

Thank you so much for contacting us here at the Center for Arms Control and Nonproliferation! We are so excited to see students like you tackling these super complicated and super important issues! You had some great questions and I hope that you find these answers helpful. Good luck with your project!

Sincerely,

The Center for Arms Control and Non-Proliferation Staff

1. What could start a nuclear war?

There are a few ways that a nuclear war could occur:

- 1) A conventional war, or a war being fought without nuclear weapons, becomes a nuclear one.
 - a. This could happen if multiple of the countries involved in the conventional war had nuclear weapons and one country decided to start using them, provoking nuclear responses from the other countries involved.
- 2) Confusion/Misunderstanding
 - a. This would happen if a country fired nuclear weapons because of a misunderstanding. A country might get false reports that another country was preparing to launch a nuclear strike and strike them first. Thus, starting a nuclear war.
- 3) Terrorism
 - a. If some very bad people get their hands on nuclear weapons, they might be willing to use them against their enemies. This could also start a nuclear war.

But don't worry! A lot of smart and dedicated people are working very hard to make sure these scenarios never happen.

2. Why did you study nuclear bombs?

Greg's Answer: Nuclear weapons could change every single person's life around the world if they were ever used, so I want to make sure that doesn't happen.

Hazel's Answer: There are approximately 15,000 nuclear weapons across the world. Any use of these weapons could have a devastating impact on the earth and its atmosphere.

Katherine's Answer: I am a college student studying security policy and economics, and I have always been interested in the Cold War, where nuclear weapons played a big role. I went to college because I was fascinated defense policy, economic issues, and diplomacy, and nuclear weapons are the point where all three of these intersect. Studying nuclear weapons is studying war, but also the ways that leaders and countries can prevent war, and I think that learning how to prevent war is one of the most important ways we can protect our country and our entire planet.

3. What is the definition of kT the unit?

kT means kiloton! A kiloton is a unit for measuring the strength of an explosion, and the strength of an explosion is how much energy it makes. The explosion of a 1 kiloton nuclear weapon is equal to the explosion of 1,000 tons of TNT. The United States has nuclear weapons ranging in strength from 0.3 kilotons to 1200 kilotons, which is equal to 1.2 million tons of TNT.

4. How big is the destruction of nuclear weapons?

If a 1000 kiloton nuclear weapon exploded, it would destroy everything within 80 square miles, that's almost 40,000 football fields!

So what actually would happen if a nuclear bomb exploded?

The most destruction comes from blast energy which causes the ground to shake and the loud noise in an explosion. The blast energy can crush buildings and objects. It also causes an intense wind that destroys anything in its path.

Destruction is also caused by thermal energy, or heat and light. The explosion would create an intense flash of light that would temporarily blind anyone looking at it. The heat would cause anyone about five miles or less away from the explosion to be severely burned. Also, the heat could cause things like water heaters, electrical lines, and gas pipes that were damaged by the blast, to catch fire.

Finally, nuclear radiation is what makes nuclear weapons so much more dangerous than regular bombs. When people are exposed to radiation it can be bad for their health. Radiation poisoning in the worst cases can cause immediate death or slow death by cancer. It can also have long term effects on the health of future generations. Radiation also increases the destruction because it makes the area of the explosion and a wide surrounding area contaminated and impossible to live in.

5. What chemical splits nuclei of plutonium and uranium?

You're absolutely right that splitting the nuclei of plutonium and uranium atoms is what gives nuclear weapons their energy. The process of splitting the nuclei is called fission. But it's not exactly a chemical that makes this happen. The nucleus of an atom has a certain number of protons and neutrons in it, and in fission, an extra neutron is put into the nucleus, which causes it to split apart and release energy. Nuclear weapons also make energy using a process called fusion, which is basically the opposite of fission. Instead of splitting the nucleus, fusion joins together lots of nuclei. This happens when the nuclei are put in extreme heat and pressure, and it also releases energy. Modern nuclear weapons use both fission and fusion to make the energy they need.

6. What is on the outside of nuclear weapons?

The plutonium and uranium are the actual explosive materials, and they are encased in a heavy metal capsule called a warhead. These warheads have lots of special features to prevent accidental explosions. These nuclear warheads are typically attached to the end of a missile.

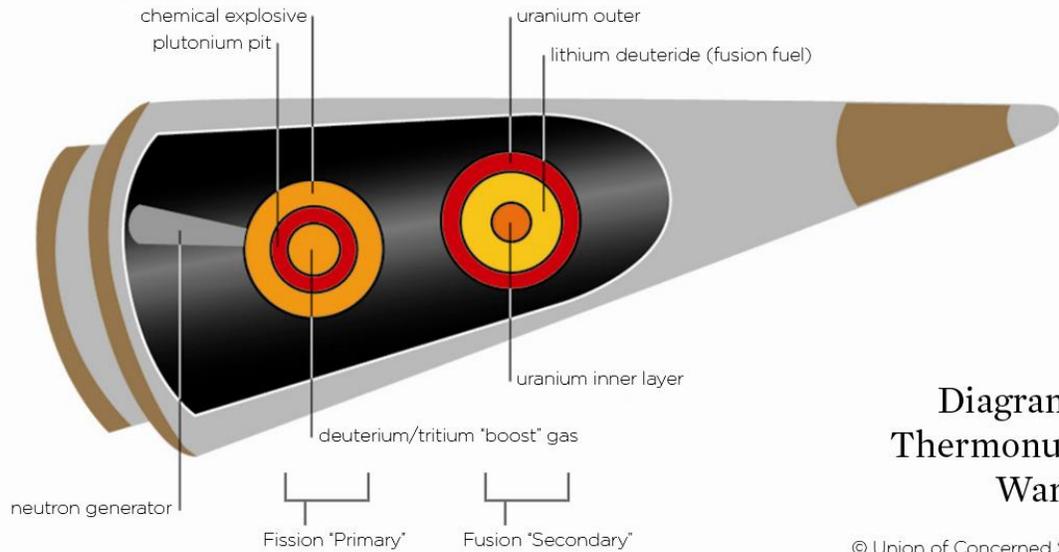


Diagram of a
Thermonuclear
Warhead

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Some More Websites That Might be Helpful!

<http://www.atomicarchive.com/Effects/effects1.shtml>

<http://www.armscontrolwonk.com/archive/202583/declaratory-policy/>

<http://thebulletin.org/what-does-nuclear-terrorism-really-mean9309>