Institute for Science and International Security

ISIS REPORT

Guidelines for the Management of Plutonium (INFCIRC/549): Background and Declarations

April 1, 2004, *Revised August 16, 2005, September 16, 2010*

In 1998, the International Atomic Energy Agency (IAEA) published *Guidelines for the Management of Plutonium* (INFCIRC/549). These guidelines, agreed to by the five declared nuclear weapon states, plus Belgium, Germany, Japan, and Switzerland, increased the transparency of the management of civil plutonium by publishing annual statements of each country's holdings of civil plutonium.

At the end of 2008, the latest year for which data are available, the declarations show a total of 256 metric tonnes of civil unirradiated plutonium in seven countries (see Figure 1). This represents an increase of approximately 5 metric tonnes from the previous year and an increase of 95 metric tonnes since the beginning of the study in 1996.[1] The total at the end of 2008 does not include any plutonium declared excess to defense requirements by the United States, Russia or other nuclear weapons states; only the United States has declared this plutonium in any case in INFCIRC/549 declarations. (U.S. declarations are in Table 10.). The total above also does not include India's civil unirradiated plutonium. In addition, the Netherlands, Sweden, Spain, and Italy have contracted for reprocessing services abroad but do not participate in 549-arrangements. About 57 tonnes of the 256 tonnes of plutonium is owned by countries other than those that currently store it. The major owners of this plutonium are Germany, Japan, and Switzerland. Almost all of this plutonium is held in France and the United Kingdom, which have commercial reprocessing plants (See Figures 3 and 7 respectively).

With over ten years of declarations, both the strengths and weaknesses of this regime are apparent. The 549-Guidelines have unquestionably increased the transparency of civil plutonium stocks. Declarations by a few countries remain persistently incomplete-the German and Swiss governments do not appear to know the amount of unirradiated plutonium held overseas by their utilities. States have not agreed on how to include plutonium excess to defense needs. In addition, civil highly enriched uranium declarations are provided by only three countries.

After ten years, the members of this transparency regime should meet to review the guidelines. The states should explore ways to improve the accuracy and completeness of the declarations and consider broadening them to include both civil HEU stocks and total military stocks of plutonium. In addition, the existing members should invite additional countries that have civil unirradiated plutonium stocks to participate in the declarations.

[1] At the time of this update, data from Belgium's declaration for 2008 were not available. If Belgium's civil unirradiated plutonium stocks remain reasonably constant, the total for 2008 is likely to increase by 1 – 2 tonnes. For the purpose of the total, this revision estimates Belgium's stocks at 1.4 tonnes.

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The final communiqué of the 2010 Nuclear Security Summit[2] placed emphasis on the importance of promoting measures to "to secure, account for, and consolidate" HEU and plutonium. By expanding the number of 549 states and improving methods of reporting these data, nuclear states can use the existing 549 declarations mechanism to effectively work towards this goal.

Background

In December 1992 the IAEA initiated a series of meetings involving countries with the largest civil plutonium holdings in order to determine the necessity of international methods of managing plutonium.[1] These countries were concerned about the increasing amounts of civil separated plutonium and the large quantities of fissile material that were expected to result from the dismantling of nuclear weapons. One year later, the IAEA convened an unofficial study of ways to manage plutonium. Participants decided that the countries with separated plutonium stocks would agree to methods of plutonium management among themselves rather than to have the IAEA act as mediator. (However, the IAEA has provided a place to meet and has published the guidelines and annual declarations.)[3]

The nine countries listed above reached agreement in late 1997 on norms for responsible government management of inventories of separated, unirradiated plutonium. The guidelines and the first declarations were published in March 1998.[4] In principle, the guidelines cover all plutonium in all peaceful nuclear activities, but focus on the material that poses the most proliferation concern. The guidelines thus cover separated plutonium in storage, in unirradiated mixed-oxide (MOX) fuel elements, in other unirradiated fabricated forms, and in the course of manufacture or fabrication into these items. Although plutonium in spent fuel is not the focus of these guidelines, each country has agreed to publish annual estimates of the amount of plutonium in its spent nuclear fuel. The guidelines also cover plutonium declared excess to military nuclear programs.

The guidelines do not cover plutonium that is more than 80 percent plutonium 238, plutonium used in gram quantities, or plutonium on which IAEA safeguards have been terminated or exempted. They do not apply to the management of highly enriched uranium (HEU), but they do recognize the need to manage HEU with the same vigilance as separated plutonium.

The guidelines express agreement that civil plutonium should be handled in accordance with major nonproliferation treaties; international agreements or conventions on safety, physical protection, material accountancy and control, and safeguards; and rules on international transfers of civil plutonium.[5] The countries also agreed to formulate national strategies on plutonium management, which will consider the risks of proliferation, especially during storage before irradiation or permanent disposal; the need to protect the environment, workers and the public; and the resource value of the material. These strategies are also to take into account the importance of balancing

[2] "Communiqué of the Washington Nuclear Security Summit." *The White House*,13 April 2010. http://www.whitehouse.gov.
[3] For a first hand summary of the origins of the guidelines, see the remarks of Jim Finucane, from the conference "Civil Separated Plutonium Stocks: Planning for the Future," sponsored by the Institute for Science and International Security, March 14, 2000. The proceedings are available online at http://www.isis-online.org/publications/civil_pu_conference/index.html.
[4] The declarations in 1998 contained data from 1996.
[5] Facets of proper plutonium management are already covered by several international agreements. INFCIRC/549 reconfirms those pledges and develops more fully guidelines for international transfers of plutonium.

supply and demand, in essence trying to minimize the amount of separated or unirradiated plutonium as soon as practical.

A major accomplishment of these guidelines is the agreement by each of these nine nations to publish:

- Occasional brief statements explaining its national strategy for nuclear power and spent fuel, and its general plans for managing national holdings of plutonium;

- An annual statement of its holding of all plutonium subject to the guidelines; and

- An annual statement of its estimate of the plutonium contained in its holdings of spent civil reactor fuel.

The Declarations

Table 1 below shows the 2008 declarations for all of the INFCIRC/549 participating countries. Tables 2 through 10 show each country's submission for each year.

This declaration system is now a mature program. Submissions are regularly offered in a timely manner. The submissions are available on the IAEA's website for anyone who wishes to review them. States continue to periodically provide narrative descriptions of their plutonium management policies in their declarations.

As the submissions are voluntary, however, some states still do not provide all of the information asked for in the *Guidelines*. Germany does not reveal the amount of separated plutonium located in Germany but owned by other states, or more importantly, the amount of German separated plutonium held elsewhere. Germany's omission appears to have more to do with lack of centralized accounting than unwillingness to provide the quantities. Since 2006, Japan declares only the amount of fissile plutonium it owns in other countries, not the total amount (the Japanese values are corrected in this study). These omissions make it difficult to amass a complete picture of the civil plutonium stockpile in these key countries. In addition, the picture remains incomplete because of a lack of declarations from India, Italy, the Netherlands, Spain, and Sweden.

Although many countries submit their declarations in a timely fashion, the at-will nature of the program allows countries to submit their INFCIRC/549 declarations in whatever time frame a country deems appropriate. This results in the lack of certain data. At the time of this revision, the data from Belgium and China for the end of 2008 were not yet available.

Helpfully, three states now regularly disclose in their INFCIRC/549 declarations the amount of civil highly enriched uranium (HEU) they possess. These states are the United Kingdom, Germany, and France.

Not all nuclear weapon states appear willing to declare excess stocks of military plutonium at this time. The Russian Federation and China have indicated in their submissions under INFCIRC/549 that they will include excess military plutonium in their declarations only after this material has been transferred to peaceful uses.

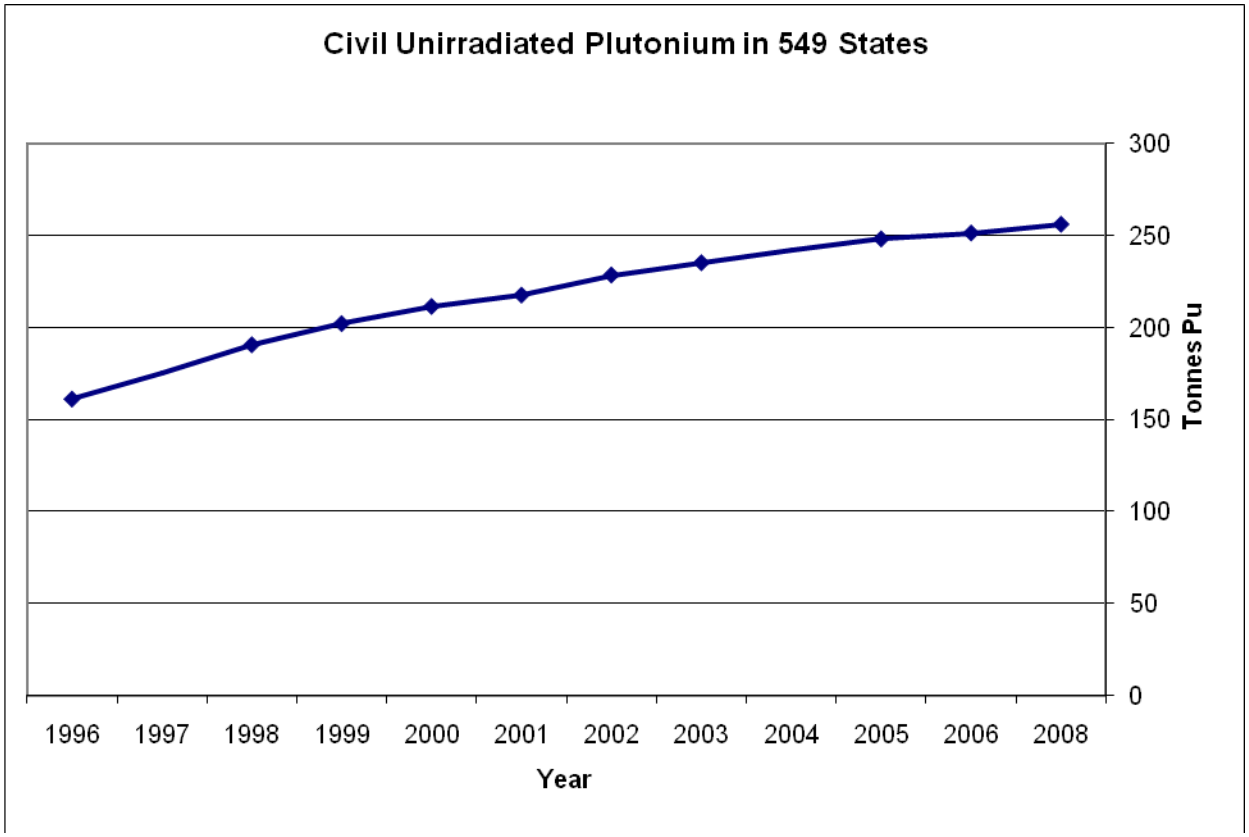
In the declarations, the quantities of separated or unirradiated plutonium are rounded to100 kilograms and the amounts of plutonium in spent fuel are rounded to 1,000 kilograms. However, values for separated and unirradiated material, particularly of recently separated plutonium, should be accurate to well within a hundred kilograms. One issue affecting the accuracy of the plutonium values is whether the decay of plutonium 241 to americium 241 is factored into the inventory declarations. Plutonium 241, which is an isotope that comprises roughly 10 percent of civil plutonium, has a halflife of 13.2 years. Therefore, it decays relatively quickly to americium 241, reducing the total quantity of plutonium. If not taken into account, plutonium 241 decay would affect the size of older inventories of separated plutonium, such as those in Britain, Russia, and the United States. In addition, the declarations do not specify whether estimates of
plutonium in spent fuel account for plutonium 241 decay.

Table 1: Civil Unirradiated Plutonium 2008 in 549-States*

	Belgium	China	France	Germany	Japan	Russia	Switzerland	UK	US
Was INFCIRC/549 declaration for 2003 submitted to the IAEA as of December 31, 2009?	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1. Unirradiated separated plutonium in product stores at reprocessing plants.		0	49.3	N/A	4.4	45.2	Not declared	104.7	0
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or fabricating plants or elsewhere		0	7.1	0.0	3.5	0	Not declared	1.3	<.05
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.		0	26.6	5.6	1.3	300	Not declared	1.9	4.6
4. Unirradiated separated plutonium held elsewhere.		0	.8	0.0	.4	1	<50 kg	1.1	49.3
Note:									
(i) Plutonium included in lines 1-4 above belonging to foreign bodies.		0	28.3	Not declared	0	.3	Not declared	27.0	0
(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.		0	<50 kg	Not declared	25.2	.6	1	.9	0
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.		0	0	0.0	0	N/A	Not declared	0	0

* All quantities in tonnes.

Figure 1: Civil Unirradiated Plutonium in 549-States



Note: 2008 includes an estimation of Belgium's stocks, as no 549 declaration had been submitted as of this revision. Additionally, the United States' plutonium data have been omitted from this data due to difficulties separating civil from military plutonium stocks.

Table 2: Belgium – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
1. Unirradiated separated plutonium in product stores at reprocessing plants.	0	0	0	0	0	0	0	0	0	0	0	0	
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	2.6	2.8	2.8	2.5	2.1	1.9	1.9	2.1	2.1	1.7	0.3	0	
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	.1	0	1.0	1.4	.6	1.0	1.5	1.4	1.2	1.1	0.3	1.4	
4. Unirradiated separated plutonium held elsewhere.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	
Note:													
(i) Plutonium included in lines 1-4 above belonging to foreign	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	.3	1.4	

bodies.													
(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.	N/A	.8	1.0	.9	.6	1.0	.4	.4	.4	0	0	0	
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	0	0	0	0	0	0	0	0	0	0	0	0	

Figure 2: Civil Unirradiated Plutonium in Belgium

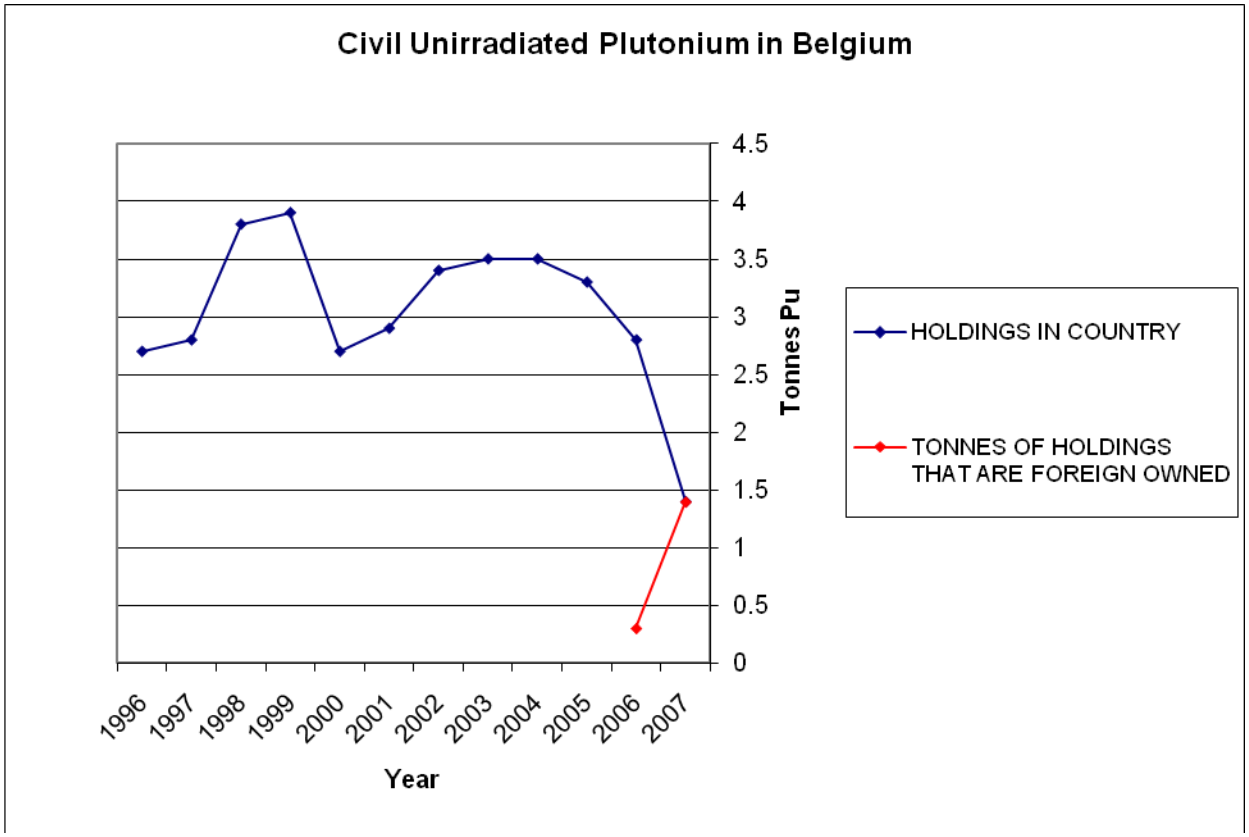


Table 3: China – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
1. Unirradiated separated plutonium in product stores at reprocessing plants.	0		0		0	0	0	0	0	0	0	0	
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	0		0		0	0	0	0	0	0	0	0	
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	0		0		0	0	0	0	0	0	0	0	
4. Unirradiated separated plutonium held elsewhere.	0		0		0	0	0	0	0	0	0	0	0
Note:													
(i) Plutonium included in lines 1-4 above belonging to foreign bodies.	0		0		0	0	0	0	0	0	0	0	0
(ii) Plutonium in any of the forms in	0		0		0	0	0	0	0	0	0	0	0

lines 1-4 above held in locations in other countries, therefore not included above.													
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	0		0		0	0	0	0	0	0	0	0	0

Table 4: France – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1. Unirradiated separated plutonium in product stores at reprocessing plants.	43.6	48.4	52.0	55.0	53.7	51.1	48.7	48.6	50.7	49.8	48.6	49.5	49.3
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	11.3	12.2	11.8	13.0	14.8	14.1	15.0	13.3	12.7	14.4	12.7	9.7	7.1
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	5.0	6.3	6.8	8.2	9.2	9.9	12.7	13.2	12.8	15.9	19.6	22.1	26.6
4. Unirradiated separated plutonium held elsewhere.	5.5	5.4	5.3	5.0	5.0	5.4	3.5	3.5	2.3	1.1	1.2	0.9	0.8
Note:													
(i) Plutonium included in lines 1-4 above	30.0	33.6	35.6	37.7	38.5	33.5	32	30.5	29.7	30.3	29.7	27.3	28.3

belonging to foreign bodies.													
(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 3: Civil Unirradiated Plutonium in France

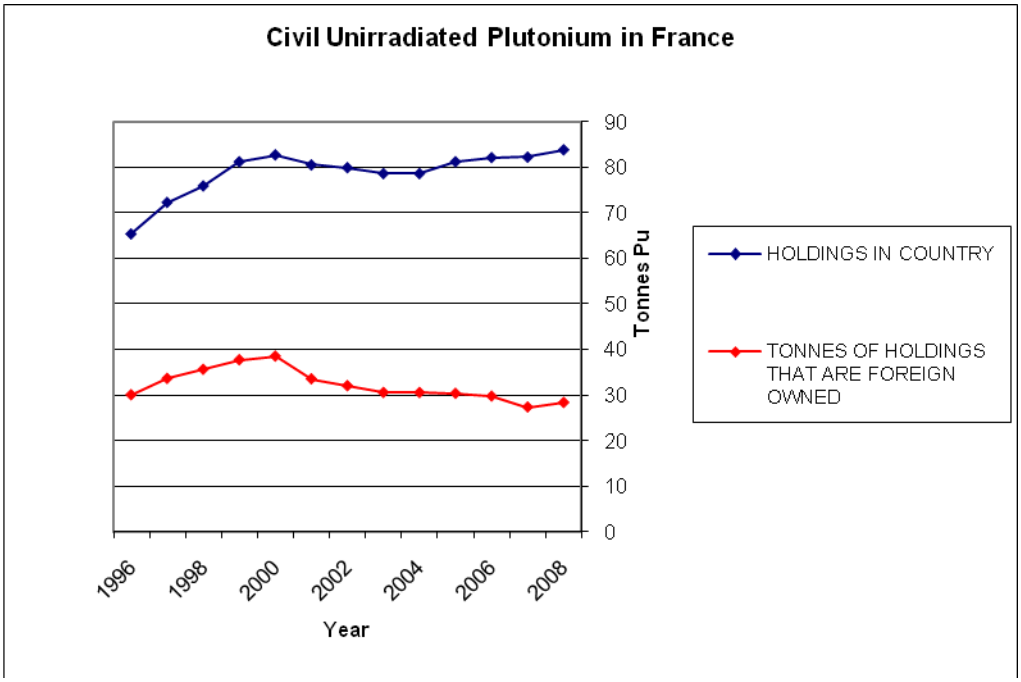


Table 5: Germany – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1. Unirradiated separated plutonium in product stores at reprocessing plants.	0	0	0	N/A	N/A	N/A	0	0	N/A	N/A	N/A	N/A	N/A
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	0.4	0.3	0.4	0.58	0.44	0.3	0.1	0	0	0	0	0	0
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	2.7	3.9	4.8	5.48	7.58	9.0	9.3	10.8	10.8	11.6	10.4	5.5	5.6
4. Unirradiated separated plutonium held elsewhere.	1.8	1.8	1.3	1.13	1.10	1.6	1.7	1.7	1.5	0	0	0	0
Note:													
(i) Plutonium included in lines 1-4 above belonging to foreign bodies.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.

(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	0	0	0	Not decl.	Not decl.	Not decl.	0	0	0	0	0	0	0

Figure 4: Civil Unirradiated Plutonium in Germany

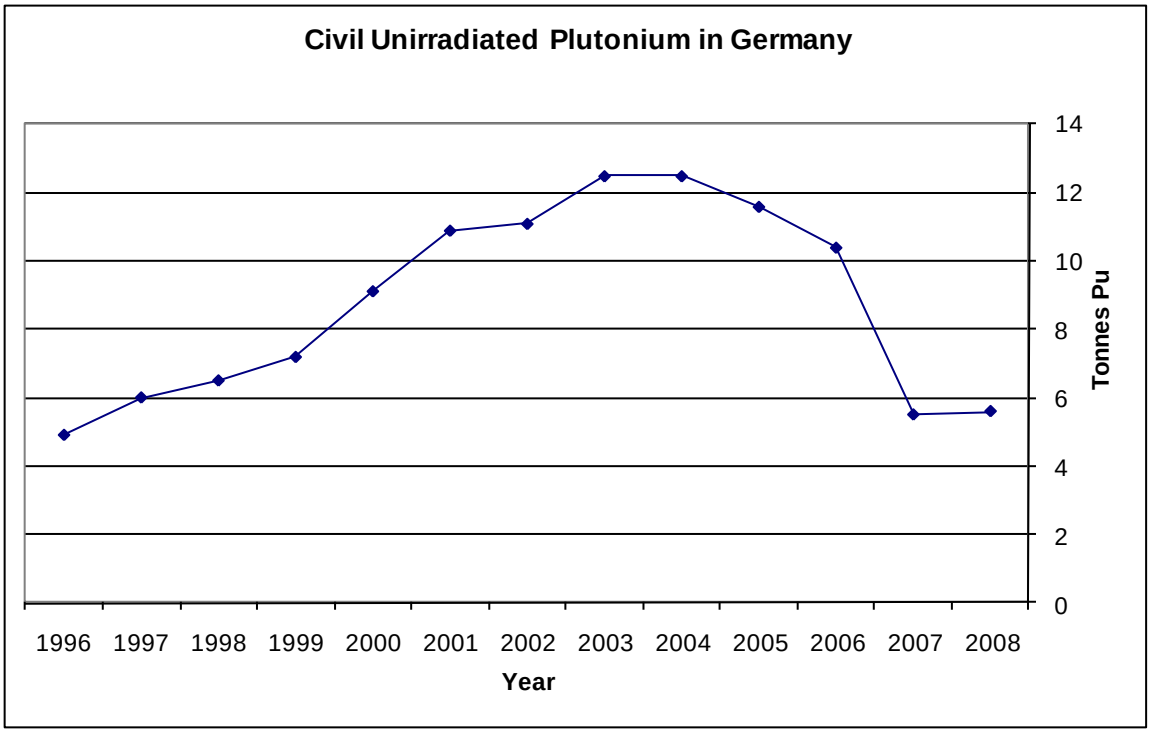


Table 6: Japan – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1. Unirradiated separated plutonium in product stores at reprocessing plants.	0.6	0.5	0.5	0.5	0.6	0.8	0.8	0.7	0.8	0.8	1.6	3.4	4.4
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	3.1	3.3	3.2	3.1	3.1	2.9	3.0	3.2	3.1	3.4	3.5	3.7	3.5
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	0.9	0.8	0.8	1.2	1.2	1.5	1.1	1.1	1.3	1.3	1.2	1.2	1.3
4. Unirradiated separated plutonium held elsewhere.	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Note:													
(i) Plutonium included in lines 1-4 above belonging to foreign bodies.	0	0	0	0	0	0	0	0	0	0	0	0	0
(ii) Plutonium in any	15.1	19.1	24.4	27.6	32.1	32.4	33.3	35.2	37.4	38*	38*	38*	38*

of the forms in lines 1-4 above held in locations in other countries, therefore not included above.													
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	0	0	0	0	0	0	0	0	0	0	0	0	0

- Number estimated based on Japan's declaration of fissile Plutonium

Figure 5: Civil Unirradiated Plutonium in Japan

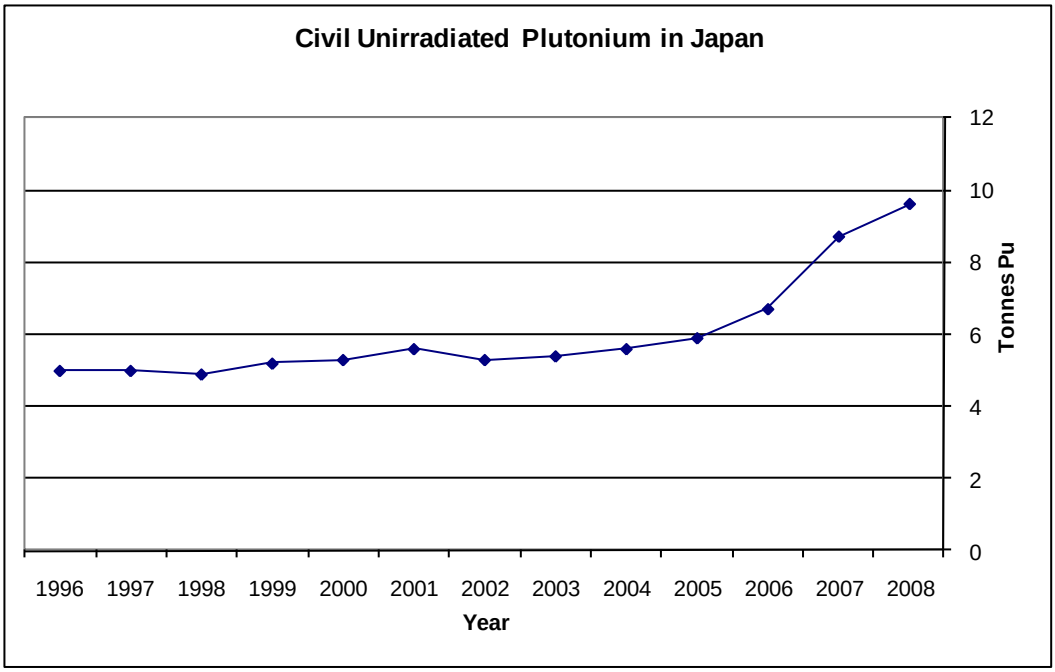


Table 7: Russia – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1. Unirradiated separated plutonium in product stores at reprocessing plants.	27.2		29.2	30.9	32.3	34.0	36.0	37.3	38.5	40.0	41.1	43.6	45.2
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	Incl. in 27.2		Not decl.	Not decl	Not decl	Not decl	Not decl	Not decl	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	0.063		0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
4. Unirradiated separated plutonium held elsewhere.	0.87		0.9	0.9	0.9	1.0	1.0	1.0	0.9	0.9	1	1	1
Note:													
(i) Plutonium included in lines 1-4	Not decl.		Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	0.0003	0.0003	0.0003	0.0003

above belonging to foreign bodies.													
(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.	Not decl.		Not decl.	Not decl.	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.00006
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	Not decl.		Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.

Figure 6: Civil Unirradiated Plutonium in Russia

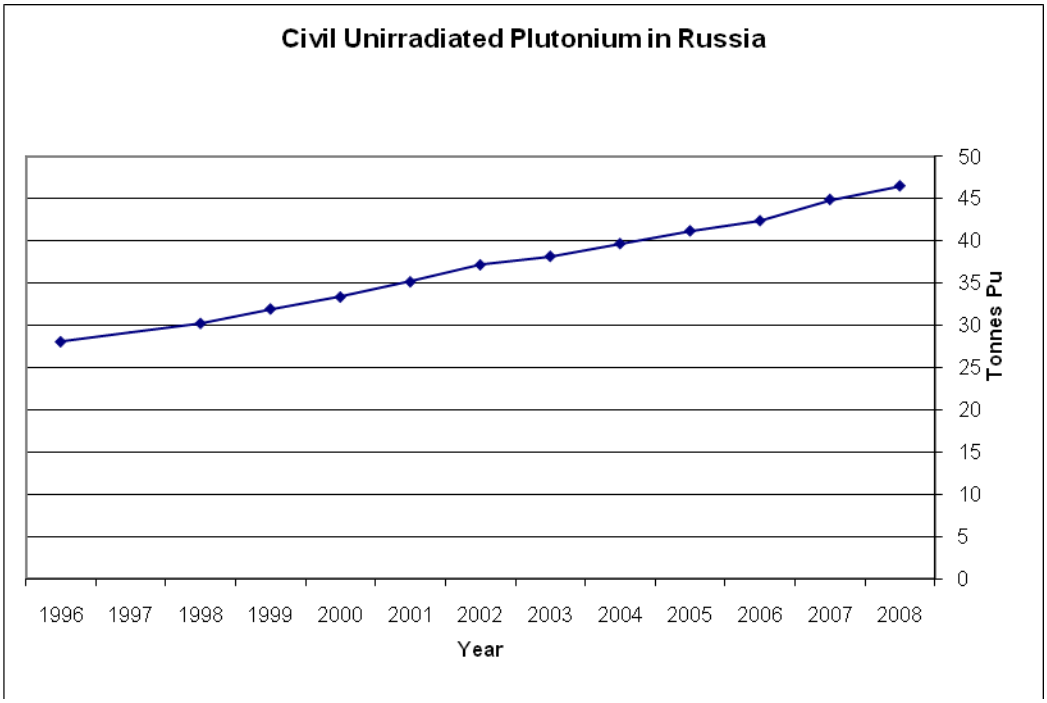


Table 8: Switzerland – Civil Unirradiated Plutonium 1996 – 2003

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1. Unirradiated separated plutonium in product stores at reprocessing plants.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	0.1	0.6	Not decl.	0.6	0.6	Not decl.	0.8	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.
4. Unirradiated separated plutonium	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

held elsewhere.													
Note:													
(i) Plutonium included in lines 1-4 above belonging to foreign bodies.	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.	Not decl.	0	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	3	2	1	1	1
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	Not decl.	0	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.	Not decl.

Table 9: United Kingdom – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1. Unirradiated separated plutonium in product stores at reprocessing plants.	52.1	57.4	66.1	69.5	75.1	79.9	86.5	92.7	98.8	101.1	102.9	103.8	104.7
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	0.5	0.5	0.8	0.8	0.8	0.8	0.9	1.0	1.0	1.2	1.2	1.3	1.3
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	2.2	2.2	2.2	2.2	2.2	1.7	1.9	1.9	1.9	2.0	1.9	1.9	1.9
4. Unirradiated separated plutonium held elsewhere.	0	0	0	0	0	0	1.5	0.6	0.9	1.0	1.0	1.0	1.1
Note:													
(i) Plutonium included in lines 1-4 above belonging to foreign bodies.	3.8	6.1	10.2	11.8	16.6	17.1	20.9	22.5	25.9	26.5	26.5	26.8	27.0

(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 7: Civil Unirradiated Plutonium in the United Kingdom

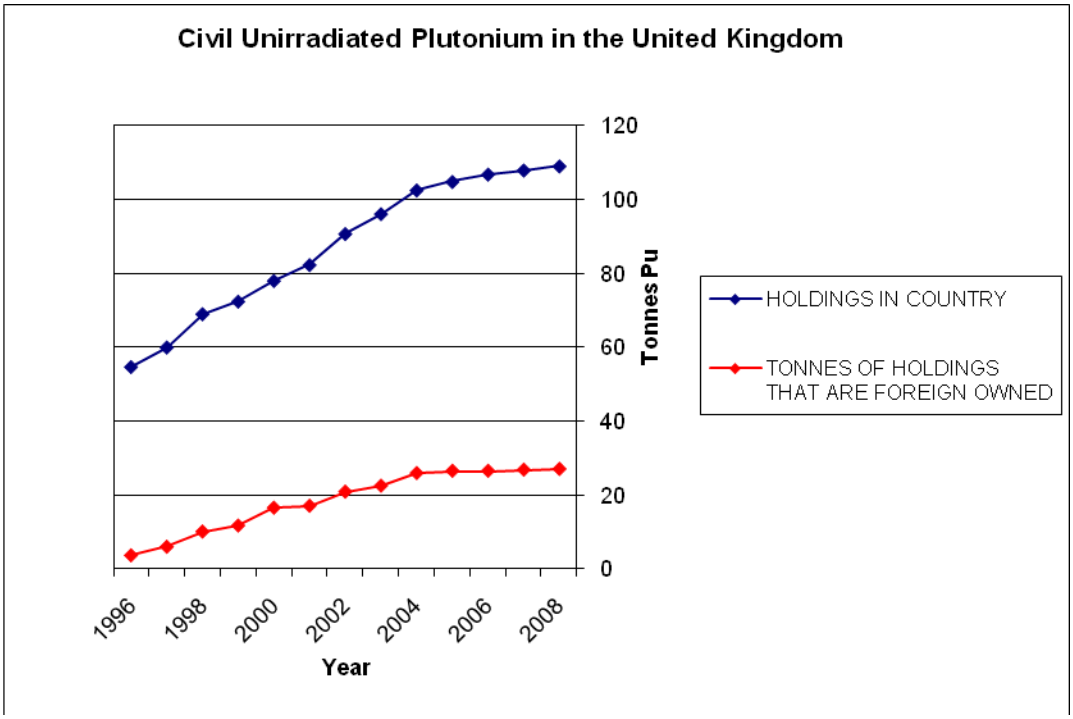


Table 10: United States – Civil Unirradiated Plutonium 1996 – 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Was INFCIRC/549 declaration submitted to the IAEA?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
1. Unirradiated separated plutonium in product stores at reprocessing plants.	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Unirradiated separated plutonium in the course of manufacture or fabrication and plutonium contained in unirradiated semifabricated or unfinished products at fuel or other fabricating plants or elsewhere	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
3. Plutonium contained in unirradiated MOX fuel or other fabricated products at reactor sites or elsewhere.	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.7	4.6	4.6	4.6
4. Unirradiated separated plutonium held elsewhere.	<40.4	40.5	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.3	40.3	49.3	49.3
Note:													
(i) Plutonium included in lines 1-4	0	0	0	0	0	0	0	0	0	0	0	0	0

above belonging to foreign bodies.													
(ii) Plutonium in any of the forms in lines 1-4 above held in locations in other countries, therefore not included above.	0	0	0	0	0	0	0	0	0	0	0	0	0
(iii) Plutonium included in lines 1-4 above which is in international shipment prior to its arrival in the recipient State.	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 8: Civil Unirradiated Plutonium in the United States