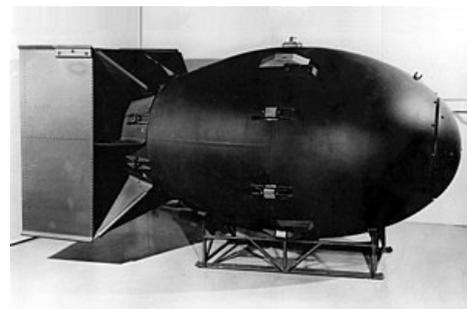


# Use of radioactivity

## Nuclear weapons

A nuclear weapon is an explosive device that derives its destructive power from nuclear reactions, either by fission or a combination of fission and fusion. Both reactions release enormous amounts of energy from a relatively small amount of matter. The first test of an "atomic" bomb released the same amount of energy as roughly 20,000 tons of TNT (trinitrotoluene). The first thermonuclear test of a "hydrogen" bomb released the same amount of energy as about 10,000,000 tons of TNT. Weighing just over 2,400 pounds (1,100 kg), the thermonuclear weapon can produce an explosive force comparable to the detonation of more than 1.2 million tons of TNT. Thus, even small nuclear devices, no larger than conventional bombs, can destroy an entire city through explosion, fire or radiation



A mockup of the Fat Man nuclear device

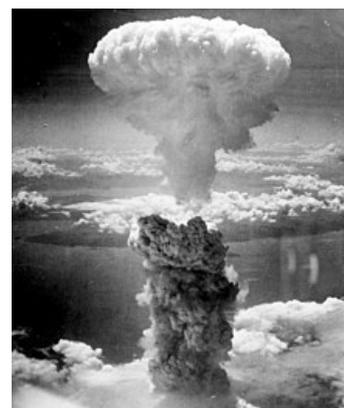
By 2014, two nuclear weapons had been used (during the war). In both cases, they were used by the US at the end of World War II. On August 6, 1945, an atomic (uranium) bomb codenamed "Little Boy" was detonated over Hiroshima, Japan. Three days later, on August 9, an atomic (plutonium) bomb codenamed "Fat Man" exploded over the Japanese city of Nagasaki. The two bombings resulted in the deaths of approximately 200,000 civilians and soldiers with acute injuries caused by the explosions. The purpose of the bombings was to surrender Japan, but their ethics remain a matter of scholarly and popular debate.

There are two basic types of nuclear weapons:

- **Nuclear explosive devices** , in which the main source of energy is the fission of atomic nuclei (e.g. a classic atomic bomb).
- **Thermonuclear nuclear explosive devices** , in which nuclear fusion is the main source of energy (eg the H-bomb). Every real functioning thermonuclear nuclear explosive device also contains in its design a fissionable explosive part of low power, which serves as a "detonator" - it creates the necessary pressure and temperature for the beginning of nuclear synthesis (nuclear fusion).
- **Radioactive warfare agents** , which are used to contaminate terrain, water and air with solid (dust), liquid or gaseous radioactive substances. In military terminology, the term "radiological weapons" is also used, in journalism they are often referred to as a "dirty bomb".

## Radioactive warfare agents

<http://world-nuclear.org/information-library/current-and-future-generation/outline-history-of-nuclear-energy.aspx>



Nagasaki bomb 9 August 1945