

## THE LEGALITY OF TESTING NUCLEAR WEAPONS

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*There have been almost 2,500 nuclear weapons explosions since 1945. All of them have been conducted in the atmosphere, underwater, or underground. All nuclear-armed countries except North Korea have maintained a moratorium on nuclear weapons tests since the early 1990s. The first treaty regarding nuclear tests banned atmospheric and underwater tests. The second one limited underground testing between Russia and the United States. The third treaty specifically and comprehensively forbidding testing has yet to come into effect. Also, the new Treaty on the Prohibition of Nuclear Weapons includes a prohibition against testing.*

The first nuclear explosion, a test conducted by the United States, exploded on 16 July 1945. The second and third nuclear explosions were atomic weapons used in wartime to destroy Hiroshima (Aug. 6, 1945) and Nagasaki (August 9). Between the summer of 1945 and today, there have been a total of 2,476 nuclear explosions in tests. Most of these tests were conducted by the United States (1,000) and the Soviet Union (715). The other tests were conducted by the other nuclear-armed countries: France (210), the United Kingdom (45), China (45), North Korea (6), India (2), Pakistan (2), and Israel (no official data). There have only been a handful of tests between 1992 and 2020. Some of them were conducted by France and China, who only officially ended their tests in 1996. Tests were further conducted by India and Pakistan in 1998, and by North Korea (2006, 2009, 2013, 2016, and 2017)<sup>1</sup>.

There are three types of nuclear tests:

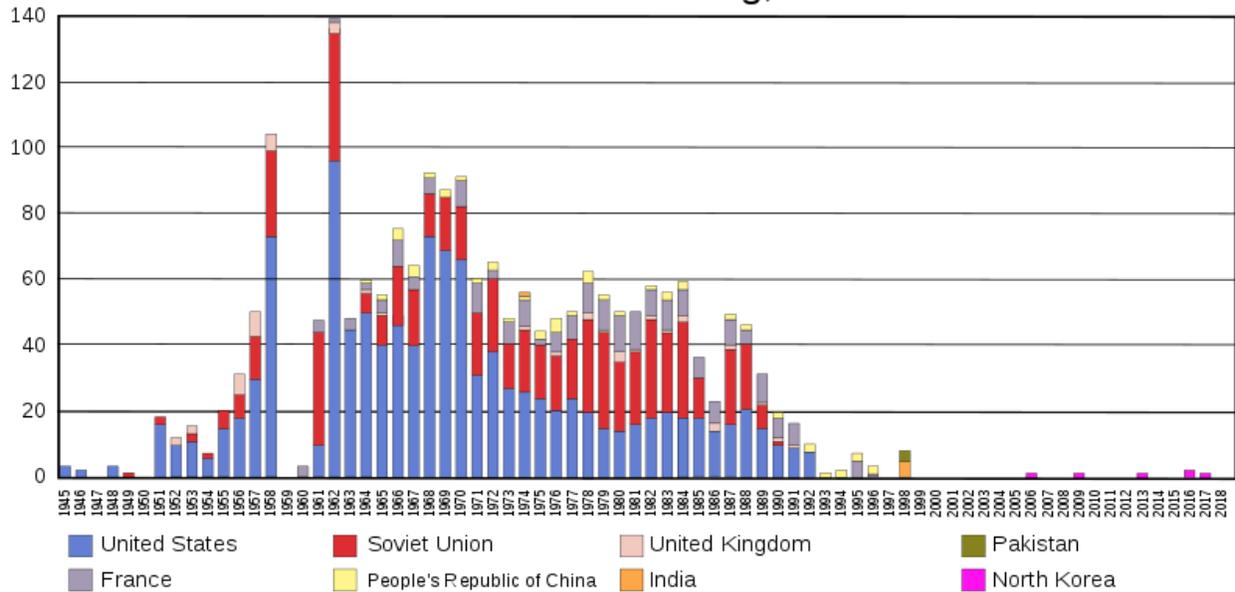
- Underground testing (75% of all tests conducted during the Cold War);
- Atmospheric testing (25% or more of all tests between 1945 and 1996);
- Underwater testing (less than ten tests)<sup>2</sup>.

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<sup>1</sup>“International Day Against Nuclear Tests 29 August.” (United Nations).

<sup>2</sup>“International Day Against Nuclear Tests 29 August.” (United Nations).

## Worldwide nuclear testing, 1945 - 2018



Worldwide number of nuclear weapon explosions testing between 1945 and 2018.

Source: <http://www.okgeosurvey1.gov/level2/nuke.cat.index.html>

The legality depends on the type of nuclear test and/or its geographical zone. All nine treaties creating “nuclear-weapon-free areas” have articles rendering each and every type (underground, atmospheric, underwater) of nuclear testing illegal. These zones include 34% of the world population in Latin America and the Caribbean, South Pacific, Southeast Asia, Central Asia, but also Antarctica, outer space, moon and seabed.

While some more zone-specific or non-proliferation treaties have dealt with nuclear weapons testing, three treaties have specifically dealt with nuclear weapons testing. These are the:

- Limited Test-Ban Treaty (1963);
- Treaty on the Limitation of Underground Nuclear Weapon Tests (1974);
- Comprehensive Test Ban Treaty (1996).

The first treaty prohibiting the testing of nuclear weapons, the Limited Test-Ban Treaty, was signed by 126 countries. It forbids all detonations of nuclear weapons except for those conducted underground. The Limited Test Ban Treaty was signed, ratified and came into effect in 1963. Notably, this was the year after the Cuban Missile Crisis. Prior to that, between 1945 and the ratification in 1963, there had been 499 nuclear explosions over the span of only 18 years.

According to a Report of the United Nations Scientific Committee on the Effects of Atomic Radiation to the General Assembly, “each nuclear test resulted in unrestrained release into the environment of substantial quantities of radioactive materials, which were widely dispersed in the atmosphere and deposited everywhere on the Earth’s surface.”<sup>3</sup> At that point, “the carbon 14 -

<sup>3</sup> “United Nations Scientific Committee on the Effects of Atomic Radiation.” (United Nations) 5.

radiocarbon -- produced by hydrogen bombs--spread over the entire world. It worked itself into the atmosphere, the oceans, and practically every living thing.”<sup>4</sup> While that element did not pose a significant threat to human health, its accumulation proved the worldwide impact of nuclear weapon testing. Thanks to the 1963 Treaty, that climb stopped.<sup>5</sup>

Signed in 1974, but ratified only in 1990, the Treaty on the Limitation of Underground Nuclear Weapon Tests between the United States and the Soviet Union prohibits “any underground nuclear weapon test having a yield exceeding 150 kilotons.”<sup>6</sup> Whilst it had not been ratified until 16 years later, both countries refrained from nuclear weapon test having a yield exceeding that 150 kilotons threshold. It further stipulated that the two countries had to “limit the number of its underground nuclear weapon tests to a minimum.”<sup>7</sup> Underground testing was the only category that had not been forbidden in the treaty of 1963.

Finally, signed in 1996 but still not entered into force and unratified by the United States Senate, the Comprehensive Test Ban Treaty is an attempt to ban each and every type of type of nuclear weapon testing. It compels states not to carry out any nuclear weapon test explosion or any other nuclear explosion. It is a full and complete ban on testing for those who signed. Since the signature in 1996, only three countries have tested nuclear weapons: India and Pakistan in 1998, and North Korea since 2006.

These three treaties can be seen as a success of international law. While some countries, such as the United States, Russia, and the United Kingdom had stopped testing beforehand, the last Treaty has put pressure on other countries such as France and China to stop their tests sooner rather than later. The three countries that have openly tested weapons since 1996 have been sharply criticized for doing so. As a consequence, while the Comprehensive Test Ban Treaty has not yet entered into force, it has nonetheless played an important normative role, meaning that it has helped create and advance international principles on nuclear weapons testing.

The Treaty on the Prohibition of Nuclear Weapons (TPNW), currently open for signature and ratification, includes a prohibition on nuclear weapons testing for those nations that join. As the treaty seeks the “total elimination of nuclear weapons,”<sup>8</sup> each country party to the treaty, once it enters into force, would have to undertake not to test nuclear weapons or devices.<sup>9</sup>

Sources & treaties:

Comprehensive Nuclear-Test-Ban Treaty, New York 10 September 1996, *United Nations Treaty Series*, Chapter XXVI, available from [https://treaties.un.org/doc/source/docs/A\\_RES\\_50\\_1027-E.pdf](https://treaties.un.org/doc/source/docs/A_RES_50_1027-E.pdf).

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<sup>4</sup> Carl Zimmer, “Nuclear Tests Marked Life on Earth With a Radioactive Spike.” (The Atlantic, 2020).

<sup>5</sup> “United Nations Scientific Committee on the Effects of Atomic Radiation.” (United Nations) 5.

<sup>6</sup> “Treaty on the Limitation of Underground Nuclear Weapon Tests,” Moscow. (United Nations, 1974) article 1(1).

<sup>7</sup> “Treaty on the Limitation of Underground Nuclear Weapon Tests,” Moscow. (United Nations, 1974) article 1(2).

<sup>8</sup> “Treaty on the Prohibition of Nuclear Weapons (TPNW).” *NTI Building a Safer World*, 14 November 2019.

<sup>9</sup> For more information on the TPNW, please check out <https://www.psr.org/issues/nuclear-weapons-abolition/nuclear-weapons-ban-treaty/>.

“Graph of nuclear testing.” *Wikipedia*, available from [https://en.wikipedia.org/wiki/Nuclear\\_weapons\\_testing#/media/File:Worldwide\\_nuclear\\_testing\\_multilang.svg](https://en.wikipedia.org/wiki/Nuclear_weapons_testing#/media/File:Worldwide_nuclear_testing_multilang.svg).

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Zimmer, Carl. “Nuclear Tests Marked Life on Earth With a Radioactive Spike.” *The Atlantic*, 2 March 2020, available from <https://www.theatlantic.com/science/archive/2020/03/how-nuclear-testing-transformed-science/607174/>.