence, and awaken the peoples of all nations to the realization that “nuclear war” means “global nuclear suicide”.

A Single Failure of Nuclear Deterrence could lead to:

- A nuclear war between India and Pakistan
 - 50 Hiroshima-size (15 kiloton) weapons detonated in the mega-cities of both India and Pakistan (there are now 130-190 operational nuclear weapons which exist in the combined arsenals of these nations).
 - The deaths of 20 to 50 million people as a result of the prompt effects of these nuclear detonations (blast, fire and radioactive fallout)
 - Massive firestorms covering many hundreds of square miles/kilometers (created by nuclear detonations that produce temperatures hotter than those believed to exist at the center of the sun), that would engulf these cities and produce 6 to 7 million tons of thick, black smoke
 - About 5 million tons of smoke that would quickly rise above cloud level into the stratosphere, where strong winds would carry it around the Earth in 10 days
 - Smoke would completely surround the Earth; above the clouds, the smoke could not be rained out, and it would remain for 10 years to block and absorb sunlight
 - 7-10% of warming sunlight would be blocked from reaching Earth's surface
 - Smoke heated by sun would heat the upper atmosphere and destroy the ozone
 - 25% to 40% of the protective ozone layer would be destroyed at the mid-latitudes, and 50-70% would be destroyed at northern and southern high latitudes
 - Ozone destruction would cause the average UV Index to increase to 16-22 in the U.S, Europe, Eurasia and China, with even higher readings towards the poles (readings of 11 or higher are classified as "extreme" by the U.S. EPA). It would take 7-8 minutes for a fair skinned person to receive a painful sunburn at mid-day
 - Loss of warming sunlight would quickly produce average surface temperatures in the Northern Hemisphere colder than any experienced in the last 1000 years
 - Hemispheric drops in temperature would be about twice as large and last ten times longer than those which followed the largest volcanic eruption in the last 500 years, Mt. Tambora in 1816. The following year, 1817, was called "The Year Without Summer", which saw famine in Europe from massive crop failures.
 - Growing seasons in the Northern Hemisphere would be significantly shortened. It would be too cold to grow wheat in most of Canada for at least several years
 - World grain stocks, which already are at historically low levels, would be completely depleted; grain exporting nations would likely cease exports in order to meet their own food needs
 - The one billion already hungry people, who currently depend upon grain imports, would likely starve to death in the years following this nuclear war.
 - The total explosive power in these 100 Hiroshima-size weapons is less than 1% of the total explosive power contained in the currently operational and deployed U.S. and Russian nuclear forces
- A. Robock, L. Oman, G. L. Stenchikov, O. B. Toon, C. Bardeen, and R. Turco, "[Climatic consequences of regional nuclear conflicts](#)", Atmospheric Chemistry and Physics, Vol. 7, 2007, p. 2003-2012.
- B. M. Mills, O. Toon, R. Turco, D. Kinnison, R. Garcia, "[Massive global ozone loss predicted following regional nuclear conflict](#)", Proceedings of the National Academy of Sciences (USA), Apr 8, 2008, vol. 105(14), pp. 5307-12.
- C. I. Helfand, "[An Assessment of the Extent of Projected Global Famine Resulting From Limited, Regional Nuclear War](#)", 2007, International Physicians for the Prevention of Nuclear War, Physicians for Social Responsibility, Leeds, MA.
- D. Starr, S. (2009) [Deadly Climate Change From Nuclear War: A threat to human existence](#)

A Single Failure of Nuclear Deterrence could lead to:

- The launching of 1000 U.S. and 1000 Russian strategic nuclear weapons which remain on launch-ready, high-alert status, capable of being launched with only a few minutes warning
- These 2000 weapons – each 7 to 85 times more powerful than the Hiroshima-size (15 kiloton) weapons of India and Pakistan – would detonate in the United States and Russia, and probably throughout the member states of NATO
- The detonation of some fraction of the remaining 7700 deployed and operational U.S. and Russian nuclear warheads/weapons would then follow
- Hundreds of large cities in the U.S., Europe and Russia would be engulfed in massive firestorms . . . the explosion of *each* weapon would instantly ignite tens or hundreds of square miles or kilometers of the land and cities beneath it
- Many thousands of square miles/kilometers of urban areas simultaneously burning would produce up to 150 million tons of thick, black smoke
- The smoke would rise above cloud level and form an extremely dense stratospheric layer of smoke and soot, which would quickly engulf the Earth
- The smoke layer would remain for at least 10 years, and block and absorb sunlight, heating the upper atmosphere and producing Ice Age weather on Earth
- The smoke would block up to 70% of the sunlight from reaching the Earth's surface in the Northern Hemisphere, and up to 35% of the sunlight in the Southern Hemisphere, producing a profound “nuclear darkness”
- In the absence of warming sunlight, surface temperatures on Earth become as cold or colder than they were 18,000 years ago at the height of the last Ice Age
- There would be rapid cooling of more than 20°C over large areas of North America and of more than 30°C over much of Eurasia
- Average global precipitation would be reduced by 45% due to the prolonged cold
- 150 million tons of smoke in the stratosphere would cause minimum daily temperatures in the largest agricultural regions of the Northern Hemisphere to *drop below freezing every night for 1 to 3 years*
- Nightly killing freezes and frosts would occur, no crops could be grown
- *Growing seasons would be virtually eliminated for at least a decade*
- Massive destruction of the protective ozone layer would also occur, allowing intense levels of dangerous UV-B light to penetrate the atmosphere and reach the surface of the Earth; as the smoke cleared, the UV-B would grow more intense
- Massive amounts of radioactive fallout would be generated and spread both locally and globally. The targeting of nuclear reactors would significantly increase global radioactive fallout of long-lived isotopes such as Cesium-137
- Gigantic ground-hugging clouds of toxic smoke would be released from the fires; enormous quantities of industrial chemicals would also enter the environment
- It would be impossible for many living things to survive the extreme rapidity and degree of changes in temperature and precipitation, combined with drastic increases in UV light, massive radioactive fallout, and massive releases of toxins and industrial chemicals
- Already stressed land and marine ecosystems would collapse
- ***Unable to grow food, most humans would starve to death***

- A mass extinction event would occur, similar to what happened 65 million years ago, when the dinosaurs were wiped out following a large asteroid impact with Earth (70% of species became extinct, including all animals greater than 25 kilograms in weight)
- Political and military leaders living in underground shelters equipped with many years worth of food, water, energy, and medical supplies would probably not survive in the hostile post-war environment.

1. O. Toon , A. Robock, and R. Turco, "[The Environmental Consequences of Nuclear War](#)", Physics Today, vol. 61, No. 12, 2008, p. 37-42.
2. A. Robock, L. Oman, G. Stenchikov, "[Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences](#)", Journal of Geophysical Research – Atmospheres, Vol. 112, No. D13, 2007. p. 4 of 14.
3. S. Starr, "[Catastrophic Climatic Consequences of Nuclear Conflict](#)". (2009). ICNND

See www.nuclearfamine.org or www.nucleardarkness.org for detailed sources of information on the environmental consequences of nuclear war.