

A BEGINNER'S GUIDE TO NUCLEAR WEAPONS



PRINTABLE GUIDE · GLOSSARY

This glossary defines key terms commonly used when talking about nuclear weapons, war, and diplomacy. Use it to help you navigate discussions about how nuclear weapons impact our world and what we can do about it.

Abolition

Abolition is the act of ending something. Nuclear abolition is the complete elimination of all existing nuclear weapons and the prohibition against developing or deploying nuclear weapons in the future.

Arsenal

An arsenal is the collection of weapons and military equipment that a group has. The term nuclear arsenal refers specifically to a nation's collection of nuclear weapons.

Atom bomb

Atom bomb refers to nuclear weapons whose explosion is powered exclusively by the process of nuclear fission. The term is somewhat dated and also a misnomer, as the energy comes from the nucleus of the atom, so a more precise name is “nuclear fission weapon.” Atom bombs may also be known by the type of material used to trigger the fission reaction – for example, plutonium bombs use plutonium, while uranium bombs use uranium.

Ballistic missile

Ballistic missiles follow an arch-shaped trajectory to drop conventional or nuclear warheads on a target. They use rocket power in the first phase of their flight to achieve a high speed and altitude, and are carried by momentum to

the peak of their arc and back down to the ground—all at very high speeds. Once the rocket-powered phase of a ballistic missile's flight is over, its trajectory can no longer change.

The flight method and trajectory of ballistic missiles distinguish them from cruise missiles, which are powered by jet engines, similar to an airplane, and stay at lower altitudes. Cruise missiles have guided flight, but shorter ranges.

Although ballistic missiles can travel at hypersonic speeds, five times the speed of sound, they are not considered hypersonic missiles. Both are rocket-powered, but hypersonic missiles stay in the Earth's atmosphere for most of their flight. After their initial launch, hypersonic missiles have a long-distance glide phase at low altitudes, where they can be slightly maneuvered and may get closer to their targets without being detected. Modern arsenals may also include hypersonic glide vehicles (HGVs), which are launched by ballistic missiles and then detach to glide.

Short-range ballistic missiles travel up to 1,000 kilometers, medium-range ballistic missiles travel up to 3,000 kilometers, and intermediate-range ballistic missiles can travel up to 5,500 kilometers. Intercontinental ballistic missiles, the largest and fastest kind, have a range greater than 5,500 kilometers.

Bilateral

Bilateral describes something involving two parties. In the world of international affairs, this typically refers to treaties or agreements made between two countries.

Bomber

Bombers are aircraft that drop bombs—conventional or nuclear—from the air onto a target. The United States maintains a fleet of 46 B-52 bombers and 20 B-2 nuclear bombers. As of 2025, the B-21 Raider is expected to enter deployment in the next few years.

Delivery System

Delivery systems, such as submarines, aircraft/bombers and missiles, are the mechanisms that carry or “deliver” a weapon to its intended target.

Deploy(ed)

Deployment is a military term signifying that a person, weapon or system is operational and ready for use. As of 2025, the United States has an arsenal of 1770 deployed nuclear weapons—1670 of which are strategic, and 100 of which are tactical.

Deterrence

Deterrence is the idea that the threat of violence and force can convince potential opponents not to engage in conflict—in other words, someone will not attack if the cost of doing so overshadows any possible gains. Nuclear deterrence is the theory that adversaries will not risk attacking a nation that may retaliate with nuclear weapons, nor risk attacking a nation being protected by a separate, nuclear-armed, nation. Critics argue that, over time, deterrence actually increases risk by normalizing the existence of nuclear weapons.

Disarmament

Disarmament is the act of either reducing or eliminating weapons. Nuclear disarmament refers to eliminating all nuclear weapons. Disarmament typically is an ongoing process guided by an agreement made between nations.

Entry into force

Entry into force is the point at which legal measures (like treaties, regulations, and legislation) gain legal force. Treaties, as an

example, enter into force when they receive a minimum number of ratifications.

Fallout

Fallout refers to the harmful, and often deadly, radioactive material that is created and “falls out” of the sky after a nuclear weapon explodes. In the immediate aftermath of an explosion, fallout is mostly local and may descend as black rain. Because fallout can contain fine particles, it may also take months or years to settle, traveling anywhere in the world before it does so. People may get poisoned from contaminated crops and water supplies or may be directly exposed by inhaling, ingesting, or absorbing fallout through the skin. Fallout is produced whether a nuclear blast came from a weapon used in war, from a test explosion, or from an accidental explosion.

First strike

First strike refers to a calculated attack using one or more nuclear weapons that is not in response to another attack (i.e. it is preemptive). The strategic intent is often to disarm the opponent by significantly weakening or destroying their military power and hampering their ability to attack or retaliate.

First use

First use refers to the act of introducing nuclear weapons to a conflict. It could be in retaliation to an attack with a conventional weapon, and is likely a form of escalation.

Fission

Fission is a reaction that splits the nucleus of a heavy atom into two or more smaller nuclei. The process is usually triggered by bombarding the atom with neutrons, but fission can also be induced by protons, gamma rays, and other particles. The resulting reaction releases large amounts of kinetic energy, thermal energy, and radiation, and powers the explosion of nuclear weapons. Fission requires heavy, unstable nuclei, so uranium-235 and plutonium-239 are the most commonly used atoms. The newly split nuclei also release neutrons, which may in turn split more nuclei, leading to a self-propagating nuclear chain reaction that rapidly releases massive amounts of energy.

Fusion

Fusion is a type of reaction that combines the nuclei of two light atoms into one slightly heavier nucleus. The process is induced by combining two hydrogen isotopes under sustained extremely high temperatures and pressure. When the nuclei fuse, they form one helium atom and a spare neutron. The process releases massive amounts of energy and is key to the explosion of a thermonuclear bomb, also known as a hydrogen bomb.

Golden Dome

The Golden Dome is a proposed missile-defense system introduced by President Donald Trump. It is intended to protect the United States by detecting and destroying threats like ballistic and cruise missiles.

Hair-trigger alert

Hair-trigger alert is a military policy that keeps nuclear weapons ready to launch within minutes of when an order is given. The U.S. keeps hundreds of missiles and submarine-based nuclear weapons on hair trigger alert staffed by around-the-clock crew. This is also sometimes referred to as “launch on warning” or “launch under attack,” although some analysts consider them to be distinct: “launch on warning” implies reacting to a weapon detected by radar, while “hair-trigger alert” refers to a general state of a high readiness.

Hydrogen bomb/Thermonuclear weapon

A hydrogen bomb, also known as an H-bomb or thermonuclear weapon, is powered by both nuclear fission and nuclear fusion and thus has an explosive force up to thousands of times more powerful than a nuclear weapon only powered by fission.

Intercontinental Ballistic Missile (ICBM)

Intercontinental ballistic missiles have larger range and speed than other types of ballistic missiles. ICBMs, which are designed specifically to carry nuclear weapons, can travel more than 5,500 kilometers and can reach most targets anywhere in the world in less than an hour. Modern missile designs can carry several warheads, which can be dropped on several targets. The United States maintains a fleet of 400 land-based Minuteman ICBMs.

Missile defense

Missile defense refers to a military system intended to shoot down missiles or drones. When the goal is to shoot down shorter range missiles, it is known as “theatre” or “battlefield missile defense.” If the system is intended to intercept and shoot down long-range missiles like cruise, ballistic, and hypersonic missiles, it is known as “strategic missile defense.” President Trump’s proposed “Golden Dome” would be categorized as a strategic missile defense system. Currently, there is no existing strategic missile defense system that can effectively stop or intercept a large-scale missile attack, especially since the attacker can deploy a number of tactics to confuse defenses.

Multilateral

Multilateral describes something involving three or more parties. In the world of international affairs, this typically refers to treaties or agreements made between three or more countries.

Mutual Assured Destruction (MAD)

Mutual Assured Destruction is the military principle that attacking a nuclear-armed nation with nuclear weapons will result in a nuclear war that destroys both sides. As an extension of the theory of deterrence, MAD assumes that the unacceptable risk will keep nations from using their nuclear weapons. The theory, which originated during the Cold War between the United States and the Soviet Union, requires that neither side possesses a sufficient defense against nuclear weapons. While MAD is often presented as a stabilizing force, it has also been critiqued as destabilizing and strategically risky, especially when there are several nations involved.

New Strategic Arms Reduction Treaty (New START)

Signed in 2010, the new Strategic Arms Reduction Treaty (New START) is the only remaining treaty between the United States and Russia limiting the size of their nuclear arsenals and delivery systems. The treaty expires in February, 2026.

No-First-Use

No-First-Use is a commitment from a nuclear-armed nation to never use nuclear weapons first and only use them in response to a nuclear

attack. China and India are the only two nuclear-armed nations that have adopted a no-first-use policy.

Non-proliferation

Non-proliferation generally refers to efforts to prevent the spread of all types of weapons. Nuclear non-proliferation specifically covers measures to prevent the spread of nuclear weapons. This includes making sure those who already have nuclear weapons don't develop more, as well as preventing nations from building, buying, or stealing nuclear weapons if they didn't previously possess any.

Nuclear famine

Nuclear famine refers to the famine that would follow a round of nuclear attacks. The nuclear explosions would trigger firestorms, which would inject soot into the atmosphere and block a significant amount of sunlight for a prolonged period of time. This would drop global temperatures by several degrees and decimate global crop production, leading to mass starvation. Nuclear famine would likely result from even a relatively small number of nuclear weapons used anywhere in the world.

Nuclear Non-Proliferation Treaty (NPT)

The NPT is considered the cornerstone of nuclear arms control and efforts to prevent their spread of nuclear weapons and ultimately to eliminate them. All the world's nations except Israel, Pakistan, India and North Korea are parties to the NPT – which commits non-nuclear weapons states not to develop nuclear weapons and the nuclear weapons states to pursue, in good faith, an agreement to eliminate their nuclear weapons.

Nuclear triad

Nuclear triad refers to the three types of nuclear weapon delivery systems that the United States deploys. It includes nuclear missiles based in land-based silos in several states in the Western United States, nuclear missiles deployed on submarines, and nuclear bombs deployed on long-range nuclear bombers.

Nuclear winter

Nuclear winter refers to the massive and sustained change in climate that would result from a large-scale nuclear war. Nuclear winter

is usually used to describe the more severe and prolonged global cooling that would occur after a full scale nuclear war.

Retired nuclear weapon

A retired nuclear weapon is one that has been withdrawn from the nuclear stockpile. This does not necessarily indicate that the weapon has also been disassembled or destroyed. Key components, such as the deadly core, of a retired nuclear weapon may still be stored for future use.

Sole Authority

Sole authority is the United States' nuclear weapons policy which gives the U.S. president sole authority to order the launch of nuclear weapons. The president is not required to consult anybody, and nobody can legally challenge the decision.

Strategic nuclear weapon

Strategic nuclear weapons are large and designed to destroy targets anywhere in the world, often as part of an overall strategic plan to dominate an enemy nation. These powerful nuclear explosions can wipe out military bases, key infrastructure, entire cities, and many millions of people. Military strategy posits that these powerful weapons can "win" a war by swiftly decimating an opponent's ability to wage war.

Submarine-launched ballistic missile (SLBM)

Submarine-launched ballistic missiles, as their names suggest, are ballistic missiles that are launched from submarines. Modern SLBMs are closely related to ICBMs and may also be intercontinental in range. The United States maintains a fleet of 14 Ohio-class nuclear submarines, each capable of carrying 20 Trident II D5 SLBMs. Each of these missiles can be loaded with multiple warheads.

Tactical nuclear weapon

Tactical nuclear weapons are designed for relatively short-range use—not across the world. They produce smaller explosions than strategic nuclear weapons do, but still have a tremendous amount of destructive power and generate a large amount of radiation. Some military tacticians posit that using a tactical

nuclear weapon against military targets would not result in a nuclear response. Critics argue that by seeming more “usable,” tactical nuclear weapons provide a gateway to rapid nuclear escalation that could leave millions dead and injured.

Treaty on the Prohibition of Nuclear Weapons (TPNW)

Also known as the “nuclear ban treaty”, the TPNW is an historic international treaty, signed in 2017 at the United Nations, which “prohibits nations from developing, testing, producing, manufacturing, transferring, possessing, stockpiling, using or threatening to use nuclear weapons, or allowing nuclear weapons to be stationed on their territory.” It is a legally binding treaty for those countries that have ratified it. It entered into force in January, 2021. As of June, 2025, 93 nations have signed the treaty and 74 have ratified it – representing a majority of the world’s population. Neither the United States nor any of the other 8 nuclear weapons states have signed or ratified the treaty.

Warhead

Warhead refers to the component of a weapon that explodes and causes destruction.



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Back from the Brink is a national grassroots campaign of committed individuals, organizations, and elected officials advocating for common-sense policies to prevent nuclear war and abolish nuclear weapons from the planet.

This publication was made possible in part by a grant from Carnegie Corporation of New York. The statements made and views expressed are solely the responsibility of the author.