

Global Inventory of Separated Plutonium

(Data: End of 2019)

[Russia](#) [US](#) [France](#) [China](#) [UK](#) [Israel](#)
[Pakistan](#) [India](#) [North Korea](#) [Japan](#) [Other Non-nuclear Weapon Countries](#)

Country	Military Use (ton)	Non-military Use (ton)
Russia	88.0	103.1
	<p>Russia closed all its plutonium production reactors by 2010. The production (reprocessing) of plutonium for military purposes was halted in 1994. The cumulative production quantity is 137-153 tons. Russia currently holds 88 tons of stockpile, of which 8 tons could still be used for military purposes.</p>	<p>Russia continues reprocessing. According to figures made public on December 8, 2020, Russia has 57.0 tons of plutonium at reprocessing facilities. In addition, Russia holds a further 0.4 tons of plutonium and 5.6 tons of MOX fuel. All are from civilian nuclear reactors (INFCIRC549). It has 40 tons of "excess" plutonium originating from dismantled nuclear weapons.</p>
US	38.4	49.3
	<p>The US had closed all its plutonium production reactors by 1987. In 1994 it disclosed the past production volume and the stockpile. In 2012, it announced that the aggregate amount produced in the past was 111.7 tons, the used/disposed amount was 14 tons, the inventory difference was 2.4 tons, and as of September 2009 the stockpile was 95.4 tons. Subsequently, considering that 0.2 tons were disposed at a waste isolation pilot plant (WIPP), 0.1 tons dissipated through radiation decay, 0.4 tons were received from overseas for research reactors, and 7.8 tons were irradiated, the total stockpile is 87.7 tons. According to the figures announced in INFCIRC/549 (the latest of which dates to the end of 2018) the amount is 49.3 tons. However, although the U.S. has reported a surplus of 49.3 tons, out of which only 8 tons are subject to safeguards (consisting of unirradiated MOX fuel and other fabricated products totaling 4.6 tons, the approximately 3 tons at the Savannah River site, and 0.4 tons of plutonium transported from overseas) the remaining 41.3 tons is not subject to safeguards. Therefore, the remaining amount for military use is 38.4 tons.</p>	<p>The US currently has no separated plutonium from spent fuel in civilian nuclear reactors. The US has 4.6 tons of MOX fuel etc., 3 tons from the Savannah River National Laboratory, and 0.4 tons received from overseas. The total is 8 tons. It also has 41.3 tons of "excess" weapon plutonium (as of figures announced on September 12, 2019). It was planned that the bulk of this would be used as MOX fuel but the program was suspended and how it will be disposed of in the future remains undecided. The amount for non-military use is 49.3 tons.</p>

France	6.0	74.8
<p>Production stopped by 1992. The previously produced amounts have not been made public but are thought to be 6-8 tons. One ton was used in nuclear testing so the current stockpile is between 5-7 tons.</p>		<p>The stockpile figures are published as of August 28, 2020. France operates large-scale civilian reprocessing plants (1,700ton U/year). The plants have reprocessed fuel on behalf of Germany and Japan. Plutonium is now being recycled in light water reactors. France also stores 15.5 tons of reprocessed plutonium belonging to other nations.</p>
China	2.9	0.04
<p>It appears that production was suspended in or around 1987 (Hui Zhang, China's Fissile Material Production and Stockpile 2017 International Panel on Fissile Materials http://fissilematerials.org/library/rr17.pdf). It appears that production was halted in 1990. The total produced was 2.6-3.8 tons, of which 0.36 tons were used in nuclear tests (including production loss) and the current total stands at 2.3-3.5 tons.</p>		<p>Since 2010 a civilian reprocessing plant (50-60 tons U/year) has been in operation. The published amount of its plutonium stockpile is 40.9 kg (as of the end of 2016, announced on October 18, 2017; there have been no announcements since 2017). China is currently constructing two reprocessing plants each with annual capacities of up to 200 tons per year.</p>
UK	3.2	115.8
<p>The UK announced in April 1995 that it had stopped the production of nuclear fissile material for nuclear explosives. It was announced in 1998 that the nation possesses 7.6 tons. The 4.1 tons of reactor-grade plutonium at the Sellafield reprocessing plant and 0.3 tons of weapons-grade plutonium were regarded as "excess" for weapons purposes. Thus the amount for nuclear weapons therefore stands at 3.2 tons.</p>		<p>The stockpile figure is as published on January 11, 2021 and includes 4.4 tons of excess weapons plutonium. The UK also stores 23.1 tons of plutonium belonging to other nations</p>
Israel	0.98	
<p>The estimated stockpile as of the end of 2019 was 0.85 tons to 1.11 tons. Production is currently underway at the Dimona nuclear facility.</p>		
Pakistan	0.41	
<p>Pakistan's reprocessing plant is capable of producing 20-40 tons of plutonium per year. Currently the nation is constructing a reprocessing plant with a capability of 2.5 times this. Pakistan's current stockpile is estimated at between 0.21-0.41 tons</p>		

India	8.40	0.4
<p>Production is currently underway and the amount for weapons use is 0.45-0.75 tons. Furthermore, India possesses between 4.7 tons to 11.7 tons of reactor-grade plutonium that has been separated from heavy water reactor fuel and earmarked for potential strategic use in the future. This plutonium is not subject to safeguards and it is possible that in the future it could be used either to manufacture weapons or as a fuel in weapons-grade plutonium-producing fast breeder reactors.</p> <p>The plutonium has been extracted from heavy water reactors operating under the IAEA safeguards agreement. There are plans to construct a reprocessing plant to make fuel for fast reactors in the future.</p>		
North Korea	0.04	
<p>North Korea reported to China in June 2008 that it possessed 31-37kg. According to the estimates of Kang et al. (2021), the estimated stockpile is between 24kg and 41kg. The International Panel of Fissile Materials (IPFM) estimate is 40kg.</p>		
Japan		45.5
<p>Japan has 8.9 tons in Japan, and 36.6 tons overseas (21.2 tons in the UK and 15.4 tons in France) (INFCIRC/549 published on September 4, 2020, domestically announced by the Japan Atomic Energy Commission (AEC) on August 21, 2020). The large-scale Rokkasho Reprocessing Plant with the capacity to reprocess 800 tons of spent fuel per year is expected to be completed in 2022. Japan's plutonium is expected to have increased by 0.6 tons by the end of 2020 (the portion allotted to Japan from the plutonium being stored in the U.K.) (Kakujoho (Nuclear Information) http://kakujoho.net/e/index.html).</p>		
Other Non-nuclear Weapon Countries *		0.7
<p>* *Balance in INFCIRC/549. Thought to be owned by the Netherlands, Italy, Spain, Switzerland and Germany.</p>		
Total	148	390