



## **The Humanitarian Consequences of Nuclear Weapons**

The sheer folly of trying to defend a nation by destroying all life on the planet must be apparent to anyone capable of rational thought. Nuclear capability must be reduced to zero, globally, permanently. There is no other option.

*Queen Noor of Jordan, Patron, Landmine Survivors Network*

Brussels, 22 January 2013

### **Introduction**

There is an increasing momentum in the efforts to achieve a ban on nuclear weapons based on the humanitarian imperative. In 2010, all NPT member states, expressed “*deep concern at the catastrophic humanitarian consequences of any use of nuclear weapons.*” In 2011, the International Red Cross/Red Crescent movement adopted a [resolution](#) titled “*Working towards the Elimination of Nuclear Weapons.*” These efforts were partly influenced by books and reports including Alan Robock’s “[Climate effects of nuclear war](#)” (2008), Brian Toon’s “[Self-assured destruction: The climate impacts of nuclear war](#)” (2012), and Ira Helfand’s “[Nuclear Famine: A Billion People at Risk](#)” (2012), among others. Growing governmental recognition of the humanitarian consequences of any use of nuclear weapons led the Government of Norway to prepare a conference taking place on 4-5 March to hold a facts-based discussion of the humanitarian and developmental consequences associated with a nuclear weapon detonation.

A humanitarian disarmament approach is broadening the debate on nuclear weapons- providing an evidence based approach to prevent indiscriminate harm and potential catastrophes. A humanitarian approach will not get rid of these weapons alone, and it is critical that we also change security doctrines, thus further diminishing the political and military value of nuclear weapons. The conference to be held in Oslo, Norway in 2013 is the prime opportunity to fully recognize, and begin to address, the humanitarian consequences of nuclear weapons.



*Pax Christi International invites all Member Organisations to campaign for a ban on nuclear weapons. You are encouraged to join the [International Campaign to Abolish Nuclear Weapons \(ICAN\)](#), as it is the civil society partner for the Oslo conference and has been immensely increasing its reach. You can also release statements and write letters of support to governments and other organisations. We urge you to take action to support the Oslo meeting of 2013 so that it is not simply another diplomatic meeting, but can result in a clear map to an end to nuclear weapons.*

### **A Brief History of Nuclear Weapons**

Throughout the 1930s, there was an upsurge in research being performed on nuclear weapons programmes. The US became increasingly nervous that Hitler's Germany would be the first to create an atomic weapon, thus massive amounts of money was poured into creating the first fissile weapon. The attack on Pearl Harbour in 1941 motivated the US to invest more time and money into military research, and by 1945 the Manhattan Project had produced enough plutonium to perform the first nuclear test. Less than a month later, the first atomic bomb was dropped on Hiroshima destroying two-thirds of the city and killing over one hundred thousand people.<sup>1</sup>

The Soviet Union tested their first atomic bomb in 1949, and the UK joined the scene in 1952. All three states developed hydrogen bombs, shortly followed by a temporary moratorium between the US and the Soviet Union to stop nuclear weapons testing. This moratorium did not last long, seeing as France declared itself the fourth nuclear nation in 1960 and the Soviet Union broke the moratorium in 1961.<sup>2</sup>

The Cuban Missile Crisis of the 1962 brought the world uncomfortably close to a nuclear war, and two short years later, China declared itself a nuclear state. These five original nuclear states continued nuclear testing through the 1990s. India and Pakistan tested their own nuclear weapons in 1998, followed by North Korea in 2006 and 2009. Israel is also

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<sup>1</sup> <http://icanw.org/history>

<sup>2</sup> <http://icanw.org/history>

known to have nuclear weapons; however, they have never participated in a nuclear test.<sup>3</sup>

The 1960s through the 1980s was a hostile time between the Soviet Union and the US, with the nuclear arms race going strong. The two states had their weapons aimed at each other, and a military doctrine was applied to the scenario: "mutually assured destruction" (MAD). This assumed that both sides had enough weapons in their arsenals to annihilate the other. A war between the USSR and the US would have undoubtedly impacted the entire world.<sup>4</sup>

### **Headed Towards Disarmament**

Since the 1970s, the US and the USSR have been working to reduce their nuclear arsenals, beginning with the Strategic Arms Limitation Treaty (SALT I & II). In 1987, the US and Russia signed the Intermediate-Range Nuclear Forces Treaty which sought to eliminate land-based intermediate and shorter-range missiles. Then, in 1991, the Strategic Arms Reduction Treaty (START) was signed with the intentions of limiting the number of heavy bombers, inter-continental ballistic missiles, submarine-launched ballistic missiles, launchers, and warheads. The second version of this treaty came into play in 1995 which further limited their strategic arsenals. This treaty has not entered into force. Russia declared START void when the US withdrew from the Anti-Ballistic Missile Treaty in 2002. START was replaced by the Strategy Offensive Treaty (SORT), or the Moscow Treaty, and it limits the nuclear arsenals of the two nations. SORT expired December of 2012.<sup>5</sup> A new START agreement was negotiated and entered into force in February 2011.

Several former nuclear-weapon-holding states have voluntarily eliminated their nuclear weapons programs in order to sign the Nuclear Non-Proliferation Treaty (NPT). Belarus, Ukraine, Kazakhstan, and South Africa have each given up their programmes. Despite the positive effort by some states, the total number of nuclear weapons, including operational warheads, spares, active and inactive storage, and intact warheads awaiting dismantlement, is estimated at 19,000 in 2012.<sup>6</sup> The United States is believed to hold 8,000 nuclear forces; Russia, 10,000; UK,

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<sup>3</sup> <http://icanw.org/history>

<sup>4</sup> <http://icanw.org/history>

<sup>5</sup> <http://icanw.org/history>

<sup>6</sup> <http://www.sipri.org/research/armaments/nuclear-forces>

225; France, 300; China, 240; India, 80-100; Pakistan, 90-110; Israel, 80; and North Korea, 1-10.<sup>7</sup>

### **What are the consequences of using them?**

There are a multitude of consequences to employing nuclear weapons in modern society: death, infrastructure and a diversion of resources, and negative impacts on health and the environment.

#### *Death*

A single nuclear explosion can kill hundreds of thousands of people instantly. It is estimated that approximately 150,000 people died following the bombing of Hiroshima and 75,000 in Nagasaki.<sup>8</sup> If a nuclear war employing only a small fraction of today's arsenals were to occur, casualties would likely reach into the tens of millions.

The effects of the bombings continue to be seen. As of August 2004, 237,062 people had died as a result of the Hiroshima bomb, with 270,000 people affected by the bomb still living in Japan.<sup>9</sup>

If there were to be a nuclear war between India and Pakistan, for instance, the results would be astonishing. Each country holds enough nuclear weapons to lead to approximately 44 million casualties.<sup>10</sup> Another study that has been conducted is the study of an attack by the US on Russia and China. If the US attacked these two states with 2,200 weapons, it would likely produce 86.4 Tg of soot which is enough to create Ice Age conditions, negatively impact global agriculture, and potentially lead to mass starvation.<sup>11</sup>

#### *Infrastructure & Diversion of Resources*

The use of nuclear weapons destroys the infrastructure that is necessary in order to recover from a nuclear, or any kind of, disaster. Hospitals, roads, transportation systems, and communications equipment would be demolished; people would be stranded and unable to receive adequate care if a nuclear event were to occur. In the event of a global nuclear disaster, unaffected states would have little to no time to react and

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<sup>7</sup> <http://www.sipri.org/research/armaments/nuclear-forces>

<sup>8</sup> <http://www.qasc.ucla.edu/cab/200708230009.html>

<sup>9</sup> <http://icanw.org/radiation-human-health>

<sup>10</sup> <http://climate.envsci.rutgers.edu/pdf/ToonRobockTurcoPhysicsToday.pdf>

<sup>11</sup> <http://climate.envsci.rutgers.edu/pdf/ToonRobockTurcoPhysicsToday.pdf>

reorganize their relief efforts. Outside aid often provides the motivation for a state to rebuild their society and rebinds society, and a lack of this aid would lead to feelings of being deserted and extremely isolated.<sup>12</sup>

Moreover, there is a massive division of resources into the research, development, production, and deployment of nuclear weapons. This comes at the expense of human and social needs. The world spends over \$100 billion on nuclear weapons annually,<sup>13</sup> yet nuclear weapons serve no purpose in addressing challenges such as poverty, health, climate change, and terrorism. Using vast financial resources each year for maintaining nuclear arsenals is inappropriate seeing as funds for social welfare, health care, and education are continuously decreasing.<sup>14</sup>

### *Environment*

Nuclear explosions have a number of environmental effects, including both immediate and long-term change. Instant effects include shockwaves which would cause blast damage, as well as thermal radiation and extensive fires, causing the burning of organic material. There is also the issue of fallout, which is when radioactive particles fall to earth after a nuclear explosion. This can occur within twenty-four hours of the explosion, or days to years later. Additionally, under the umbrella of fallout, there is tropospheric fallout in which radioactive material returns to earth through precipitation and covers plants and animals in radioactive dust, and stratospheric fallout which primarily occurs in temperate climates and is less radioactive.<sup>15</sup>

Recent studies show that in a low intensity nuclear exchange between India and Pakistan, the environmental effects would be catastrophic. The smoke produced from the explosions and resulting fires would block out sunlight and massively cool the planet creating a "little ice age" within a few weeks. Not only would the temperatures decrease an estimated 1.25 degrees Celsius, but growing seasons would be drastically affected.<sup>16</sup> Growing seasons would be shortened, thus those crops that need

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<sup>12</sup> <http://www.cato.org/pubs/pas/pa009.html>

<sup>13</sup> <http://ipnw.org/catastrophic-consequences.html>

<sup>14</sup> <http://www.pressenza.com/2012/05/statement-on-humanitarian-dimensions-of-nuclear-disarmament/>

<sup>15</sup> [http://isnap.nd.edu/Lectures/nuclear\\_warfare/Environmental\\_Effects\\_of\\_Nuclear\\_War.pdf](http://isnap.nd.edu/Lectures/nuclear_warfare/Environmental_Effects_of_Nuclear_War.pdf)

<sup>16</sup> [http://isnap.nd.edu/Lectures/nuclear\\_warfare/Environmental\\_Effects\\_of\\_Nuclear\\_War.pdf](http://isnap.nd.edu/Lectures/nuclear_warfare/Environmental_Effects_of_Nuclear_War.pdf)

the entire growing period would not produce a yield and others would produce a smaller yield. It would also be darker with less precipitation, further damaging yields. Furthermore, it is likely that countries would stop shipping food, fuel, fertilizer, and seeds in order to be able to feed their own citizens, resulting in a crisis, since global grain stocks can only feed the world's population for approximately two months.<sup>17</sup> Due to increased ozone depletion, ultraviolet radiation would also be significantly worsened.

## *Health*

Nuclear weapons release ionizing radiation which causes both immediate and long-term effects. Radiation is released throughout the production of nuclear weapons and has been known to cause genetic defects, mental impedance, immune destruction, stillbirths, and most notably cancer.<sup>18</sup> It is estimated that over 13 million people have become victims of radiation pollution related to nuclear weapon production.<sup>19</sup>

The complete process of developing nuclear weapons has overwhelming health effects. In the early stages, the mining and processing of uranium leads to inhalation of chemicals and uranium exposure, which can ultimately result in reproductive and developmental issues, diminished bone growth, and DNA damage. It has been found that those working in uranium mines have a significant increase in chromosomal aberrations, which often result in physical or mental abnormalities.<sup>20</sup>

It is possible for a cell to repair DNA damage caused by low levels of damage; however, faulty repairs may lead to spreading of abnormal cells which in turn can cause cancer. These forms of cancer may take up to several decades to fully develop and be detected, proven by the fact that many who were affected by exposure following the bombings of Hiroshima and Nagasaki are just now starting to show an increase in cancer rates.<sup>21</sup>

When there is a higher level of radiation, cell death occurs. In the gastrointestinal tract and bone marrow, cells may not be replaced quickly enough, resulting in failing tissue. This can be

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<sup>17</sup> <http://www.time.com/time/health/article/0,8599,1873164,00.html>

<sup>18</sup> <http://www.nuclearfiles.org/menu/key-issues/nuclear-weapons/issues/effects/effects-of-nuclear-weapons.htm>

<sup>19</sup> <http://www.nuclearfiles.org/menu/key-issues/nuclear-weapons/issues/effects/effects-of-nuclear-weapons.htm>

<sup>20</sup> <https://ill.lib.neu.edu/illiad/snell/illiad.dll?Action=10&Form=75&Value=445309>

<sup>21</sup> <http://icanw.org/radiation-human-health>

fatal and makes the foetus extremely vulnerable. If the foetus is exposed to radiation, the risk of childhood cancer increases. Inadequate brain development is also a common problem for individuals who were exposed to radiation while in the womb. If damage to the DNA occurs in a reproductive cell, then the genetic effects may be passed on.<sup>22</sup>

## Law

The debate on the legality of nuclear weapons was heightened in 1996 when the question came before the International Court of Justice. There was not a unanimous decision about the legality of the weapons or their use; instead, the judges found that the use of nuclear weapons would be generally contrary to the principles of international humanitarian law (IHL).<sup>23</sup> The four fundamental aspects of IHL are distinction, proportionality, necessity, and controllability, all of which assist in defining nuclear weapons as violations of IHL.

There are three main *humanitarian* purposes of IHL, which are: (1) protecting combatants and civilians from unnecessary suffering; (2) protecting those who fall to the enemy; and (3) facilitating the restoration of peace.<sup>24</sup> Thus, disarming countries that maintain, or are developing, a nuclear weapons programme is essential. It is the duty of international bodies to develop a binding treaty that will work towards eliminating the existence of nuclear weapons. There are already legal requirements that support the non-use of nuclear weapons, which assists in achieving the ultimate goal of nuclear disarmament by underpinning the fact that these weapons are illegitimate.<sup>25</sup>

The rule of distinction states that when using weapons, it is vital that a clear distinction is made between non-combatants and military targets at all times; thus prohibits the use of a weapon that cannot make this distinction. Nuclear weapons are unable to be controlled, as witnessed through the bombings of Hiroshima and Nagasaki, in which tens of thousands of civilians were injured.<sup>26</sup>

The rule of proportionality requires that weapons only be used if the “potential collateral effects upon non-combatants” is proportional to the military advantage anticipated by the attack.<sup>27</sup> This rule also

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<sup>22</sup> <http://icanw.org/radiation-human-health>

<sup>23</sup> <http://www.icj-cij.org/docket/files/95/7495.pdf>

<sup>24</sup> <http://0-www.lexisnexis.com.ilsprod.lib.neu.edu/hottopics/lnacademic/?verb=sr&csi=6742>

<sup>25</sup> <http://0-www.lexisnexis.com.ilsprod.lib.neu.edu/hottopics/lnacademic/?verb=sr&csi=6742>

<sup>26</sup> <http://0-www.lexisnexis.com.ilsprod.lib.neu.edu/hottopics/lnacademic/?verb=sr&csi=6742>

<sup>27</sup> <http://0-www.lexisnexis.com.ilsprod.lib.neu.edu/hottopics/lnacademic/?verb=sr&csi=6742>

requires that any state using a given weapon, control the effects of such weapon. With nuclear weapons, this proves to be virtually impossible, seeing as hundreds of thousands of innocent civilians can be impacted by a single nuclear attack, which cannot be controlled by the state perpetrating the violence.

The rule of necessity articulates that a state may only use a level of force that is necessary to achieve the military objective of the strike, and any additional force is unlawful.<sup>28</sup> According to the US, the reason that they attacked Hiroshima and Nagasaki with such a powerful weapon was to end a war that they most likely would have lost, and to prevent thousands of lives from being lost on both sides through a land invasion. Using a nuclear weapon, the atomic bomb, was by no means to be considered a necessary action. The US chose to put hundreds of thousands of people in danger in order to save American lives, and this incredibly selfish action should not be legally allowed to occur.

The final fundamental rule of controllability says that a state cannot use a weapon if the effects cannot be controlled, as such is the case with nuclear weapons. Again referring to Hiroshima and Nagasaki as an example, the effects of nuclear weapons were essentially unknown then; they had finally developed a working bomb and the US jumped at the chance to use it without fully discovering, or revealing, the after-effects.

## **Conclusion**

There are countless reasons to support the elimination of nuclear weapons, and a treaty banning nuclear weapons is a positive step in that direction. The conference in Norway is, in itself, not the start of a process leading to such a ban. However, there is a chance that the results presented in Oslo will lead to the start of a process. This could include a meeting which would focus on the prevention of any use of nuclear weapons with the conclusion that preventing use requires a ban. This follows the pattern established by humanitarian disarmament treaties- the anti-personnel land mine treaty and the convention on cluster munitions. There is a noticeable trend in discussions about weapons overall (whether they are small arms or nuclear bombs) to focus efforts on the impact on people. This humanitarian approach has demonstrated success. Even when countries do not subscribe directly

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<sup>28</sup> <http://0-www.lexisnexis.com.ilspod.lib.neu.edu/hottopics/lnacademic/?verb=sr&csi=6742>

to the related international instruments, the stigma against their use (and even their deployment) is so strong that behaviour is changed.

Some have likened this to the growing efforts to eliminate cigarette smoking in public places. Those efforts were not begun by, nor did they engage smokers per se. Instead the highest possible standards were set, and then those who continued to smoke were forced to modify behaviour. A similar pattern of stigmatization leading to behavioural modification can be seen with cluster munitions as well as anti-personnel landmines. Any state that would deploy these weapons today would be ostracized in the global community of nations. A treaty banning nuclear weapons- even if the nuclear armed states are not contributing to the ban itself- would redefine the global landscape in such a way that, at least, deployment practices (for example in Europe by the U.S.) would necessarily change. For such a treaty to have significant practical impact, it could also include measures to be implemented by all states parties to it, such as divestment from nuclear weapons producers, or some other effective incentive to bring nuclear armed countries on board.

The second and subsequent meetings of states in non-traditional forums offer a great opportunity to make nuclear weapons universally illegal. While this does not directly eliminate those weapons, it provides a positive justification, for example, for the UK to choose not to re-new its Trident system. It provides justification for states to challenge modernization programmes in the nuclear armed states. And it expands the "taboo on use" to a "taboo on possession". Ultimately, it would allow those who want to see the weapons removed to set the terms of the debate, instead of those who still possess them.