Frederiksberg, October 28, 2024

Humanitarian consequences of nuclear bomb explosions

Nuclear weapons are the most destructive, inhumane and indiscriminate weapons in existence.

Nuclear weapons differ from all other types of weapons in that nuclear weapons are the most destructiveweapons, the effect of which is persistent due to the spread of, among other things, radioactive material.

Nuclear weapons cause extensive death, injury and destruction

A single nuclear bomb detonated over a major city will kill most of the inhabitants. Depending on the size of the city, millions of people will die. The vast majority of the victims will be civilians. The use of hundreds of nuclear bombs will kill tens of millions of people and cause catastrophic climate change, which will lead to worldwide hunger. In a major nuclear war between the USA and Russia, hundreds of millions will die.

Civilians are the main victims

The extensive destruction caused by nuclear weapons cannot be limited to military targets, including military personnel. Nuclear weapons are indiscriminate, meaning they cannot distinguish between military targets and the civilian population. Civilians will often constitute the majority of the dead and injured as a result of a nuclear attack. The blast wave from a nuclear explosion and its radioactive radiationwill either kill the victims or cause long-term illness.

Nuclear weapons spread radioactive radiation

Nuclear weapon explosions produce ionizing radiation that can either kill or cause cancer and genetic damage. Nuclear tests in the twentieth century have caused millions of deaths from diseases caused by radioactive radiation.

The production of nuclear weapons also negatively affects the environment, as the production of the nuclear materials used in atomic bombs causes long-term radioactive contamination.

Nuclear weapons could lead to climate change and global hunger

The use of less than one percent of the world's nuclear weapons - i.e. about 120 nuclear bombs – could affect the global climate negatively and result in two billion people being threatened with hunger.

The use of the thousands of nuclear weapons that the United States and Russia possess could cause a nuclear winter that would destroy the ecosystem.

Humanitarian aid to victims would not be possible

Victims of a nuclear attack would not be able to receive medical care. Doctors and other healthcare personnel would not be able to work in an area that has been contaminated with radioactivity. A single nuclear bomb explosion in a major city would cause the disaster preparedness to collapse.Populations displaced in a nuclear war would lead to an unprecedented flow of refugees.

Nuclear weapons pose risks to health and the environment

The existence of nuclear weapons is a threat to the health of populations and to the environment. States that possess nuclear weapons will not be able to guarantee full control over their nuclear arsenals.

Misuse of public funds

Spending on the development, production and maintenance of nuclear weapons limits resources for vital social services. According to ICAN, the nine nuclear-weapon states spent a combined $91.4 billion on their nuclear forces in 2023 – an increase of $10.7 billion compared to 2022.

Total nuclear weapons spending in 2023 was equivalent to $173,884 per minute. In 2023, the United States was the country that spent the largest amount on nuclear weapons – $51.5 billion

Effects of a nuclear bomb explosion

Short-term effects

A single nuclear weapon can destroy a city and kill most of its inhabitants. Several nuclear explosions over major cities would kill tens of thousands of people. The death toll from a major nuclear war between the United States and Russia would be in the hundreds of millions. The detonation of a 300-kiloton nuclear warhead—that is, a warhead that is almost ten times more powerful than the two atomic bombs detonated over Hiroshima and Nagasaki combined—in a city like New York would result in over a million deaths and about twice as many serious injuries in the first 24 hours after the explosion. There would be almost no survivors within a radius of several kilometers from the explosion site. A regional nuclear war between India and Pakistan, using about a hundred 15-kiloton nuclear weapons fired at urban areas, would result in 27 million direct deaths. An all-out nuclear war between the United States and Russia, using more than four thousand 100-kiloton nuclear warheads, would result in at least 360 million deaths. It takes about ten seconds for the fireball to from a nuclear explosion to reach its maximum size. A nuclear explosion releases enormous amounts of energy in the form of a shock wave, heat and radiation. An enormous shock wave reaches speeds of many hundreds of kilometres per hour. The shock wave kills people close to ground zero and causes damage to the lungs, ears and internal bleeding. People are injured by collapsing buildings and flying objects. The heat radiation is so intense that almost everything close to ground zero vaporizes. The extreme heat – several thousand degrees – causes severe burns and ignites fires over a large area, which merge into a gigantic firestorm. Even people in underground shelters risk dying from lack of oxygen and carbon monoxide poisoning. An atomic bomb explosion produces an electromagnetic pulse, i.e. an intense burst of radio waves, which damages electronic equipment. As a result, electronic communication via satellites, computers, mobile phones, radios and payment systems (e.g. online banking) etc. will collapse and paralyze vital societal functions.

The consequences of a nuclear bomb explosion over Copenhagen

Approximately 88,000 people will die instantly if one nuclear bomb of 20 kilotons – equivalent to the one that hit Nagasaki in 1945 – detonates over inner Copenhagen. Approximately 180,000 people will be injured. This is shown by a simulator calculation based on Google Earth. According to "Nukemap" the number of deaths is estimated to be approximately 67,000. 177,000 are expected to be injured. The number of deaths and injuries will depend on the time of day of the explosion (number of people in the city during normal working hours). If a single Russian SS-25 missile with an explosive charge of 800 kilotons hits Copenhagen, the estimated death toll will be 360,000 and the number of injuries 444,000.

When the atomic bomb "Fat Man" with an explosive force equivalent to 20,000 tons of conventional explosives hit the Japanese city of Nagasaki in 1945, 75,000 people lost their lives, and at least as many died later from injuries and radiation sickness. Long-term effects The catastrophic consequences of a nuclear war between the United States and Russia will not be limited to these two belligerent countries and their allies. The long-term regional and global effects of nuclear explosions have been overshadowed in public discussions by the catastrophic, immediate, local consequences of nuclear explosions. The secondary effects in the form of widespread fires and other global climate changes resulting from many nuclear explosions are difficult to predict and assess.

However, within a few years of a nuclear war, such consequences could cause more than half of the human population on Earth to be wiped out. In the long term, nuclear weapons cause ionizing radiation that kills or makes the affected people ill, pollutes the environment and has long-term health consequences, including cancer and genetic damage. The many nuclear tests in atmospheric testing have caused serious long-term consequences. It is estimated that about 2.4 million people worldwide will die of cancer due to atmospheric nuclear tests carried out between 1945 and 1980. The use of less than one percent of the world's nuclear weapons could affect the global climate in a negative direction and threaten up to two billion people with hunger. The detonation of thousands of nuclear weapons could result in a nuclear winter, which would destroy the fragile ecosystem and cause a sharp drop in global temperatures. Doctors and other health and emergency personnel would be unable to work in devastated, radioactively contaminated areas. Even a single nuclear bomb explosion nuclear detonation in a modern city would strain existing disaster relief resources to the breaking point. In a nuclear war, no emergency response would be sufficient. Displaced populations from a nuclear war would produce a refugee crisis on a scale never seen before. Environmental and socio-economic impacts of nuclear weapons

The existence of nuclear weapons has a strong impact on the environment. Nuclear war would cause climate disruption with devastating consequences. The world would experience a nuclear winter, face a deadly global famine, and exacerbate the effects of global warming. The socio-economic consequences would also be terrible. Developing countries and marginalized groups would be most affected. Nuclear weapons also seize enormous economic funds for their development, maintenance and dismantling. This is money that could be better spent on financing green technologies for climate change and health facilities.

A nuclear explosion releases enormous amounts of energy in the form of blast (pressure wave), heat and radiation. It takes about ten seconds for the fireball from a nuclear explosion to reach its maximum size. The fireball from the explosion of a 300 kiloton nuclear weapon can grow to more than 600 meters in diameter and remain blindingly bright for several seconds before the surface cools. The light emitted from the fireball will be so intense that it ignites fires and causes severe burns at great distances. The heat from a 300 kiloton nuclear weapon can cause first-degree burns up to 13 kilometers from ground zero.

A huge blast wave reaches speeds of many hundreds of kilometers per hour. The blast wave from a 300 kiloton explosion will reach up to 4.7 kilometers from ground zero. This is sufficient to destroy most houses, skyscrapers, and cause a large number of deaths less than 10 seconds after the explosion. The explosion kills people close to ground zero, causing damage to the lungs, hearing, and internal bleeding. Victims are injured by collapsing buildings and flying objects. The heat radiation is so intense that almost everything near ground zero vaporizes. The extreme heat causes severe burns and ignites fires over a large area, which merge into a gigantic firestorm. Even people in underground shelters risk dying from lack of oxygen and carbon monoxide poisoning. The use of less than one percent of the world's nuclear weapons could throw the global climate out of balance and threaten two billion people with starvation in a "nuclear famine." The thousands of nuclear weapons that the United States and Russia possess could result in a nuclear winter that would destroy the ecosystem on which all life depends. Doctors and other health and emergency personnel would be unable to work in devastated, radioactively contaminated areas. Even a single nuclear detonation detonation in a modern city would strain existing disaster relief resources to the breaking point. In a nuclear war, no emergency response would be sufficient. Displaced populations from a nuclear war would produce a refugee crisis of a magnitude never seen before. Climate change and nuclear weapons are both man-made threats that endanger the survival of humanity. The two threats are also interconnected in ways that mutually exacerbate the risks and impacts to people and the planet. They are therefore referred to as “twin existential threats.” The interconnected threats include global famine caused by climate disruption following a nuclear war, other environmental damage exacerbated by the effects of climate change, the diversion of financial resources that could be used to combat climate change, and strong economic interests invested in maintaining the nuclear weapons status quo.

Nuclear Winter, Global Famine, and Environmental Destruction

For decades, scientists have warned of and modeled the climate disruptions that would result from any nuclear war.

The heat from a nuclear bomb explosion is so intense that it can start major fires in both urban and rural areas. A 300-kiloton detonation in a city like New York or Washington, DC, could cause a mass fire with a radius of at least 3.5 miles, unaffected by any weather conditions.

The air in that area would be transformed into dust, fire, and smoke. A nuclear war would set not just one city on fire, but hundreds of them. Even a regional nuclear war—between India and Pakistan, for example—could lead to widespread firestorms in cities and industrial areas that would have the potential to cause global climate change for decades.

After a nuclear explosion, smoke and dust from firestorms and smoke from massive forest fires will block sunlight from reaching the Earth's surface, causing a sharp drop in global temperatures and precipitation. This will lead to shorter growing seasons and a decline in global agricultural production and fish stocks. A recent study published in Nature Food found that after a global nuclear war, global average calorie production would fall by about 90 percent three to four years after the war. The resulting famine could kill five billion people. Even a limited regional nuclear conflict would kill more than two billion people. Although global temperatures would fall, a nuclear winter would not reverse the effects of global warming. On the contrary, a nuclear winter would exacerbate some of the effects, including ocean damage and damage to the ozone layer. Higher levels of ultraviolet radiation would cause widespread damage to humans, animals, and plants. Smoke from the large number of fires after a nuclear war can develop enormous amounts of soot in the stratosphere –Earth's upper atmosphere – so-called stratospheric soot injection An all-out nuclear war between India and Pakistan, with both countries detonating a total of 100 nuclear warheads of 15 kilotons each, could produce a stratospheric load of about 5 million tons of soot. The climatic effects of a massive release of soot aerosols into the stratosphere from fires following a nuclear war would cause stratospheric warming, ozone depletion, and cooling at the Earth's surface. After soot is released into the upper atmosphere, it could remain in the upper atmosphere for months or years, blocking direct sunlight from reaching the Earth's surface and resulting in falling temperatures. Global average precipitation after a nuclear war would decrease significantly because the lower amounts of solar radiation reaching the Earth's surface would reduce the temperature and rate of water evaporation. Precipitation would be greatest in the tropics. Changes in the atmosphere, land surface, and oceans following a nuclear war would have massive and long-term consequences for global agricultural production and food availability. After a nuclear war, and after food supplies are depleted, the total number of available food calories would fall dramatically, putting millions of people at risk of hunger and/or malnutrition.

The overall global consequences of nuclear war – including both short-term and long-term consequences – would be horrific, causing hundreds of millions of people to starve to death.

A climate-stressed world increases the risk of nuclear war

The environmental stresses caused by climate change, such as increasingly insecure access to food and water, could contribute to an increase in the number of armed conflicts and contribute to the highest number of people ever forcibly displaced worldwide. Military and security strategists around the world assess that global warming is a significant and accelerating threat to security, amplifying other threats. The global instability that results from it increases the risk of nuclear war.

Environmental consequences of nuclear weapons exacerbated by climate change - and vice versa

Nuclear weapons also damage the environment long before they are used. Uranium mining, nuclear waste dumps, and nuclear tests pollute the land and sea.

The production and testing of nuclear weapons have serious environmental consequences.

Climate change is increasing the risk of disasters. In the Marshall Islands, rising sea levels, which are already threatening the islands themselves, are also increasing the pressure on a concrete dome that houses the waste from 43 US nuclear tests. If the dome crumbles or slides off, its radioactive nuclear waste will be released into the lagoon and the sea, polluting both the environment and endangering the health of people living nearby.

Nuclear weapons facilities have contaminated the environment with radiation that will last well beyond our own lifetimes. grandchildren's lifetime.

Nuclear waste damages the environment and the health of future generations because clean-up is left until years later, when the damage has already been done and is often forgotten.

Issues of economic and social justice

As with the effects of climate change, the consequences of nuclear weapons disproportionately affect developing countries and indigenous and other marginalized peoples.

Nuclear testing, nuclear weapons production and uranium mining have caused serious health impacts, socio-economic disruption and lasting environmental damage in some of the world's most vulnerable communities.

Investments in the continued maintenance of nuclear weapons come at a huge cost – money that could be used to develop sustainable and green technologies to limit climate change. The nine nuclear-weapon states spend a combined total of approximately USD 174,000 per minute on their nuclear weapons. This means that one hour of spending on nuclear weapons costs the same as operating and maintaining

2 commercial wind turbines for a whole year.

Action on both climate change and nuclear weapons is being thwarted, thwarted and sabotaged by powerful commercial interests. Just as fossil fuel companies opposeefforts to reduce emissions and transition to renewable energy sources,

companies involved in the manufacture and maintenance of nuclear weapons oppose efforts to stigmatize and delegitimize nuclear weapons and promote nuclear disarmament. Many of the tactics are the same: funding think tanks and research, lobbying governments, warnings of job losses and negative economic consequences.

What to do?

The international community's approach to the climate crisis must be broadened to include the danger of an abrupt nuclear winter from nuclear weapons. A healthy and sustainable future for all life on Earth requires that we act quickly to transition to renewable energy systems and net-zero carbon emissions, and that we prohibit and eliminate nuclear weapons. As long as nuclear weapons exist, they can be used, and the world has come close to nuclear war several times. Banning nuclear weapons is the only long-term solution.

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