



# Plutonium and Highly Enriched Uranium 2015

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## Summary Tables and Charts

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**Table 1. HEU and Plutonium Worldwide, End of 2014 (tonnes)**

		<b>Plutonium<sup>1</sup></b>	<b>HEU<sup>2</sup></b>	<b>Total<sup>3</sup></b>
<b>Civil Stocks</b>	Irradiated	2,113	42	
	Unirradiated	275		
<i>Subtotal</i>		2,388	42	<b>2,430</b>
<b>Military Stocks</b>	Military Stocks and Reserves <sup>4</sup>	129	1,061	
	Naval		152.5	
	Excess	111	116	
	Reactors		5.5	
<i>Subtotal</i>		240	1,335	<b>1,575</b>
<b>Total</b>		<b>2,627</b>	<b>1,377</b>	<b>4,005</b>

<sup>1</sup> See David Albright and Serena Kelleher-Vergantini, *Military Highly Enriched Uranium and Plutonium Stocks in Acknowledged Nuclear Weapon States, end of 2014*, November 3, 2015, [http://isis-online.org/uploads/isis-reports/documents/Military\\_HEU\\_and\\_Pu\\_Stocks\\_in\\_Acknowledged\\_NWS\\_November3\\_2015\\_Final.pdf](http://isis-online.org/uploads/isis-reports/documents/Military_HEU_and_Pu_Stocks_in_Acknowledged_NWS_November3_2015_Final.pdf); and David Albright, Serena Kelleher-Vergantini, and Daniel Schnur *Civil Plutonium Stocks Worldwide, end of 2014*, November 16, 2015, [http://isis-online.org/uploads/isis-reports/documents/Civil\\_Plutonium\\_Stocks\\_Worldwide\\_November\\_16\\_2015\\_FINAL.pdf](http://isis-online.org/uploads/isis-reports/documents/Civil_Plutonium_Stocks_Worldwide_November_16_2015_FINAL.pdf).

<sup>2</sup> See David Albright and Serena Kelleher-Vergantini, *Civil HEU Watch. Tracking Inventories of Civil Highly Enriched Uranium. National and Global Stocks, as of End 2014*, October 7, 2015, [http://isis-online.org/uploads/isis-reports/documents/Civil\\_Stocks\\_of\\_HEU\\_Worldwide\\_October\\_7\\_2015\\_Final.pdf](http://isis-online.org/uploads/isis-reports/documents/Civil_Stocks_of_HEU_Worldwide_October_7_2015_Final.pdf); and *Military Highly Enriched Uranium and Plutonium Stocks* (op.cit).

<sup>3</sup> Rounded.

<sup>4</sup> This category includes naval reserves.

**Table 2. Plutonium and HEU Holdings by Country, end 2014 (tonnes)<sup>5</sup>**

	PLUTONIUM						HIGHLY ENRICHED URANIUM <sup>6</sup>						TOTAL		
	CIVIL			MILITARY			Pu Total	CIVIL			MILITARY			HEU Total	
	Irr.	Unirr.	Civil Subtotal	Military	Excess	Military Subtotal		Military	Naval	Excess	Other	Military Subtotal			
Argentina	17.60		17.6			17.6	0.004						0.004	17.6	
Armenia	2.1		2.1			2.1								2.1	
Australia							0.002						0.002	0.002	
Austria															
Belarus							0.28						0.28	0.28	
Belgium	40	0.9	40.9			40.9	0.58						0.58	41.48	
Brazil	5.9		5.9			5.9								5.9	
Bulgaria	8.8		8.8			8.8								8.8	
Canada	213		213			213	1.035						1.035	214.04	
Chile															
China	32.5	0.025	32.53	1.9		1.9	34.425	1	19.4				19.4	20.4	54.83
Colombia															
Czech Republic	16.8		16.8			16.8									16.8
Denmark															
Finland	17.6		17.6			17.6									17.6
France	275.6	78.8	354.4	5.3		5.3	359.7	4.653	24	1		5.5	30.5	35.153	394.85
Georgia															
Germany	113	2.1	115.1			115.1	1.26							1.26	116.36
Ghana							0.001							0.001	0.001
Greece															
Hungary	10.8		10.8			10.8									10.8
India	31.9	2.9	34.8	0.55		0.55	35.35	0.005	0.15	0.66			0.81	0.815	36.17
Indonesia								0.003						0.003	0.003
Iran								0.007						0.007	0.007
Israel				0.66		0.66	0.66	0.022						0.022	0.68
Italy	0.4		0.4			0.4	0.4	0.1225						0.1225	0.52
Jamaica								0.0008						0.0008	0.0008
Japan	161	10.8	171.8			171.8	1.8							1.8	173.6
Kazakhstan	3		3			3	10.0505							10.0505	13.05
Latvia															
Libya															
Lithuania	12.33		12.33			12.33									12.33
Mexico	5.20		5.20			5.2									5.2
Netherlands	1.4	0.15	1.55			1.55		0.6						0.6	2.15
Nigeria								0.001						0.001	0.001
North Korea				0.035		0.035	0.035	0.042	0.17				0.17	0.212	0.25

<sup>5</sup> Holdings represent the stocks present in the country. If one country has material located overseas, it is accounted for in the host country's stockpile.

<sup>6</sup> Includes both irradiated and separated HEU. The vast bulk of HEU is separated (unirradiated). However, the estimates presented in this table do not make a distinction between irradiated and separated HEU because of sensitivities about security at many sites at which the HEU is located.

PLUTONIUM								HIGHLY ENRICHED URANIUM						
	CIVIL			MILITARY			Pu Total	CIVIL	MILITARY				HEU Total	
	Irr.	Unirr.	Civil Subtotal	Military	Excess	Military Subtotal			Military	Naval	Excess	Other		Military Subtotal
Norway								0.004					0.004	0.004
Pakistan	2.17		2.17	0.205		0.205	2.375	0.017	3.08				3.08	3.097
Philippines														
Poland								0.0604						0.0604
Portugal														
Romania	10.4		10.4				10.4							10.4
Russia	146.5	52.7	199.2	83	45	128	327.2	17.5	660	50	2		712	729.5
Serbia														
Slovakia	14.3		14.3				14.3							14.3
Slovenia	4.3		4.3				4.3							4.3
South Africa	9.46		9.46				9.46	0.725					0.725	10.19
South Korea	97.86		97.86				97.86							97.86
Spain	44.4		44.4				44.4							44.4
Sweden	54.4		54.4				54.4							54.4
Switzerland	18	0.025	18.03				18.025	0.006					0.006	18.03
Syria								0.001					0.001	0.001
Taiwan	32.4		32.4				32.4							32.4
Thailand														
Turkey														
Ukraine	50.6		50.6				50.6							50.6
United Kingdom	30	126.3	156.3	3.2	4.4	7.6	163.9	1.398	19.5	5.85			25.35	26.748
United States	629		629	33.9	61.5	95.4	724.4	<1 <sup>7</sup>	335	95	114		544	545
Uzbekistan								0.005						0.005
Vietnam														
Others								0.0007						0.0007
TOTAL <sup>8</sup>	2,113	275	2,387	129	111	240	2,627	42	1,061	152	116	5.5	1,335	1,377

<sup>7</sup> This material represents HEU that was in NRC licensed, non-DOE facilities, such as university reactors.

<sup>8</sup> Rounded.

**Table 3. Fissile Materials of Special Concern:  
Stocks of Separated Plutonium & HEU (end 2014, in tonnes)<sup>i,ii</sup>**

	SEPARATED PLUTONIUM			HEU			TOTAL
	Military <sup>iii</sup>	Civil	Subtotal	Military <sup>iv</sup>	Civil	Subtotal	
<b>Argentina</b>					0.004	0.004	<b>0.004</b>
<b>Australia</b>					0.002	0.002	<b>0.002</b>
<b>Belarus</b>					0.28	0.28	<b>0.28</b>
<b>Belgium</b>		0.9	0.9		0.58	0.58	<b>1.48</b>
<b>Canada</b>					1.035	1.035	<b>1.035</b>
<b>China</b>	1.9	0.025	1.925	19.4	1	20.4	<b>22.325</b>
<b>France</b>	5.3	78.8	84.1	30.5	4.653	35.153	<b>119.253</b>
<b>Germany</b>		2.1	2.1		1.26	1.26	<b>3.36</b>
<b>India<sup>v</sup></b>	0.55	2.9	3.45	0.81	0.005	0.815	<b>4.265</b>
<b>Indonesia</b>					0.003	0.003	<b>0.003</b>
<b>Iran</b>					0.007	0.007	<b>0.007</b>
<b>Israel<sup>vi</sup></b>	0.66		0.66		0.022	0.022	<b>0.682</b>
<b>Italy</b>					0.1225	0.1225	<b>0.1225</b>
<b>Japan</b>		10.8	10.8		1.8	1.8	<b>12.6</b>
<b>Kazakhstan</b>					10.0505	10.0505	<b>10.0505</b>
<b>Netherlands</b>		0.15	0.15		0.6	0.6	<b>0.75</b>
<b>North Korea<sup>vii</sup></b>	0.035		0.035	0.17	0.042	0.212	<b>0.247</b>
<b>Norway</b>					0.004	0.004	<b>0.004</b>
<b>Pakistan<sup>viii</sup></b>	0.205		0.205	3.08	0.017	3.097	<b>3.302</b>
<b>Poland</b>					0.0604	0.0604	<b>0.0604</b>
<b>Russia</b>	128	52.7	180.7	712	17.5	729.5	<b>910.2</b>
<b>South Africa<sup>ix</sup></b>					0.725	0.725	<b>0.725</b>
<b>Switzerland</b>		0.025	0.025		0.006	0.006	<b>0.031</b>
<b>United Kingdom</b>	7.6	126.3	133.9	25.35	1.398	26.748	<b>160.648</b>
<b>United States</b>	95.4		95.4	544	1	545	<b>640.4</b>
<b>Uzbekistan</b>					0.005	0.005	<b>0.005</b>
<b>Others<sup>x</sup></b>		<1			0.0057	0.0057	<b>0.0057</b>
<b>TOTAL<sup>xi</sup></b>	<b>239.65</b>	<b>274.7</b>	<b>514.35</b>	<b>1,335.31</b>	<b>42.18</b>	<b>1,377.49</b>	<b>1,891.8</b>

<sup>i</sup> Holdings represent the stocks present in the country. If one country has material located overseas, it is accounted for in the host country's stockpile.

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<sup>ii</sup> This table estimates stocks of separated plutonium and both separated and irradiated HEU in several countries. Many of the listed countries are of special concern because of the risk of fissile material diversion for use by terrorists. Separated plutonium and HEU are directly usable in nuclear weapons. Most of the HEU is unirradiated. In addition, much of the irradiated HEU stock is not very radioactive and is relatively easy to transport. Irradiated plutonium, or better plutonium unseparated from power reactor spent fuel, while still posing a proliferation risk, is more difficult for terrorists to handle and convert into a nuclear weapon, and is not included in this table.

<sup>iii</sup> Includes military plutonium as well as separated plutonium declared excess to military needs.

<sup>iv</sup> Includes military plutonium as well as separated plutonium declared excess to military needs.

<sup>v</sup> See David Albright and Serena Kelleher-Vergantini, *India's Stocks of Civil and Military Plutonium and Highly Enriched Uranium, End 2014*, November 2, 2015, [http://isis-online.org/uploads/isis-reports/documents/India\\_Fissile\\_Material\\_Stock\\_November2\\_2015-Final.pdf](http://isis-online.org/uploads/isis-reports/documents/India_Fissile_Material_Stock_November2_2015-Final.pdf).

<sup>vi</sup> See David Albright, *Israel's Military Plutonium Inventory, November 19, 2015*, [http://isis-online.org/uploads/isis-reports/documents/Israel\\_Military\\_Plutonium\\_Stock\\_November\\_19\\_2015\\_Final.pdf](http://isis-online.org/uploads/isis-reports/documents/Israel_Military_Plutonium_Stock_November_19_2015_Final.pdf).

<sup>vii</sup> See David Albright, *North Korean Plutonium and Weapon-Grade Uranium Inventories*, October 7, 2015, [http://isis-online.org/uploads/isis-reports/documents/North\\_Korean\\_Fissile\\_Material\\_Stocks\\_Jan\\_30\\_2015\\_revised\\_Oct\\_5\\_2015-Final.pdf](http://isis-online.org/uploads/isis-reports/documents/North_Korean_Fissile_Material_Stocks_Jan_30_2015_revised_Oct_5_2015-Final.pdf).

<sup>viii</sup> See David Albright, *Pakistan's Inventory of Weapon-Grade Uranium and Weapon-Grade Plutonium Dedicated to Nuclear Weapons*, October 19, 2015, [http://isis-online.org/uploads/isis-reports/documents/Pakistan\\_WGU\\_and\\_WGPu\\_inventory\\_Oct\\_16\\_2015\\_final\\_1.pdf](http://isis-online.org/uploads/isis-reports/documents/Pakistan_WGU_and_WGPu_inventory_Oct_16_2015_final_1.pdf).

<sup>ix</sup> See David Albright, *Highly Enriched Uranium Inventories in South Africa. Status as of end of 2014*, November 16, 2015, [http://isis-online.org/uploads/isis-reports/documents/Highly\\_Enriched\\_Uranium\\_Inventories\\_in\\_South\\_Africa\\_November\\_2015.pdf](http://isis-online.org/uploads/isis-reports/documents/Highly_Enriched_Uranium_Inventories_in_South_Africa_November_2015.pdf).

<sup>x</sup> This value includes holdings in non-nuclear weapon states that received US and Russian-origin HEU and plutonium that are not listed separately in this table and countries with Chinese-supplied research reactors.

<sup>xi</sup> Rounded.