



Key Facts About Nuclear Security

The Problem:

There are many locations around the [world](#) (including in the United States) with fissile materials, but there are no binding global standards for how they should be stored and secured.

Fissile materials, such as highly enriched uranium (HEU) and plutonium, can be used as fuel for both nuclear weapons and nuclear reactors. As a result, even stockpiles of these weapons for non-weapons purposes present a risk. The real possibility of HEU or plutonium being used in an “improvised nuclear device” ([IND](#)) by non-state actors presents a clear and present danger. So does sabotage of nuclear power plants—leading to a radiological release. As such, it is imperative that the United States and our partners work to improve nuclear security both at home and abroad.

According to the International Atomic Energy Agency (IAEA), nuclear security [is](#) the prevention and detection of theft, sabotage, and unauthorized access or other malicious acts involving fissile material and their associated facilities.

The Background:

As the Soviet Union collapsed, there were significant amounts of weapons and fissile material left in some of the newly independent countries. Recognizing the dangers posed by HEU and plutonium, the United States created the Cooperative Threat Reduction ([CTR](#)) program in order to support these countries’ efforts to secure these weapons and materials. Over time, the United States broadened its nuclear security work globally, and other countries have provided technical and financial assistance with a goal of securing all nuclear materials.

While much has been accomplished in the intervening decades, the threat posed by fissile material persists. [Approximately](#) 22 countries have HEU stockpiles, and given that most countries do not publicly share their inventory, estimates for the global stockpile vary significantly. According to some [estimates](#) there are 1340 tons of HEU total, including military and civilian. Civilian uses for HEU include their use in research and test reactors, fast reactors, medical isotopes, and in power and naval propulsion (including space reactors and ice breakers).

The estimates for the global plutonium stockpile also vary widely, with most analyses estimating [approximately](#) 520 tons worldwide, of which about 290 tons is in civilian custody. The United States and Russia have agreed to dispose of [34 metric tons](#) of excess plutonium, which is enough for thousands of nuclear weapons. In total, there are approximately [1,875 tons](#) of fissile material in the world.

The lack of appropriate security for all fissile materials prompted President Obama to launch a series of [Nuclear Security Summits](#). This resulted in four summits held over six years (2010, 2012, 2014, 2016) involving 53 countries. The Summit process prioritized the removal of excess fissile materials across the world, ultimately creating whole regions without any HEU: South America, Southeast Asia, and Central and Eastern Europe. The process worked to recover [more than](#) 1,500 kilograms of HEU and separated plutonium to later be down-blended.

The Next Steps:

In the absence of a further round of nuclear security summits, it is important that the 53 Summit-participating countries follow through on their commitments and work with other states who were not part of the Summit process, in conjunction with the IAEA. An important first step would be agreeing to and enforcing the Strengthening Implementation joint statement in which 36 countries pledged to incorporate IAEA nuclear security guidance into their own national regulations governing nuclear security. That commitment has been opened up for any interested IAEA members to join [INFCIRC/869](#).

Several other commitments from the Summit process have been opened up to other IAEA members through a similar process, including efforts to minimize HEU. Moreover, with the 2005 Amendment to the Convention on the Physical Protection of Nuclear Materials entering into force, countries should prepare for an effective and meaningful review conference in 2021.

Other nuclear security initiatives, such as increasing nuclear detection capacity at borders and transportation hubs, should continue. This initiative works to secure borders across the globe and can detect radioactive material that any state or non-state actor may try to smuggle into a country. In addition, efforts to increase cyber security at nuclear facilities should expand. More research and awareness-raising are needed in order to mitigate any insider or outsider threats as cyber networks and capabilities expand.

Finally, it is important that member states continue to support the IAEA. The IAEA's role in securing fissile and radiological materials is crucial as they work to cultivate a global network for member-states to eliminate excess stocks, phase out civilian use of such materials, and replace them with lower-risk alternatives. This will require additional funds, particularly in the nuclear security budget, and Member State requests to the IAEA so it can conduct additional nuclear and radiological security advisory missions and education and training programs.