



Science for Peace  
Science pour la paix

## 10 ESSENTIAL FACTS ABOUT NUCLEAR WEAPONS

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**1. WARNING:** The Bulletin of the Atomic Scientists has moved the hands of the doomsday clock to 90 seconds to midnight (human extinction) because of the risks of nuclear war and climate disruption.

**2. ORIGINS:** Nuclear weapons were developed by the US, UK, and Canada in the Manhattan Project in World War II. The US dropped a 15 kiloton atomic bomb on Hiroshima, Japan, on 6 August 1945, and a 21 ktn bomb on Nagasaki on 9 August, causing an estimated 214,000 deaths, and excruciating injuries by radiation.

**3. NUCLEAR POWERS:** the US, UK, France, Russia, China, India, Pakistan, North Korea and Israel have nuclear arsenals. In 2023 there were 15,000 nuclear warheads, more than 3,000 of them ready to fire. Russia controls the greatest number of nuclear weapons, followed by the United States.

### 4. RISKS:

- Today's nuclear bombs could be up to 80 times more powerful than the 1945 ones. With declared policies of deterrence, military planners have planned attacks projected to kill 300 million in the targeted country (according to US whistle-blower Daniel Ellsberg). Retaliation and long-term deaths from radiation and a "nuclear winter" leading to mass starvation, would multiply this number. "Modernization" of nuclear arsenals is underway, expanding the lethality and undetectability of nuclear strikes.
- Land-based intercontinental missiles are the most dangerous component of the "nuclear triad" ((land, air, and submarine-based systems) mounted by Russia, the United States, and recently China. Because the location of their silos is known, decision makers would, in the event of a real or suspected attack, need to decide within minutes whether to launch these missiles or potentially lose them all. The risk of miscalculation is high.
- New, smaller ("tactical") nuclear missiles have been touted as affording the possibility to win a war otherwise fought and lost with conventional weapons., thus raising the risk of escalation of a conventional war into a nuclear war.
- US missiles are kept on alert for launching, despite the risk of false alarms. The US has refused to commit to a policy of "no first strike."
- Submarines loaded with enough missiles to destroy civilization cruise the oceans silently.

**5. LETHALITY:** Even a small-scale nuclear war between India and Pakistan, using 100 Hiroshima -size nuclear weapons, would loft debris into the atmosphere, significantly reducing sunlight for years, and seriously disrupting global agriculture and food supply. Risks of accidental or deliberate nuclear conflict are high, given that technology and humans are fallible.


**6. MULTILATERAL TREATIES:** Various UN treaties restrict nuclear weapons possession and use.

- The NON-PROLIFERATION TREATY (NPT, 1970) has 187 state signatories, including the US, UK, France, China, Iran, and North Korea, but not India, Pakistan or Israel. By Article 6 signatories undertook to “pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.” Subsequent NPT review conferences endorsed commitment to specific disarmament steps.; however, since 1970 the nuclear weapons states have NOT taken these steps to disarm.
- The COMPREHENSIVE TEST BAN TREATY (CTBT, 1996) has not come into force because it lacks the required number of signatories.
- The OUTER SPACE TREATY (1967) bans nuclear weapons in outer space.

**7. BILATERAL TREATIES:** Other treaties were negotiated between individual countries: the ANTI-BALLISTIC MISSILE TREATY (ABM 1972-2002) between the US and the Soviet Union was abandoned by George W. Bush in 2002. the INTERMEDIATE-RANGE FORCES TREATY (INF 1987) between the US and the Soviet Union was terminated by President Donald Trump in 2019; the OPEN SKIES TREATY (1989) between NATO and the Warsaw Pact, cancelled by US President Biden In 2021; the STRATEGIC ARMS REDUCTION TREATY (START, 1991) between the US and the Soviet Union, and the NEW START (2011) between the US and Russia, cancelled by US President Trump, renewed by President Biden until 2026.

**8. THE TREATY ON THE PROHIBITION OF NUCLEAR WEAPONS (TPNW):** The nuclear weapon states ignored, abrogated, and did not enforce treaty commitments. A humanitarian movement, three humanitarian conferences in 2013-14, and UN resolutions declaring use of nuclear weapons to be against international humanitarian law, inspired change. A UN General Assembly working group began negotiations in March 2017 that led to this treaty, adopted by 122 nations in July 2017. The International Campaign to Abolish Nuclear Weapons (ICAN) led a campaign supported by civil society and diplomats securing ratification of the treaty by 50 nations, bringing the TPNW into force for its signatories on 22 Jan. 2021. The TPNW prohibits states that are parties to the treaty to develop, test, produce, manufacture, acquire, possess, or stockpile nuclear weapons or other nuclear explosive devices, as well as to transfer them to any recipient, or to receive transfer or control of them. It also prohibits states parties to use or threaten to use nuclear weapons or nuclear explosive devices, and it prohibits them to assist, encourage or induce anyone in these prohibited activities.

The TPNW is already delegitimizing deterrence. It has led major financial institutions to stop providing funds for nuclear weapons production. The nuclear weapons states, with the US leading the way, boycotted the TPNW negotiations.



**9. HOPE:** For peace activists worldwide the TPNW is a sign of hope - the beginning of the end of nuclear weapons. The ICAN campaign continues. Toronto, Vancouver, Halifax and other Canadian cities have voted support for Canada's signing the TPNW. A NANOs poll in April 2021 revealed that 70% of Canadians support Canada's joining the TPNW.

**10. CONCERN:** All nuclear weapons states are modernizing their arsenals to maintain them for another half century. The US alone has committed to spend \$1.2 - \$1.7 trillion on this program. Imagine what real security could be attained if this vast sum was invested instead in fighting climate change, pandemics and poverty.

