European Commission

Radiation protection 127

Radioactive effluents from nuclear power stations and nuclear fuel reprocessing plants in the European Union, 1995-1999

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Radioactive effluents from nuclear power stations and nuclear fuel reprocessing plants in the European Union, 1995 - 1999.

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Unit C.4, Radiation Protection

2001

CONTENTS

PREFACE

Reports on releases to the environment of radioactive materials in airborne and liquid effluents from Nuclear Power Stations and Nuclear Fuel Reprocessing Plants in the European Union are published periodically.

This report, the tenth in the series, deals with the period 1995-1999 and covers discharges from operational Nuclear Power Stations of capacity greater than 50 MWe as well as four Nuclear Fuel Reprocessing Plants (La Hague, Sellafield, Dounreay and Marcoule).

Nuclear Power Stations that have stopped operations and/or are being decommissioned have not been taken up in this report. Currently 73 Nuclear Power Stations totalling 148 reactors are operational and are spread over 64 different sites within the territory of the European Union. These figures take into account both the Dodewaard (NL) and Creys Malville (FR) power stations that respectively stopped operations in March 1997 and December 1998.

Data on radioactive gaseous and liquid effluent discharges from these installations are expressed both in absolute terms (GBq/annum) and normalised to net electricity production from the fuel (GBq/GWh). Some tables contain the measured releases per installation while other tables and figures contain the results of calculations to highlight general tendencies, for example the discharges per type of reactor. Data on individual nuclide contributions have been included. It should be noted that the list of individual nuclides routinely measured may vary from one installation to another. Also, the definition of groups of radionuclides may be different from one installation or Member State to another, as well as the way the corresponding activity is measured or calculated. This report does not attempt to clarify the situation. However, the Group of Experts established under Article 37 of the Euratom Treaty has started a programme of work to define which nuclides and nuclide categories, on the basis of their potential significance, should be included in future reports. The Group will also issue recommendations on how the corresponding activity discharges should be measured and summed to annual discharges.

The present report does not include a commentary on the radiological significance of the discharges. An assessment of population doses was carried out for the period 1977-1986 (RP77) and a new assessment for the period 1987-1996 will be completed and published by the end of the year 2001. However it can already be stated that in all cases the most exposed members of the public received only a fraction of the dose limit of 1 millisievert per year introduced in Community legislation in 1996[(1)].

The data presented are essentially those received by the Commission from Member States in pursuance of Article 8 (a) of the Commission's 1990 Recommendation[(2)] on the application of Article 37 of the Euratom Treaty. On occasion, however, the opportunity has been taken to complement the data thus received with material from other publicly available sources.

Whilst great care has been taken in the compilation of this report, the Commission apologises for any errors or omissions which may have resulted from transcription errors.

The authors would like to thank the national authorities for their co-operation in communicating the discharge data to the Commission.

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1 Council Directive of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation, 96/29/EURATOM (OJ L159 of 29.6.1996).

2 Commission Recommendation of 7 December 1990 on the application of Article 37 of the Euratom Treaty, 91/4/EURATOM (OJ L6 of 9.1.1991).

Nuclear Power Stations - General Characteristics

Member State Nuclear Power Station	Reactor type	Capacity (Mwe) [1]	Connected to grid in	Operations stopped in	Water body receiving liquid effluents
BELGIUM					
DOEL 1	PWR	392	1974		SCHELDT
DOEL 2	PWR	392	1975		SCHELDT
DOEL 3	PWR	1006	1982		SCHELDT
DOEL 4	PWR	985	1985		SCHELDT
TIHANGE 1	PWR	962	1975		MEUSE
TIHANGE 2	PWR	960	1982		MEUSE
TIHANGE 3	PWR	1015	1985		MEUSE
FINLAND					
LOVIISA 1	PWR	488	1977		GULF OF FINLAND
LOVIISA 2	PWR	488	1980		GULF OF FINLAND
OLKILUOTO 1	BWR	840	1978		BOTHNIAN SEA
OLKILUOTO 2	BWR	840	1980		BOTHNIAN SEA
FRANCE					
BELLEVILLE 1	PWR	1310	1987		LOIRE
BELLEVILLE 2	PWR	1310	1988		LOIRE
BLAYAIS 1	PWR	910	1981		GIRONDE
BLAYAIS 2	PWR	910	1982		GIRONDE
BLAYAIS 3	PWR	910	1983		GIRONDE
BLAYAIS 4	PWR	910	1983		GIRONDE
BUGEY 1	GCR	540	1972	1994	RHONE
BUGEY 2	PWR	910	1978		RHONE
BUGEY 3	PWR	910	1978		RHONE
BUGEY 4	PWR	880	1979		RHONE
BUGEY 5	PWR	880	1979		RHONE
CATTENOM 1	PWR	1300	1986		MOSELLE
CATTENOM 2	PWR	1300	1987		MOSELLE
CATTENOM 3	PWR	1300	1990		MOSELLE
CATTENOM 4	PWR	1300	1991		MOSELLE
CHINON A3	GCR	480	1966	1990	LOIRE
CHINON B1	PWR	905	1982		LOIRE
CHINON B2	PWR	905	1983		LOIRE
CHINON B3	PWR	905	1986		LOIRE
CHINON B4	PWR	905	1987		LOIRE
CHOOZ A	PWR	310	1967	1991	MEUSE
CHOOZ B1	PWR	1455	1996		MEUSE
CHOOZ B2	PWR	1455	1997		MEUSE
CIVAUX 1	PWR	1455	1997		VIENNE
CIVAUX 2	PWR	1455	1998		VIENNE
CREYS MALVILLE	FBR	1200	1986	1998	RHONE
CRUAS 1	PWR	915	1983		RHONE
CRUAS 2	PWR	915	1984		RHONE
CRUAS 3	PWR	915	1984		RHONE
CRUAS 4	PWR	915	1984		RHONE
DAMPIERRE 1	PWR	890	1980		LOIRE
DAMPIERRE 2	PWR	890	1980		LOIRE
DAMPIERRE 3	PWR	890	1981		LOIRE
DAMPIERRE 4	PWR	890	1981		LOIRE
FESSENHEIM 1	PWR	880	1977		RHINE

Nuclear Power Stations - General Characteristics

Member State Nuclear Power Station	Reactor type	Capacity (Mwe) [1]	Connected to grid in	Operations stopped in	Water body receiving liquid effluents
FESSENHEIM 2	PWR	880	1977		RHINE

Nuclear Power Stations - General Characteristics

Member State Nuclear Power Station	Reactor type	Capacity (Mwe) [1]	Connected to grid in	Operations stopped in	Water body receiving liquid effluents
FLAMANVILLE 1	PWR	1330	1985		ENGLISH CHANNEL
FLAMANVILLE 2	PWR	1330	1986		ENGLISH CHANNEL
GOLFECH 1	PWR	1310	1990		GARONNE
GOLFECH 2	PWR	1310	1993		GARONNE
GRAVELINES 1	PWR	910	1980		NORTH SEA
GRAVELINES 2	PWR	910	1980		NORTH SEA
GRAVELINES 3	PWR	910	1980		NORTH SEA
GRAVELINES 4	PWR	910	1981		NORTH SEA
GRAVELINES 5	PWR	910	1984		NORTH SEA
GRAVELINES 6	PWR	910	1985		NORTH SEA
NOGENT 1	PWR	1310	1987		SEINE
NOGENT 2	PWR	1310	1988		SEINE
PALUEL 1	PWR	1330	1984		ENGLISH CHANNEL
PALUEL 2	PWR	1330	1984		ENGLISH CHANNEL
PALUEL 3	PWR	1330	1985		ENGLISH CHANNEL
PALUEL 4	PWR	1330	1986		ENGLISH CHANNEL
PENLY 1	PWR	1330	1990		ENGLISH CHANNEL
PENLY 2	PWR	1330	1992		ENGLISH CHANNEL
PHENIX	FBR	233	1973		RHONE
ST ALBAN 1	PWR	1335	1985		RHONE
ST ALBAN 2	PWR	1335	1986		RHONE
ST LAURENT A1	GCR	480	1969	1990	LOIRE
ST LAURENT A2	GCR	515	1971	1992	LOIRE
ST LAURENT B1	PWR	915	1981		LOIRE
ST LAURENT B2	PWR	915	1981		LOIRE
TRICASTIN 1	PWR	915	1980		RHONE
TRICASTIN 2	PWR	915	1980		RHONE
TRICASTIN 3	PWR	915	1981		RHONE
TRICASTIN 4	PWR	915	1981		RHONE
GERMANY					
BIBLIS A (KWB-A)	PWR	1167	1974		RHINE
BIBLIS B (KWB-B)	PWR	1240	1976		RHINE
BROKDORF (KBR)	PWR	1370	1986		ELBE
BRUNSBUETTEL (KKB)	BWR	771	1976		ELBE
EMSLAND (KKE)	PWR	1290	1988		EMS
GRAFENRHEINFELD (KKG)	PWR	1275	1981		MAIN
GREIFSWALD 1	WER	440	1973	1990	GREIFSWALD BODEN
GREIFSWALD 2	WER	440	1974	1990	GREIFSWALD BODEN
GREIFSWALD 3	WER	440	1977	1990	GREIFSWALD BODEN
GREIFSWALD 4	WER	440	1979	1990	GREIFSWALD BODEN
GREIFSWALD 5	WER	440	1989	1990	GREIFSWALD BODEN
GROHNDE (KWG)	PWR	1360	1984		WESER
GUNDREMMINGEN B (KRB-2)	BWR	1284	1984		DANUBE
GUNDREMMINGEN C (KRB-2)	BWR	1288	1984		DANUBE
ISAR 1 (KKI-1)	BWR	870	1977		ISAR
ISAR 2 (KKI-2)	PWR	1380	1988		ISAR
KRUEMMEL (KKK)	BWR	1260	1983		ELBE
MUELHEIM-KAERLICH (KMK)	PWR	1219	1986	1988	RHINE
NECKARWESTHEIM 1 (GKN-1)	PWR	785	1976		NECKAR
NECKARWESTHEIM 2 (GKN-2)	PWR	1269	1989		NECKAR
OBRIGHEIM (KWO)	PWR	340	1968		NECKAR
PHILIPPSBURG 1 (KKP)	BWR	890	1979		RHINE
PHILIPPSBURG 2 (KKP)	PWR	1358	1984		RHINE

Nuclear Power Stations - General Characteristics

Member State Nuclear Power Station	Reactor type	Capacity (Mwe) [1]	Connected to grid in	Operations stopped in	Water body receiving liquid effluents
RHEINSBERG	WER	70	1966	1990	STECHLINSEE

Nuclear Power Stations - General Characteristics

Member State Nuclear Power Station	Reactor type	Capacity (Mwe) [1]	Connected to grid in	Operations stopped in	Water body receiving liquid effluents
STADE (KKS)	PWR	640	1972		ELBE
THTR 300	TGR	269	1985	1989	LIPPE
UNTERWESER (KKU)	PWR	1285	1978		WESER
WUERGASSEN (KWW)	BWR	640	1971	1994	WESER
ITALY					
CAORSO	BWR	860	1978	1988	PO
LATINA	GCR	153	1963	1987	TYRRHENIAN SEA
TRINO	PWR	260	1964	1988	PO
SPAIN					
ALMARAZ 1	PWR	927	1981		TAGUS
ALMARAZ 2	PWR	936	1983		TAGUS
ASCO 1	PWR	945	1983		EBRO
ASCO 2	PWR	946	1985		EBRO
COFRENTES	BWR	989	1984		JUCAR
JOSE CABRERA (ZORITA)	PWR	153	1968		TAGUS
ST MARIA DE GARONA	BWR	448	1971		EBRO
TRILLO 1	PWR	1001	1988		TAGUS
VANDELLOS 1	GCR	480	1972	1990	MEDITERRANEAN SEA
VANDELLOS 2	PWR	1043	1987		MEDITERRANEAN SEA
SWEDEN					
BARSEBÄCK 1	BWR	600	1975		ÖRESUND
BARSEBÄCK 2	BWR	600	1977		ÖRESUND
FORSMARK 1	BWR	968	1980		GULF OF BOTHNIA
FORSMARK 2	BWR	969	1981		GULF OF BOTHNIA
FORSMARK 3	BWR	1158	1985		GULF OF BOTHNIA
OSKARSHAMN 1	BWR	445	1970		BALTIC SEA
OSKARSHAMN 2	BWR	605	1974		BALTIC SEA
OSKARSHAMN 3	BWR	1160	1985		BALTIC SEA
RINGHALS 1	BWR	835	1974		KATTEGAT
RINGHALS 2	PWR	872	1974		KATTEGAT
RINGHALS 3	PWR	915	1980		KATTEGAT
RINGHALS 4	PWR	915	1982		KATTEGAT
THE NETHERLANDS					
BORSSELE	PWR	449	1973		SCHELDT ESTUARY
DODEWAARD	BWR	55	1968	1997	WAAL
UNITED KINGDOM					
BERKELEY A	GCR	138	1962	1989	SEVERN ESTUARY
BERKELEY B	GCR	138	1962	1988	SEVERN ESTUARY
BRADWELL A	GCR	123	1962		BLACKWATER ESTUARY
BRADWELL B	GCR	123	1962		BLACKWATER ESTUARY
CALDERHALL A	GCR	50	1956		IRISH SEA
CALDERHALL B	GCR	50	1957		IRISH SEA
CALDERHALL C	GCR	50	1959		IRISH SEA
CALDERHALL D	GCR	50	1959		IRISH SEA

Nuclear Power Stations - General Characteristics

Member State Nuclear Power Station	Reactor type	Capacity (Mwe) [1]	Connected to grid in	Operations stopped in	Water body receiving liquid effluents
CHAPELCROSS A	GCR	48	1959		SOLWAY FIRTH
CHAPELCROSS B	GCR	48	1959		SOLWAY FIRTH
CHAPELCROSS C	GCR	48	1959		SOLWAY FIRTH
CHAPELCROSS D	GCR	48	1960		SOLWAY FIRTH
DOUNREAY (PFR)	FBR		1975	1994	PENTLAND FIRTH
DUNGENESS AA	GCR	212	1965		ENGLISH CHANNEL
DUNGENESS AB	GCR	212	1965		ENGLISH CHANNEL
DUNGENESS B1	AGR	450	1983		ENGLISH CHANNEL
DUNGENESS B2	AGR	450	1985		ENGLISH CHANNEL
HARTLEPOOL A1	AGR	625	1983		NORTH SEA
HARTLEPOOL A2	AGR	625	1984		NORTH SEA
HEYSHAM 1A	AGR	620	1983		IRISH SEA
HEYSHAM 1B	AGR	620	1984		IRISH SEA
HEYSHAM 2A	AGR	615	1988		IRISH SEA
HEYSHAM 2B	AGR	615	1988		IRISH SEA
HINKLEY POINT AA	GCR	235	1965		SEVERN ESTUARY
HINKLEY POINT AB	GCR	235	1965		SEVERN ESTUARY
HINKLEY POINT BA	AGR	560	1976		SEVERN ESTUARY
HINKLEY POINT BB	AGR	560	1976		SEVERN ESTUARY
HUNTERSTON AA	GCR	150	1964	1990	FIRTH OF CLYDE
HUNTERSTON AB	GCR	150	1964	1989	FIRTH OF CLYDE
HUNTERSTON B1	AGR	575	1976		FIRTH OF CLYDE
HUNTERSTON B2	AGR	575	1977		FIRTH OF CLYDE
OLDBURY AA	GCR	217	1967		SEVERN ESTUARY
OLDBURY AB	GCR	217	1968		SEVERN ESTUARY
SIZEWELL AA	GCR	210	1966		NORTH SEA
SIZEWELL AB	GCR	210	1966		NORTH SEA
SIZEWELL B	PWR	1188	1994		NORTH SEA
TORNESS 1	AGR	625	1988		NORTH SEA
TORNESS 2	AGR	625	1989		NORTH SEA
TRAWSFYNYDD A	GCR	195	1965	1993	LAKE TRAWSFYNYDD
TRAWSFYNYDD B	GCR	195	1965	1993	LAKE TRAWSFYNYDD
WINFRITH	HWR	92	1967	1990	ENGLISH CHANNEL
WYLFA A	GCR	420	1971		IRISH SEA
WYLFA B	GCR	420	1971		IRISH SEA

Notes:

[1] For Belgium, Finland, France, Germany, The Netherlands, Spain and Sweden the data pertaining to thermal capacity, maximum output capacity and net electrical production have been taken from the Eurostat Report "Operation of nuclear power stations 1993-1999".

Nuclear Power Stations - Airborne Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Belgium	[1] [2]					
Doel 1+2+3+4		1995	8.88E+05	6.13E+02	1.48E+02	3.61E-03
		1996		2.88E+02		2.80E-03
		1997		2.27E+02		1.50E-03
		1998		5.20E+01		2.40E-03
		1999		5.67E+03		0.00E+00 [3]
Tihange 1+2+3		1995	5.55E+04	5.97E+03	1.11E+02	5.14E-02
		1996		4.42E+03		3.31E-02
		1997		5.05E+03		1.54E-02
		1998		6.35E+03		2.87E-02
		1999		7.17E+03		1.38E-02
Finland	[4]					
Loviisa 1+2		1995	not defined	1.90E+02	not defined	3.40E-01
		1996		2.20E+02		2.20E-01
		1997		2.50E+02		2.50E-01
		1998		2.00E+02		7.30E-02
		1999		1.80E+02		2.70E-02
Olkiluoto 1+2		1995	not defined	1.30E+02	not defined	3.30E-02
		1996		2.10E+02		1.40E-02
		1997		3.00E+02		4.40E-02
		1998		4.30E+02		3.20E-02
		1999		5.20E+02		6.50E-03
France	[5]					
Germany	[6] [7] [8] [9]					
Biblis A (KWB-A)		1995	not defined	4.30E+02	3.70E+01	7.00E-04
		1996		1.00E+02		1.40E-03
		1997		1.80E+02		6.40E-03
		1998		1.80E+02		7.00E-03
		1999		2.40E+02		9.20E-03
Biblis B (KWB-B)		1995	not defined	9.80E+01	3.70E+01	1.80E-03
		1996		1.20E+02		6.20E-04
		1997		3.10E+02		2.00E-03
		1998		2.60E+02		5.60E-03
		1999		1.80E+02		1.50E-03
Brokdorf (KBR)		1995	not defined	3.50E+02	1.00E+01	< DL
		1996		3.70E+02		< DL
		1997		3.20E+02		< DL
		1998		3.10E+02		6.60E-05
		1999		3.20E+02		< DL
Brunsbuettel (KKB)		1995	7.40E+03	1.90E+01	1.48E+01	3.40E-02
		1996		4.00E+01		3.40E-02
		1997		3.50E+01		2.60E-02
		1998		4.60E+01		1.30E-01
		1999		7.50E+01		5.70E-02
Emsland (KKE)		1995	not defined	1.60E+03	1.00E+01	7.00E-06
		1996		2.00E+03		6.60E-04
		1997		1.90E+03		1.70E-04
		1998		1.90E+03		7.10E-05
		1998		2.50E+03		< DL

Nuclear Power Stations - Airborne Discharges - Tritium and Total beta-gamma

Member State Nuclear Power Station	Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
		Limit	Value	Limit	Value
Grafenrheinfeld (KKG)	1995	1.11E+04	5.20E+02	3.70E+01	2.70E-03
	1996		5.50E+02		2.50E-03
	1997		2.90E+02		2.00E-03
	1998		3.00E+02		1.60E-03
	1999		2.70E+02		1.80E-03
Grohnde (KWG)	1995	7.50E+03	3.60E+02	3.00E+01	2.50E-04
	1996		6.80E+02		9.60E-04
	1997		1.90E+02		1.20E-03
	1998		3.30E+02		1.80E-03
	1999		2.60E+02		5.10E-04
Gundremmingen B+C (KRB)	1995	2.20E+04 [10]	1.50E+03	3.70E+01 [10]	< DL
	1996		2.20E+03		7.40E-05
	1997		1.20E+03		6.20E-05
	1998		1.00E+03		3.70E-04
	1999		9.60E+02		< DL
Isar 1 (KKI-1)	1995	not defined	4.40E+01	3.70E+01	1.00E-02
	1996		5.60E+01		1.60E-02
	1997		6.00E+01		1.30E-02
	1998		1.70E+02		5.90E-03
	1999		8.10E+01		4.60E-03
Isar 2 (KKI-2)	1995	not defined	1.30E+03	3.00E+01	< DL
	1996		1.30E+03		1.80E-03
	1997		9.70E+02		6.70E-05
	1998		9.90E+02		< DL
	1999		4.80E+02		< DL
Kruemmel (KKK)	1995	not defined	4.50E+01	1.48E+01	3.40E-02
	1996		4.60E+01		8.60E-02
	1997		4.20E+01		1.50E-01
	1998		3.20E+01		3.20E-02
	1999		3.90E+01		1.20E-02
Neckarwestheim 1 (GKN-1)	1995	not defined	2.80E+02	1.85E+01	9.50E-04
	1996		2.60E+02		3.10E-03
	1997		2.60E+02		4.00E-04
	1998		2.10E+02		6.80E-04
	1999		1.30E+02		2.60E-04 [11]
Neckarwestheim 2 (GKN-2)	1995	not defined	3.20E+02	3.00E+01	2.10E-04
	1996		1.90E+02		1.30E-04
	1997		1.30E+02		< DL
	1998		2.20E+02		2.20E-04
	1999		2.60E+02		< DL
Obrigheim (KWO)	1995	not defined	9.90E+01	1.00E+01	1.80E-02
	1996		1.50E+02		9.20E-03
	1997		1.30E+02		7.40E-03
	1998		1.20E+02		2.30E-03
	1999		1.30E+02		1.20E-03
Philippsburg 1 (KKP-1)	1995	not defined	8.10E+01	3.70E+01	3.20E-02
	1996		7.10E+01		2.10E-02
	1997		5.40E+01		2.50E-02
	1998		6.40E+01		6.90E-03
	1999		5.50E+01		9.60E-03

Nuclear Power Stations - Airborne Discharges - Tritium and Total beta-gamma

Member State Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Philippsburg 2 (KKP-2)		1995	not defined	9.60E+02	3.00E+01	9.90E-04
		1996		9.70E+02		1.50E-04
		1997		1.10E+03		5.30E-04
		1998		1.20E+03		2.00E-04
		1999		1.10E+03		3.30E-04
Stade (KKS)		1995	not defined	7.90E+02	9.30E+00	7.90E-02
		1996		3.30E+02		1.00E-03
		1997		2.10E+03		2.40E-04
		1998		5.90E+02		8.60E-04
		1999		5.30E+02		5.30E-04
Unterweser (KKU)		1995	7.40E+05	1.30E+03	4.63E+00	1.20E-03
		1996		5.60E+02	9.25E+00	1.50E-03
		1997		3.50E+02		7.90E-04
		1998		4.50E+02		1.70E-03
		1999		4.40E+02		1.60E-03
The Netherlands	[12]					
Borssele		1995	2.00E+03	3.43E+02	5.00E+00	< DL
		1996		3.71E+02		< DL
		1997		1.77E+02		< DL
		1998		3.33E+02		< DL
		1999		2.24E+02		4.00E-05
Dodewaard		1995	2.00E+03	2.60E+01	1.00E+00	4.90E-03
		1996		9.60E+00		4.60E-03
(stopped 26/03/97)		1997		9.80E+00		5.10E-03
Spain	[13]					
Almaraz 1+2		1995	not defined	5.66E+03	not defined	1.12E-02
		1996		5.26E+03		4.28E-02
		1997		6.37E+03		7.93E-02
		1998		7.58E+03		1.45E-03
		1999		7.66E+03		7.57E-03
Asco 1+2		1995	not defined	2.75E+03	not defined	2.19E-02
		1996		1.37E+03		1.64E-02
		1997		2.29E+03		6.74E-03
		1998		2.02E+03		1.53E-02
		1999		3.22E+03		2.75E-02
Cofrentes		1995	not defined	2.90E+02	not defined	4.90E-02
		1996		4.59E+02		5.19E-03
		1997		1.18E+03		4.56E-01
		1998		2.48E+03		2.41E-02
		1999		9.77E+02		3.19E-02
Jose Cabrera (Zorita)		1995	not defined	2.53E+01	not defined	4.48E-03
		1996		2.66E+01		1.65E-02
		1997		8.89E+01		8.78E-03
		1998		3.06E+01		2.26E-03
		1999		3.12E+01		1.25E-03
Sta Maria de Garona		1995	not defined	5.43E+02	not defined	7.74E-02
		1996		3.70E+02		1.27E-01
		1997		2.64E+02		1.49E-02
		1998		4.02E+02		1.67E-02
		1999		3.91E+02		6.59E-02

Nuclear Power Stations - Airborne Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Trillo		1995	not defined	9.02E+02	not defined	5.94E-03
		1996		8.77E+02		2.44E-03
		1997		7.43E+02		2.21E-03
		1998		5.88E+02		2.63E-03
		1999		5.97E+02		8.08E-03
Vandellos 2		1995	not defined	8.42E+01	not defined	3.94E-03
		1996		5.67E+01		7.84E-03
		1997		1.97E+02		2.48E-02
		1998		5.16E+02		1.27E-04
		1999		2.49E+02		5.19E-02
Sweden	[14] [15]					
Barsebäck 1+2		1995	not defined	not measured	not defined	1.05E+00
		1996		not measured		3.06E+00
		1997		not measured		1.60E+00
		1998		not measured		4.50E+00
		1999		not measured		5.10E+00
Forsmark 1+2+3		1995	not defined	not measured	not defined	8.46E+01
		1996		not measured		1.82E+00
		1997		not measured		2.80E+00
		1998		not measured		2.70E-01
		1999		not measured		2.10E-01
Oskarshamn 1+2+3		1995	not defined	not measured	not defined	1.40E+01
		1996		not measured		4.07E+01
		1997		not measured		3.10E+01
		1998		not measured		1.40E+01
		1999		not measured		1.80E+00
Ringhals 1		1995	not defined	not measured	not defined	4.46E+04
		1996		not measured		1.06E+04
		1997		not measured		1.70E+03
		1998		not measured		4.50E+03
		1999		not measured		4.00E+02
Ringhals 2+3+4		1995	not defined	not measured	not defined	5.13E-03
		1996		not measured		1.50E-03
		1997		not measured		5.00E-02
		1998		not measured		2.50E-03
		1999		not measured		1.90E-01
United Kingdom						
Bradwell A+B		1995	1.50E+03	1.27E+03	1.00E+00	1.56E-01
		1996		7.86E+02		2.10E-01
		1997		1.10E+03		1.98E-01
		1998		8.39E+02		2.62E-01
		1999		7.81E+02		2.25E-01
Calder Hall A+B+C+D		1995	1.10E+04	5.60E+03	2.00E+01	1.00E+00
		1996		5.00E+03		4.90E-01
		1997		4.40E+03		1.10E-01
		1998		4.00E+03		9.80E-02
		1999		3.80E+03		8.20E-02

Nuclear Power Stations - Airborne Discharges - Tritium and Total beta-gamma

Member State Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Chapelcross A+B+C+D		1995	5.00E+06	1.60E+06	not defined	not measured
		1996		1.12E+06		not measured
		1997		1.03E+06		not measured
		1998		1.27E+06		not measured
		1999		1.42E+06		not measured
Dungeness AA+AB		1995	2.00E+03	6.17E+02	1.00E+00	3.80E-01
		1996		1.03E+03		3.25E-01
		1997		5.70E+02		3.00E-01
		1998		5.70E+02		3.60E-01
		1999		5.07E+02		3.11E-01
Dungeness B1+B2		1995	1.50E+04	2.44E+03	1.00E+00	1.15E-02
		1996		1.52E+03		4.86E-02
		1997		4.78E+03		3.45E-02
		1998		3.32E+03		1.61E-02
		1999		1.20E+03		1.15E-02
Hartlepool A1+A2	[16]	1995	6.00E+03	1.12E+03	1.00E+00	1.46E-02
		1996		1.56E+03		3.49E-02
		1997		1.61E+03		2.53E-02
		1998		1.50E+03		4.43E-03
		1999		1.41E+03		4.30E-03
Heysham 1A+1B	[17]	1995	6.00E+03	1.13E+03	1.00E+00	1.99E-02
		1996		9.23E+02		4.74E-02
		1997		6.36E+02		4.76E-02
		1998		1.42E+03		3.60E-02
		1999		9.78E+02		6.42E-03
Heysham 2A+2B	[17]	1995	1.50E+04	2.13E+03	1.00E+00	2.71E-02
		1996		2.14E+03		2.20E-02
		1997		2.08E+03		5.17E-02
		1998		2.18E+03		1.46E-02
		1999		1.21E+03		8.10E-03
Hinkley Point AA+AB		1995	2.50E+04	2.62E+03	1.00E+00	1.57E-01
		1996		2.10E+03		7.68E-02
		1997		2.98E+03		1.68E-01
		1998		2.59E+03		1.05E-01
		1999		3.30E+03		5.00E-02
Hinkley Point BA+BB		1995	3.00E+04	2.50E+03	1.00E+00	7.69E-02
		1996		2.10E+03		7.68E-02
		1997		1.96E+03		7.53E-02
		1998		1.72E+03		5.16E-02
		1999		2.20E+03		5.56E-02
Hunterston B1+B2	[18]	1995	3.60E+04	5.00E+03	6.00E+00	7.40E-02
		1996	2.00E+04	2.18E+03	2.00E+00	3.56E-02
		1997		2.81E+03		3.43E-02
		1998		2.15E+03		4.48E-02
		1999		3.52E+03		6.78E-02
Oldbury AA+AB		1995	5.00E+03	1.89E+03	1.00E+00	1.01E-01
		1996		1.73E+03		9.06E-02
		1997		1.48E+03		1.01E-01
		1998		2.39E+03		1.03E-01
		1999		2.42E+03		1.08E-01

Nuclear Power Stations - Airborne Discharges - Tritium and Total beta-gamma

Member State Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Sizewell AA+AB		1995	7.00E+03	1.33E+03	1.00E+00	3.44E-01
		1996		8.71E+02		2.22E-02
		1997		6.39E+02		7.34E-02
		1998		5.15E+02		5.62E-02
		1999		1.41E+03		1.47E-01
Sizewell B	[19]	1995	8.00E+03	1.44E+02	1.00E+01	1.92E-02
		1996		5.79E+02		8.71E-03
		1997		5.66E+02		4.97E-03
		1998		1.39E+03		1.06E-02
		1999		6.86E+02		3.54E-03
Torness 1+2	[20]	1995	3.60E+04	1.30E+03	6.00E+00	1.40E-02
		1996	2.00E+04	1.26E+03	2.00E+00	1.48E-02
		1997		1.81E+03		1.49E-02
		1998		2.08E+03		1.55E-02
		1999		1.31E+03		4.59E-03
Wylfa A+B		1995	2.00E+04	1.03E+04	1.00E+00	9.90E-02
		1996		6.70E+03		8.71E-02
		1997		5.29E+03		7.35E-02
		1998		8.25E+03		6.35E-02
		1999		4.84E+03		7.80E-02

Notes: see next page.

Notes:

[1] For each nuclear power station design objectives must be met to ensure that the effective dose (from airborne releases) to critical group members does not exceed 50 µSv/year (whole-body dose) and 150 µSv/year (dose equivalent to any organ or to the skin). The dose criteria are translated into annual discharge limits; typically for tritium, beta-gamma emitters (aerosols), I-131 and noble gases.

[2] Annual discharge limits are complemented with trimestrial limits amounting to 50% of the yearly limit.

[3] Reported as such (zero).

[4] Release limits must ensure that that the effective dose (from airborne releases) to critical group members does not exceed 100 µSv/year and that the global collective dose does not exceed 5 manSv/yearGWe. The dose criteria are translated into annual discharge limits; typically for iodines (I-131 equivalent) and noble gases (Kr-87 equivalent).

[5] For France see separate table.

[6] For each nuclear power station design objectives must be met to ensure that the effective dose (from airborne releases) to critical group members does not exceed 300 µSv/year. The dose criteria are translated into annual discharge limits, typically for tritium, beta-gamma emitters (aerosols), I-131 and noble gases.

[7] Annual discharge limits, complemented with semestrial and daily limits, apply to releases through the vent stack. Additional limits are in force for KWO, GKN-1, KKB, KKU, KKP-2, KKG, KWG, KMK and KBR power stations and apply to authorised releases of gaseous effluents via ancillary buildings. With respect to I-131 releases, more stringent limits may be applicable during grazing times.

[8] The discharge limit for airborne beta-gamma emitters (aerosols) applies to nuclides (excluding I-131) with a half-life greater than 8 days.

[9] Limits for airborne tritium discharge are in general not defined, except for the KKB, KKG, KKU, KRB and KWG power stations.

[10] Airborne discharge limits are applicable to the Gundremmingen site as a whole, including unit A (shutdown since May 1983).

[11] Of which 1,7E-05 GBq as Sb-122 (half-life < 8 days).

[12] For each nuclear power station design objectives must be met to ensure that the effective dose (from airborne releases) to critical group members does not exceed 100 µSv/year. The dose criteria are translated into annual discharge limits; typically for tritium, beta-gamma emitters (aerosols), noble gases, halogens and C-14.

[13] For each nuclear power station design objectives must be met to ensure that the effective dose (from liquid releases) to critical group members does not exceed 50 µSv/year (whole body) and 150 µSv/year (any organ or skin).

[14] For each nuclear power station design objectives must be met to ensure that the effective dose (from airborne releases) to critical group members does not exceed 100 µSv/year and that the global collective dose does not exceed 5 manSV/yearGWe.

[15] Current regulations do not include compulsory measurement and reporting of atmospheric tritium releases.

[16] Revised discharge authorisation with effect on 15/08/1995.

[17] Revised discharge authorisation with effect on 10/08/1995.

[18] Revised discharge authorisation with effect on 31/03/1996.

[19] Discharge limits and values also cover gaseous effluents from 'approved places'. Discharges from approved places only marginally contribute to the total activity released.

[20] Revised discharge authorisation with effect on 31/03/1996.

Nuclear Power Stations - Airborne Discharges - Noble Gas and Iodine-131

Member State Nuclear Power Station	Year	Total Noble Gases (GBq)		Iodine-131 (GBq)	
		Limit	Value	Limit	Value
Belgium					
Doel 1+2+3+4	1995	2.96E+06	4.12E+03	1.48E+01	3.18E-02
	1996		2.05E+03		8.20E-03
	1997		7.38E+01		5.70E-03
	1998		3.31E+03		1.37E-02
	1999		2.66E+03		3.10E-03
Tihange 1+2+3	1995	2.22E+06	4.12E+03	1.48E+01	5.22E-03
	1996		1.46E+04		5.16E-02
	1997		9.81E+03		1.59E-02
	1998		8.04E+03		4.61E-03
	1999		4.32E+03		5.87E-03
Finland					
Loviisa 1+2	1995	2.20E+07 [1]	2.40E+04	2.20E+02	7.70E-01
	1996		1.10E+03		8.70E-04
	1997		3.40E+03		7.20E-05
	1998		3.60E+03		3.30E-03
	1999		5.90E+03		4.50E-02
Olkiluoto 1+2	1995	1.80E+07 [1]	5.20E+04	1.10E+02	3.80E-02
	1996		1.80E+04		2.60E-02
	1997		1.10E+03		1.70E-02
	1998		6.80E+03		2.70E-03
	1999		5.80E+03		1.40E-02
Germany					
Biblis A (KWB-A)	1995	1.11E+06	3.70E+03	8.51E+00	1.70E-02
	1996		8.30E+01		1.40E-02
	1997		9.90E+02		4.50E-03
	1998		1.50E+03		5.40E-05
	1999		1.00E+03		2.30E-04
Biblis B (KWB-B)	1995	1.11E+06	4.60E+03	8.51E+00	2.20E-04
	1996		2.50E+03		1.60E-02
	1997		3.50E+03		2.40E-03
	1998		2.60E+03		6.10E-03
	1999		1.20E+03		2.90E-04
Brokdorf (KBR)	1995	1.00E+06	3.50E+04	6.00E+00	2.60E-02
	1996		8.00E+02		6.00E-04
	1997		3.70E+03		3.20E-03
	1998		9.50E+03		3.90E-03
	1999		2.60E+02		<DL
Brunsbuettel (KKB)	1995	1.48E+06	6.60E+03	9.25E+00	9.40E-04
	1996		7.20E+03		1.20E-02
	1997		3.90E+03		1.10E-03
	1998		2.80E+03		1.10E-02
	1999		3.70E+03		7.10E-03
Emsland (KKE)	1995	1.00E+06	6.00E+02	5.00E+00	1.30E-03
	1996		1.20E+02		<DL
	1997		1.00E+02		<DL
	1998		1.90E+03		9.30E-04
	1998		9.70E+02		2.00E-04

Nuclear Power Stations - Airborne Discharges - Noble Gas and Iodine-131

Member State Nuclear Power Station	Year	Total Noble Gases (GBq)		Iodine-131 (GBq)	
		Limit	Value	Limit	Value
Grafenrheinfeld (KKG)	1995	1.11E+06	<DL	1.63E+01	<DL
	1996		1.60E+02		1.50E-04
	1997		<DL		1.30E-03
	1998		6.20E+01		<DL
	1999		3.50E+02		<DL
Grohnde (KWG)	1995	9.00E+05	1.80E+04	7.50E+00	3.10E-02
	1996		2.50E+04		8.20E-03
	1997		2.40E+02		<DL
	1998		6.80E+02		2.90E-04
	1999		3.00E+02		6.20E-05
Gundremmingen B+C (KRB)	1995	1.85E+06	1.20E+00	2.20E+01	2.90E-04
	1996		<DL		1.40E-04
	1997		3.10E+02		1.60E-04
	1998		1.70E+01		2.30E-03
	1999		9.70E+00		2.50E-03
Isar 1 (KKI-1)	1995	1.10E+06	4.00E+02	1.10E+01	1.30E-02
	1996		1.50E+02		2.30E-02
	1997		8.10E+02		5.70E-02
	1998		7.80E+02		7.70E-02
	1999		3.30E+01		3.90E-02
Isar 2 (KKI-2)	1995	1.10E+06	2.20E+02	1.10E+01	<DL
	1996		1.70E+02		<DL
	1997		1.70E+02		<DL
	1998		2.90E+02		<DL
	1999		5.00E+02		<DL
Kruemmel (KKK)	1995	1.48E+06	1.70E+04	9.62E+00	3.80E-01
	1996		1.40E+04		2.20E-01
	1997		1.10E+04		1.40E-01
	1998		4.30E+02		4.80E-02
	1999		1.10E+02		1.80E-01
Neckarwestheim 1 (GKN-1)	1995	9.25E+05	2.20E+03	9.25E+00	2.00E-02
	1996		7.10E+02		3.60E-04
	1997		1.80E+03		4.00E-03
	1998		7.50E+02		2.00E-04
	1999		7.00E+02		2.60E-04
Neckarwestheim 2 (GKN-2)	1995	1.00E+06	1.50E+03	1.10E+01	1.70E-04
	1996		3.90E+03		3.50E-04
	1997		3.50E+02		1.70E-04
	1998		3.10E+02		1.20E-04
	1999		2.80E+02		<DL
Obrigheim (KWO)	1995	7.00E+05 [2]	6.20E+02	1.80E+00	8.70E-03
	1996		3.30E+02		6.30E-06
	1997		2.00E+02		7.20E-05
	1998		2.60E+02		3.20E-04
	1999		2.90E+02		6.60E-04
Philippsburg 1 (KKP-1)	1995	1.10E+06	8.80E+02	1.80E+01	5.00E-02
	1996		5.20E+02		4.70E-02
	1997		8.60E+02		7.50E-02
	1998		6.70E+02		2.70E-02
	1999		3.70E+02		1.40E-02

Nuclear Power Stations - Airborne Discharges - Noble Gas and Iodine-131

Member State / Nuclear Power Station	Year	Total Noble Gases (GBq)		Iodine-131 (GBq)	
		Limit	Value	Limit	Value
Philippsburg 2 (KKP-2)	1995	1.10E+06	1.70E+03	1.10E+01	7.40E-04
	1996		1.10E+03		4.30E-04
	1997		5.80E+03		4.50E-03
	1998		1.30E+02		1.90E-04
	1999		3.20E+03		2.60E-03
Stade (KKS)	1995	8.88E+05	1.70E+03	3.70E+00	2.60E-04
	1996		1.90E+03		2.00E-03
	1997		1.20E+03		4.00E-03
	1998		1.30E+03		2.30E-04
	1999		1.50E+03		1.40E-03
Unterweser (KKU)	1995	8.88E+05	3.60E+03	4.63E+00	1.90E-03
	1996		3.50E+03		9.70E-05
	1997		3.50E+03		4.70E-04
	1998		3.40E+03		<DL
	1999		3.90E+03		5.20E-04
The Netherlands					
Borssele	1995	5.00E+05	6.50E+03	5.00E+00	9.50E-03
	1996		2.00E+03		3.00E-04
	1997		6.40E+03		3.00E-02
	1998		1.10E+04		2.04E-01
	1999		3.70E+03		1.30E-02
Dodewaard	1995	2.50E+05	3.20E+03	1.00E+00	2.80E-02
	1996		3.90E+03		2.30E-03
(stopped 26/03/97)	1997		2.30E+04		1.60E-03
Spain					
Almaraz 1+2	1995	not defined	2.97E+04	not defined	1.31E-02
	1996		5.29E+04		8.87E-02
	1997		4.67E+04		9.49E-02
	1998		9.71E+03		6.28E-03
	1999		1.19E+03		1.37E-02
Asco 1+2	1995	not defined	1.94E+04	not defined	4.78E-02
	1996		3.55E+03		2.29E-04
	1997		2.38E+03		3.33E-04
	1998		1.51E+04		1.05E-02
	1999		2.24E+04		5.79E-03
Cofrentes	1995	not defined	9.32E+03	not defined	1.28E-01
	1996		5.15E+03		5.19E-02
	1997		8.00E+03		2.39E-01
	1998		7.91E+03		1.09E-01
	1999		4.59E+03		5.33E-02
Jose Cabrera (Zorita)	1995	not defined	1.31E+04	not defined	2.62E-03
	1996		2.18E+04		7.85E-03
	1997		1.56E+04		1.81E-01
	1998		1.49E+04		3.53E-02
	1999		1.24E+04		7.32E-03
Sta Maria de Garona	1995	not defined	7.47E+03	not defined	9.09E-02
	1996		6.48E+02		3.06E-02
	1997		2.94E+02		1.09E-02
	1998		4.47E+03		7.79E-03
	1999		1.78E+02		8.76E-03

Nuclear Power Stations - Airborne Discharges - Noble Gas and Iodine-131

Member State / Nuclear Power Station		Year	Total Noble Gases (GBq)		Iodine-131 (GBq)	
			Limit	Value	Limit	Value
Trillo		1995	not defined	5.06E+03	not defined	<DL
		1996		8.72E+01		<DL
		1997		8.03E+03		3.09E-01
		1998		3.51E+03		7.75E-01
		1999		1.06E+03		8.98E-02
Vandellos 2		1995	not defined	1.44E+02	not defined	2.88E-02
		1996		2.64E+02		2.61E-02
		1997		3.37E+02		5.29E-02
		1998		1.15E+01		1.99E-03
		1999		8.67E+02		1.22E-01
Sweden						
Barsebäck 1+2		1995	not defined	2.21E+04	not defined	2.08E-02
		1996		1.79E+04		2.68E-03
		1997		7.32E+03		7.93E-03
		1998		9.23E+03		7.42E-03
		1999		1.93E+04		2.20E-03
Forsmark 1+2+3		1995	not defined	8.15E+04	not defined	5.84E-01
		1996		8.70E+04		4.27E-01
		1997		2.56E+04		2.32E-01
		1998		1.14E+04		6.48E-02
		1999		2.33E+03		4.35E-02
Oskarshamn 1+2+3		1995	not defined	1.12E+05	not defined	3.39E-01
		1996		1.38E+05		4.51E-01
		1997		7.93E+05		4.61E-01
		1998		4.40E+04		9.20E-01
		1999		3.16E+04		2.24E-01
Ringhals 1		1995	not defined	1.57E+07	not defined	1.23E+01
		1996		6.69E+06		7.46E+00
		1997		1.31E+06		4.20E+00
		1998		2.34E+06		2.00E+00
		1999		4.63E+05		5.20E-01
Ringhals 2+3+4		1995	not defined	1.55E+04	not defined	9.31E-02
		1996		2.09E+04		6.49E-02
		1997		1.32E+03		2.02E-02
		1998		8.11E+02		1.80E-02
		1999		3.21E+03		2.88E-02
United Kingdom						
Bradwell A+B	[3]	1995	1.00E+06	6.62E+05	not defined	not measured
		1996		6.47E+05		not measured
		1997		5.10E+05		not measured
		1998		7.24E+05		not measured
		1999		2.79E+05		not measured
Calder Hall A+B+C+D	[3]	1995	3.70E+06	2.70E+06	not defined	not measured
		1996		2.60E+06		not measured
		1997		2.60E+06		not measured
		1998		2.50E+06		not measured
		1999		2.60E+06		not measured

Nuclear Power Stations - Airborne Discharges - Noble Gas and Iodine-131

Member State / Nuclear Power Station		Year	Total Noble Gases (GBq)		Iodine-131 (GBq)	
			Limit	Value	Limit	Value
Chapelcross A+B+C+D	[3]	1995	4.50E+06	3.20E+06	not defined	not measured
		1996		3.21E+06		not measured
		1997		2.73E+06		not measured
		1998		2.80E+06		not measured
		1999		2.81E+06		not measured
Dungeness AA+AB	[3]	1995	2.00E+06	1.20E+06	not defined	not measured
		1996		1.19E+06		not measured
		1997		9.77E+05		not measured
		1998		1.30E+06		not measured
		1999		1.25E+06		not measured
Dungeness B1+B2		1995	1.50E+05	6.88E+03	5.00E+00	3.30E-03
		1996		2.79E+04		4.14E-03
		1997		1.93E+04		4.40E-03
		1998		2.31E+04		4.22E-03
		1999		1.56E+02		3.15E-03
Hartlepool A1+A2		1995	6.00E+04	1.32E+04	5.00E+00	2.02E-01
		1996		2.39E+04		2.75E-01
		1997		3.78E+04		1.93E-01
		1998		1.24E+04		8.87E-02
		1999		3.77E+04		2.81E-02
Heysham 1A+1B		1995	6.00E+04	2.74E+04	5.00E+00	1.22E+00
		1996		1.07E+04		1.20E+00
		1997		7.92E+03		1.11E+00
		1998		1.26E+04		7.47E-01
		1999		6.52E+03		7.58E-02
Heysham 2A+2B		1995	8.50E+04	2.25E+04	5.00E+00	2.86E-01
		1996		1.29E+04		2.32E-01
		1997		2.10E+04		2.46E-01
		1998		1.63E+04		1.89E-01
		1999		1.30E+04		4.30E-02
Hinkley Point AA+AB	[3]	1995	4.50E+06	3.20E+06	not defined	not measured
		1996		3.32E+04		not measured
		1997		3.03E+06		not measured
		1998		2.70E+06		not measured
		1999		1.10E+06		not measured
Hinkley Point BA+BB		1995	3.00E+05	4.18E+04	5.00E+00	1.95E-02
		1996		3.32E+04		2.09E-02
		1997		1.67E+04		2.05E-02
		1998		3.66E+04		1.25E-02
		1999		3.60E+04		8.73E-03
Hunterston B1+B2	[4]	1995	2.20E+05	5.50E+04	no data	no data
		1996		4.95E+04		no data
		1997		6.61E+04		no data
		1998		6.19E+04		no data
		1999		6.81E+04		no data
Oldbury AA+AB	[3]	1995	5.00E+05	2.50E+05	not defined	not measured
		1996		1.12E+05		not measured
		1997		1.11E+05		not measured
		1998		1.80E+05		not measured
		1999		1.91E+05		not measured

Nuclear Power Stations - Airborne Discharges - Noble Gas and Iodine-131

Member State / Nuclear Power Station		Year	Total Noble Gases (GBq)		Iodine-131 (GBq)	
			Limit	Value	Limit	Value
Sizewell AA+AB	[3]	1995	3.00E+06	1.95E+06	not defined	not measured
		1996		2.95E+05		not measured
		1997		1.23E+06		not measured
		1998		8.41E+05		not measured
		1999		1.68E+06		not measured
Sizewell B		1995	3.00E+05	4.15E+03	3.00E+00	8.00E-02
		1996		6.11E+03		4.92E-02
		1997		4.36E+03		3.42E-02
		1998		1.57E+04		5.95E-02
		1999		7.29E+03		3.35E-01
Torness 1+2	[4]	1995	3.00E+05	7.00E+03	no data	no data
		1996	2.20E+05	6.99E+03		no data
		1997		1.22E+04		no data
		1998		1.08E+04		no data
		1999		1.05E+04		no data
Wylfa A+B	[3]	1995	1.20E+05	1.90E+04	not defined	not measured
		1996		4.39E+04		not measured
		1997		5.14E+04		not measured
		1998		6.06E+04		not measured
		1999		3.65E+04		not measured

Notes:

[1] The discharge limit for noble gases is set as Kr-87 equivalent.

[2] The authorised release of Ar-41 is restricted to 1% of the overall noble gases discharge limit.

[3] Under normal operational conditions GCR power stations do not release I-131, the nuclide is therefore not routinely assessed.

[4] I-131 data for both Scottish AGR power stations were not available at the time of compilation of this report.

Nuclear Power Stations - Airborne Discharges - Noble Gas Spectra (GBq)

Member State / Nuclear Power Station		Year	Ar-41	Kr-85	Kr-85m	Kr-87	Kr-88	Kr-89	Xe-131m	Xe-133	Xe-133m	Xe-135	Xe-135m	Xe-137	Xe-138
Belgium	[1]														
Finland															
Loviisa 1+2		1995	9.80E+02	8.60E+03	4.50E+02	4.00E+02	4.80E+02			8.90E+03		3.80E+03			
		1996	1.00E+03									8.20E+01			
		1997	3.40E+03									3.20E+01			
		1998	3.50E+03							5.00E+01		2.90E+01			
		1999	3.80E+03		8.20E+01		2.10E+01			1.40E+03		6.20E+02			
Olkiluoto 1+2		1995			1.50E+04		5.00E+03			3.10E+04	3.30E+01	9.10E+02			
		1996			8.30E+03		3.10E+03			5.60E+03		6.30E+02	1.20E+01		
		1997			1.00E+03					5.20E+01		5.20E+01			
		1998								6.70E+03		1.30E+02			
		1999			3.50E+01	1.30E+01	4.80E+01			4.80E+03		7.60E+02	1.30E+02		
France	[1]														
Germany															
Biblis A (KWB-A)		1995	2.50E+01	7.10E+02	1.30E+01	5.10E+00	7.70E+00			2.80E+03	2.20E+01	1.30E+02			
		1996	1.80E+01	1.40E+01					3.30E+01	6.10E+00		1.30E+01			
		1997	3.70E+01	7.70E+02			4.70E-02		1.20E+01	1.50E+02	2.70E+00	1.70E+01			
		1998	4.60E+01	1.10E+03	3.20E-01	1.70E-02	2.50E-02		2.20E+02	1.70E+02		1.70E+01	9.20E-03	3.10E-02	
		1999	3.70E+01	7.40E+02	9.50E-03		7.60E-02		1.30E+02	3.90E+01	3.30E+00	3.90E+00	8.80E-03		
Biblis B (KWB-B)		1995	2.00E+03	4.50E-01						2.10E+03		4.40E+02			
		1996	1.50E+02	1.50E+03	1.40E+01	7.30E+00	1.80E+01		2.80E+01	6.40E+02	1.00E+01	1.30E+02	1.70E+01		3.40E+00
		1997	5.30E+01	9.50E+02	8.50E+00	4.20E-02	6.10E+00	2.10E+00	2.00E+01	2.30E+03	5.10E+01	1.50E+02	5.60E-01		
		1998	5.00E+01	1.30E+03	2.40E+00		6.50E-01		1.60E+02	9.70E+02	5.90E+00	5.00E+01	2.80E-01		
		1999	4.60E+01	7.40E+02	1.40E+00				1.00E+02	3.00E+02	6.80E+00	2.20E+01	2.70E-02		
Brokdorf (KBR)		1995	1.40E+02	1.80E+04	5.00E+01	1.30E+01	6.00E+01		9.00E+02	1.50E+04	1.10E+02	8.90E+02			
		1996	1.70E+02	2.80E+02						3.20E+02		3.30E+01			
		1997	1.60E+02	4.00E+02	8.50E+00					2.90E+03	8.70E+00	2.40E+02			
		1998	1.90E+02	4.50E+03	3.20E+01	1.70E+01	8.00E-01		2.20E+01	4.50E+03	7.50E+00	1.70E+02			
		1999	1.50E+02			2.70E+00				5.80E+01		5.50E+01			

Member State Nuclear Power Station	Year	Ar-41	Kr-85	Kr-85m	Kr-87	Kr-88	Kr-89	Xe-131m	Xe-133	Xe-133m	Xe-135	Xe-135m	Xe-137	Xe-138
Brunsbuettel (KKB)	1995								4.00E+02		4.90E+03	1.40E+03		
	1996	7.10E+01		3.70E+02	1.60E+02	1.30E+02		3.20E+01	3.10E+03	1.90E+01	2.80E+03	5.30E+02		
	1997	4.90E+01						1.10E+02	2.40E+02	2.60E+01	2.90E+03	6.20E+02		
	1998	9.30E+01		5.10E+00		2.00E+01		6.90E+01	5.20E+02	5.20E+01	1.90E+03	2.00E+02		
	1999	2.20E+01			2.30E+01	1.60E+01		3.00E+01	3.00E+02		2.80E+03	3.70E+02	1.20E+02	
Emsland (KKE)	1995	1.10E+02							4.80E+02		6.80E+00			
	1996	1.20E+02												
	1997	9.90E+01							1.90E+00		1.50E-01			
	1998	1.00E+02	2.20E+02	1.50E+00	5.70E-01	1.70E+00	8.30E-01	2.00E+02	1.30E+03	1.10E+01	5.00E+01	2.90E-01	9.10E-01	1.60E+00
	1998	1.10E+02	4.20E+02	5.80E-01	3.70E-01	1.10E+00	1.10E+00	1.60E+02	2.50E+02	4.30E+00	1.20E+01	2.10E-01	7.00E-01	1.30E+00
Grafenrheinfeld (KKG)	1995 [2]													
	1996	2.40E-01						1.60E+02						
	1997 [2]													
	1998	5.50E+01							6.40E+00					
	1999	5.10E+01							3.00E+02	8.80E-01	3.50E-01			
Grohnde (KWG)	1995	3.40E+02	4.80E+03	3.20E+01	1.20E+01			3.10E+01	1.20E+04	4.80E+01	9.30E+02			
	1996	9.20E+01	1.60E+04	3.90E+01				1.60E+02	8.40E+03	4.10E+01	3.60E+02			
	1997	4.90E+00		1.90E+01	4.60E+00	1.90E+01			1.50E+02	3.30E+00	4.00E+01			
	1998	6.80E+00	6.30E+01	2.00E+00					3.50E+02	1.10E+01	2.30E+02	1.40E+01		
	1999							1.30E+01	2.10E+02	2.00E+00	8.30E+01			
Gundremmingen B+C (KRB)	1995	1.20E+00												
	1996 [2]													
	1997		3.10E+02											
	1998	3.00E+00	3.30E-01						1.20E+01		1.50E+00			
	1999	5.90E+00							8.00E-01		2.40E+00	6.20E-01		
Isar 1 (KKI-1)	1995	7.50E-02	3.50E+02	1.20E-02	3.80E-01	3.10E-02	4.50E+00	1.20E-01	1.40E+01		5.10E+00	1.80E+01	7.20E-01	2.30E-01
	1996	3.30E-02	1.40E+02	2.50E-03	5.80E-02	2.30E-03	1.00E+00	8.40E-02	1.80E+00	7.60E-02	1.50E+00	5.50E+00	2.20E-02	4.30E-02
	1997	1.80E-01	7.40E+02	1.30E-02	6.10E-01		5.40E+00		1.90E+01	4.10E-02	9.80E+00	2.90E+01	2.90E+00	2.80E+00
	1998	2.70E-01	6.80E+02		4.80E-01	5.90E-02	1.30E+01		4.60E+00		2.00E+01	6.40E+01	1.10E+00	2.40E-01
	1999	3.20E-03	3.30E+01	4.10E-03	2.40E-02	3.70E-03	2.40E-01	7.20E-02			5.70E-02	9.50E-02	1.20E-02	5.10E-03

Member State Nuclear Power Station	Year	Ar-41	Kr-85	Kr-85m	Kr-87	Kr-88	Kr-89	Xe-131m	Xe-133	Xe-133m	Xe-135	Xe-135m	Xe-137	Xe-138
Isar 2 (KKI-2)	1995	9.50E+01	5.10E+01			5.00E+01		1.80E+01	6.50E+00					4.40E-01
	1996	9.90E+01	4.30E+01			9.60E-01		2.30E+01	6.10E-01		3.60E-01		8.20E-01	1.30E+00
	1997	1.20E+02			4.00E-01	1.70E+00		4.60E+01						5.30E-01
	1998	1.10E+02	7.90E+01	1.10E-02	6.80E-02	1.50E-01	3.20E-01	1.00E+02	5.00E-01	5.10E-01	7.70E-02		5.00E-02	1.30E-01
	1999	8.20E+01	1.70E+02	8.10E-02	1.40E-01	3.10E-01	4.50E-01	1.80E+02	6.10E+01	2.00E+00	2.50E+00	4.90E-02	1.70E-01	3.60E-01
Kruemmel (KKK)	1995		9.10E+02	1.70E+01	1.30E+02	3.60E+00		1.30E+01	2.70E+03	1.30E+01	6.50E+03	6.70E+03		3.60E+02
	1996	1.30E+01	1.50E+02	5.40E+01	1.10E+02			1.10E+01	2.80E+03	2.00E+01	5.00E+03	5.10E+03		1.00E+03
	1997		2.90E+02	2.20E+02	2.30E+02	1.30E+02		9.60E+00	2.40E+03	2.60E+01	3.30E+03	3.80E+03		7.10E+02
	1998			5.90E-02	1.40E+00				1.10E+02	9.00E-01	2.20E+02	9.00E+01		
	1999								2.20E+01		7.40E+01	1.80E+01		
Neckarwestheim 1 (GKN-1)	1995	8.50E+02	2.10E+02	6.00E+00	2.00E+00	2.00E+00		1.10E+01	9.50E+02	9.00E+00	1.20E+02	2.00E+00		
	1996	6.50E+02	1.00E+01	1.00E+00	4.00E+00	4.00E+00		2.00E+00	1.80E+01		1.70E+01	2.00E+00		
	1997	6.70E+02	1.40E+02	5.00E+00	2.00E+00	5.00E+00		1.70E+01	8.80E+02	8.00E+00	6.70E+01	4.00E-01		
	1998	6.00E+02	1.20E+01	1.00E+00	3.00E+00	4.00E+00		3.00E+00	8.00E+01		4.10E+01	6.00E+00		
	1999	5.70E+02		1.00E+00	1.00E+00	2.00E+00		4.00E+00	6.00E+01		5.10E+01	3.00E+00		
Neckarwestheim 2 (GKN-2)	1995	1.70E+02	7.40E+02	1.00E+00		1.00E+00		2.00E+01	5.40E+02	1.00E+00	5.90E+01			
	1996	1.60E+02	4.10E+02	1.20E+01		4.00E+00		3.40E+01	3.10E+03	3.80E+01	1.50E+02	1.00E+00		
	1997	1.00E+02	6.00E+01					3.60E+00	1.80E+02		1.70E+00			
	1998	8.40E+01	1.90E+02					3.60E+00	2.10E+01		4.60E+00	6.30E-01		
	1999	8.80E+01	1.40E+02	2.40E-02	1.40E-01	3.90E-01		3.60E+01	3.30E+00	2.10E+00	2.20E+00	2.20E-01	5.80E-01	
Obrigheim (KWO)	1995	3.00E+01							4.90E+02		9.70E+01	3.80E+00		
	1996	2.90E+01							2.30E+02		7.30E-01			
	1997	3.30E+01							1.30E+02		3.30E+01			
	1998	7.00E+01							1.50E+02		3.80E+01			
	1999	6.50E+01							1.70E+02		4.80E+01			
Philippsburg 1 (KKP-1)	1995	3.90E+01		1.60E+01		7.10E+00			1.20E+01		3.20E+02	4.50E+02		3.20E+01
	1996	1.40E+00	8.20E+01	2.00E+00	8.50E+00	1.10E+01			3.10E+01	1.00E+01	1.90E+02	1.50E+02		2.90E+01
	1997		5.30E+01	5.70E+00	1.00E+01	7.80E+00			6.20E+00		4.40E+02	3.10E+02		2.10E+01
	1998		1.10E+01	7.40E-01	2.30E+00	8.00E-01			3.10E+01		3.60E+02	2.50E+02	1.40E+00	1.40E+01
	1999	2.10E-01	8.80E+00	4.80E-01	1.80E+00				4.70E+01		1.60E+02	1.40E+02	9.80E+00	6.90E+00

Member State Nuclear Power Station	Year	Ar-41	Kr-85	Kr-85m	Kr-87	Kr-88	Kr-89	Xe-131m	Xe-133	Xe-133m	Xe-135	Xe-135m	Xe-137	Xe-138
Philippsburg 2 (KKP-2)	1995	3.30E+02	3.70E+02						6.80E+02		3.50E+02	4.70E+00		
	1996	3.00E+02	6.80E+01	9.40E+00		2.30E+00			5.90E+02	7.00E+00	1.30E+02	1.40E+01		
	1997	1.70E+02	2.60E+03	2.50E+01	8.80E+00	2.80E+01		2.80E+01	2.50E+03	6.00E+01	3.20E+02	1.80E+00		3.50E+00
	1998	1.10E+02		1.00E+00					4.50E+00		1.20E+01			
	1999	4.40E+02	2.40E+02	6.10E+01	1.10E+01	5.70E+01	2.20E+01	6.10E+01	1.90E+03	4.00E+01	4.00E+02	2.30E+00		
Stade (KKS)	1995	1.20E+03							3.80E+02		7.80E+01			
	1996	1.70E+03	6.50E+01						1.80E+02		8.50E+00			
	1997	1.10E+03	7.20E+01						1.90E+01		1.40E+01			
	1998	1.10E+03	1.70E+02						3.70E+01		2.90E+01			
	1999	1.10E+03	1.30E+02	4.80E-01		4.20E+00			4.10E+01		1.80E+02			
Unterweser (KKU)	1995	3.70E+02	3.10E+02						2.90E+03		6.20E+01			
	1996	3.80E+02	1.50E+02						2.70E+03		8.70E+01			
	1997	4.20E+02	2.00E+02						2.80E+03		4.90E+01			
	1998	2.30E+03	1.10E+03											
	1999	1.80E+02	2.20E+02	1.60E+00		2.10E+00		9.10E+01	3.10E+03	1.10E+01	2.70E+02			
The Netherlands	[1]													
Spain														
Almaraz 1+2	1995	5.45E+02	1.17E+01	8.29E+01	1.01E+02	1.12E+02			2.69E+04	4.53E+01	6.90E+02	1.10E+03		9.34E+01
	1996	2.40E+02		2.81E+02	3.07E+02	3.55E+02		3.42E+01	4.79E+04	2.24E+02	2.06E+03	1.35E+03		1.79E+02
	1997	5.98E+01	3.43E+02	6.66E+01	7.96E+01	8.83E+01		7.92E+01	4.42E+04	9.45E+01	1.01E+03	6.41E+02		7.18E+01
	1998	1.14E+02	5.40E+01					1.39E+02	9.37E+03	1.66E+01	1.32E+01	2.53E-01		
	1999	8.62E+02	2.83E+01	1.10E-01				4.71E-02	2.93E+02	3.01E-03	8.15E+00	9.10E-01		
Asco 1+2	1995	4.34E+01			5.55E-01			4.44E+01	1.85E+04	4.21E+00	8.76E+02			
	1996	4.25E+01			3.68E-01	3.39E-01		1.22E+01	3.30E+03	3.22E-01	1.90E+02	5.15E+00		1.37E+00
	1997	3.76E+01			4.71E-03			2.95E-01	2.19E+03	6.13E-02	1.48E+02	1.26E-02		
	1998	4.28E+01			4.42E-03			5.62E+00	1.40E+04	1.31E+00	1.11E+03	3.31E-02		
	1999	3.30E+01						8.78E+01	2.11E+04	1.72E+01	1.17E+03			
Cofrentes	1995	1.92E+01	1.92E+02	1.42E+02	4.48E+01	6.76E+01	4.34E+02	1.42E+00	1.68E+03		4.40E+03	7.05E+02	9.25E+02	7.12E+02
	1996	1.64E+01	1.22E+02	1.08E+02	3.82E+01	5.77E+01	3.71E+02	1.22E+00	1.09E+03		1.34E+03	6.09E+02	7.90E+02	6.07E+02
	1997	2.74E+01	3.19E+02	2.94E+01	6.40E+01	9.64E+01	6.19E+02	2.03E+00	1.83E+03		1.68E+03	1.00E+03	1.32E+03	1.01E+03
	1998	1.31E+01	2.55E+02	1.43E+01	3.07E+01	4.63E+01	2.97E+02	9.74E-01	9.78E+02		4.67E+03	4.90E+02	6.33E+02	4.87E+02
	1999	2.78E+00	2.06E+01	2.98E+00	6.33E+01	9.76E+00	6.26E+01	2.06E-01	2.31E+02		3.85E+03	1.02E+02	1.34E+02	1.03E+02

Member State Nuclear Power Station	Year	Ar-41	Kr-85	Kr-85m	Kr-87	Kr-88	Kr-89	Xe-131m	Xe-133	Xe-133m	Xe-135	Xe-135m	Xe-137	Xe-138
Jose Cabrera (Zorita)	1995								6.57E+03		6.56E+03			
	1996								1.83E+04		3.50E+03			
	1997								1.09E+04		4.68E+03			
	1998								1.28E+04		2.10E+03			
	1999								1.07E+04		1.74E+03			
Sta Maria de Garona	1995	1.01E+01		1.89E+03	6.22E+01	1.61E+03			3.40E+03		5.02E+02			
	1996			1.88E+02		1.00E+02			2.26E+02		1.33E+02			
	1997			1.50E+02		9.78E+01			2.57E+01		2.12E+01			
	1998			7.84E+02		4.27E+02			3.19E+03		6.79E+01			
	1999			4.88E+01					1.22E+02		7.72E+00			
Trillo	1995	1.17E+03							3.65E+03	8.16E+01	1.54E+02			
	1996	8.72E+01							1.82E-03		2.43E-03			
	1997	3.22E+01		4.00E-02					7.45E+03	3.58E+01	5.12E+02			
	1998	8.96E+00	4.94E-01	1.49E-01	6.75E-02	2.57E-01			3.32E+03	1.09E-01	1.79E+02			
	1999	1.98E+02		1.49E+01	1.98E+01	2.97E+01			6.87E+02		1.12E+02			2.52E-02
Vandellos 2	1995	5.28E+01							8.52E+01		5.81E+00			
	1996								2.64E+02					
	1997								3.37E+02					
	1998								1.15E+01					
	1999								8.67E+02					
Sweden														
Barsebäck 1+2	1995	7.80E+02		1.21E+03	3.30E+03	4.90E+03		8.10E+02	4.80E+02	3.40E+02	6.90E+03	9.40E+02	1.10E+03	1.31E+03
	1996	4.10E+03		6.70E+02	2.11E+03	1.97E+03			1.86E+02	1.20E+02	6.40E+03	5.70E+02	8.00E+02	9.40E+02
	1997	5.70E+02	4.40E-02	3.05E+02	4.20E+02	9.10E+02			6.65E+02	2.90E+02	2.18E+03	2.07E+02	7.50E+02	1.02E+03
	1998		4.80E-02	4.70E+02	8.90E+02	1.44E+03			7.66E+02	2.40E+02	2.40E+03	9.60E+02	8.42E+02	1.22E+03
	1999	1.31E+03	1.05E-01	9.60E+02	1.49E+03	3.11E+03			2.84E+03	2.80E+02	5.29E+03	1.06E+03	1.56E+03	1.41E+03
Forsmark 1+2+3	1995			6.81E+03	3.85E+02	2.28E+02			3.24E+04	2.70E+01	9.20E+03	5.10E+03	2.33E+04	4.00E+03
	1996			3.44E+03	1.92E+02	2.97E+03			5.54E+04	7.77E+01	5.14E+03	2.49E+03	1.69E+04	3.89E+02
	1997			9.74E+00	6.00E+00				1.70E+04	1.90E+01	1.17E+03	7.31E+02	6.60E+03	2.50E+01
	1998			4.65E+01	2.60E+03				4.46E+03	5.91E+02	2.17E+02	2.88E+01	3.50E+03	
	1999			4.64E+00	9.37E-01			6.60E+01	1.97E+03	1.86E+01	1.16E+02	1.01E+01	1.42E+02	

Member State Nuclear Power Station		Year	Ar-41	Kr-85	Kr-85m	Kr-87	Kr-88	Kr-89	Xe-131m	Xe-133	Xe-133m	Xe-135	Xe-135m	Xe-137	Xe-138
Oskarshamn 1+2+3		1995	6.50E+01	1.20E+00	7.60E+03	1.20E+04	1.30E+04	4.44E+03	1.80E+02	2.64E+03	4.92E+02	5.91E+04	6.20E+02	8.80E+03	2.83E+03
		1996	6.40E+01	9.14E-01	7.10E+03	1.60E+04	1.19E+04	4.64E+03	2.10E+02	1.46E+04	7.94E+02	4.53E+04	5.89E+03	5.81E+03	2.56E+04
		1997	8.04E+02	6.90E+00	6.82E+04	8.74E+04	1.63E+05	1.79E+03	3.03E+03	8.72E+04	1.11E+03	3.45E+05	6.79E+03	1.75E+03	2.73E+04
		1998	1.30E+03		2.68E+03	1.76E+03	4.06E+03	1.74E+02	4.10E+03	1.34E+04	3.03E+02	3.37E+03	1.40E+03	2.22E+03	9.21E+03
		1999	1.12E+03		2.81E+03	1.20E+03	4.74E+03	7.10E+01	2.71E+03	8.60E+03	6.40E+02	4.62E+03	3.67E+02	8.32E+02	3.87E+03
Ringhals 1		1995	6.25E+01		2.53E+05	1.65E+06	8.30E+05	3.80E+05	5.10E+05	8.46E+04	3.42E+03	1.56E+06	2.18E+06	1.45E+06	6.76E+06
		1996	3.52E+00		1.81E+05	9.01E+05	5.48E+05	7.66E+04	4.99E+03	7.21E+04		1.17E+06	8.79E+05	2.97E+05	2.56E+06
		1997	1.90E+01		5.00E+04	2.10E+05	1.40E+05	1.70E+04	2.60E+01	2.80E+04	2.80E+02	3.30E+05	1.30E+05	4.90E+04	3.60E+05
		1998	1.40E+02		7.10E+04	3.40E+05	2.20E+05	3.30E+04	3.70E+02	2.70E+04	1.80E+02	4.90E+05	2.50E+05	1.40E+05	7.70E+05
		1999 [3]	1.12E+02		2.19E+04	5.83E+04	5.99E+04	8.42E+03	1.64E+02	1.40E+04	5.59E+01	1.97E+05	1.93E+04	2.95E+04	5.44E+04
Ringhals 2+3+4		1995	4.68E+02	2.44E+02	9.44E+01	2.48E+01	5.77E+01		1.19E+02	1.35E+04	1.06E+02	8.55E+02	2.55E+01	1.96E+00	3.33E+01
		1996	4.94E+02	2.89E+02	1.88E+02	6.87E+01	2.68E+02		1.50E+02	1.82E+04	1.61E+02	1.04E+03	8.59E+00	7.05E-01	1.52E+00
		1997	4.15E+02	1.93E+01	1.08E+00	7.52E-01	2.80E-01		1.28E+01	5.59E+02	2.06E+00	3.07E+02	3.16E+00	2.22E-01	3.00E-01
		1998	4.09E+02	1.20E-01	1.68E+00	7.50E-01	4.40E-03		5.40E+00	2.05E+02	5.10E+00	1.80E+02	3.89E+00	3.10E-01	4.20E-02
		1999	5.49E+02	1.33E+01	1.24E+01	1.90E+00	3.14E+00		2.26E+01	2.20E+03	9.14E+00	2.77E+02	1.23E+02	2.80E-01	
United Kingdom	[4]														
Sizewell B	[5]														

Notes:

[1] Member States do not report detailed nuclide data for noble gases.

[2] Discharge values for noble gases <DL.

[3] Ringhals 1 also reported a discharge of 3,43E-02 Bq of Xe-139 in 1999.

[4] The UK power stations (GCR and AGR) only report Ar-41 - see previous table for data.

[5] Sizewell B (PWR): detailed nuclide data for noble gases are not reported.

Nuclear Power Stations - Airborne Discharges - Carbon-14

Member State / Nuclear Power Station		Year	Carbon-14 (GBq) Limit	Value	
Belgium	[1]				
Finland					
Loviisa 1+2		1995	not defined	1.40E+02	
		1996		9.90E+01	
		1997		2.30E+02	
		1998		3.40E+02	
		1999		3.20E+02	
Olkiluoto 1+2	[2]	1995	not defined	6.40E+02	
		1996		6.50E+02	
		1997		6.70E+02	
		1998		7.20E+02	
		1999		7.60E+02	
France	[1] [3]				
Germany					
Biblis A (KWB-A)		1995	not defined	3.00E+02	Of which 1,4 E+01 GBq as CO2
		1996		4.50E+01	Of which 8,0 E+00 GBq as CO2
		1997		3.00E+02	Of which 8,3 E+00 GBq as CO2
		1998		1.20E+02	Of which 7,1 E+00 GBq as CO2
		1999		3.00E+02	Of which 1,4 E+01 GBq as CO2
Biblis B (KWB-B)		1995	not defined	8.00E+01	Of which 1,4 E+01 GBq as CO2
		1996		2.70E+02	Of which 2,0 E+01 GBq as CO2
		1997		3.20E+02	Of which 2,4 E+01 GBq as CO2
		1998		4.60E+02	Of which 3,3 E+01 GBq as CO2
		1999		1.00E+02	Of which 2,5 E+01 GBq as CO2
Brokdorf (KBR)		1995	not defined	2.60E+02	
		1996		2.10E+02	
		1997		3.50E+02	
		1998		3.10E+02	
		1999		3.00E+02	
Brunsbuettel (KKB)		1995	not defined	7.50E+01	Of which 1,4 E+02 GBq as CO2
		1996		7.00E+01	Of which 9,0 E+01 GBq as CO2
		1997		1.40E+02	Of which 1,0 E+02 GBq as CO2
		1998		1.10E+02	Of which 5,2 E+01 GBq as CO2
		1999		2.70E+02	Of which 5,2 E+01 GBq as CO2
Emsland (KKE)		1995	not defined	1.30E+02	Of which 1,3 E+02 GBq as CO2
		1996		1.80E+02	Of which 1,7 E+02 GBq as CO2
		1997		2.50E+02	Of which 1,8 E+02 GBq as CO2
		1998		5.90E+02	Of which 3,2 E+02 GBq as CO2
		1998		7.00E+02	Of which 3,3 E+02 GBq as CO2
Grafenrheinfeld (KKG)		1995	not defined	1.10E+02	
		1996		1.00E+02	
		1997		9.30E+01	
		1998		5.20E+01	
		1999		5.00E+01	

Nuclear Power Stations - Airborne Discharges - Carbon-14

Member State Nuclear Power Station	Year	Carbon-14 (GBq)		
		Limit	Value	
Grohnde (KWG)	1995	not defined	5.00E+01	
	1996		5.20E+01	
	1997		4.70E+00	
	1998		3.10E+02	Of which 3,5 E+01 GBq as CO2
	1999		3.30E+02	Of which 1,9 E+01 GBq as CO2
Gundremmingen B+C (KRB)	1995	not defined	7.30E+02	
	1996		1.60E+03	
	1997		1.20E+03	
	1998		1.30E+03	
	1999		9.00E+02	
Isar 1 (KKI-1)	1995	not defined	2.10E+02	
	1996		2.00E+02	
	1997		1.70E+02	
	1998		2.90E+02	Of which 2,7 E+02 GBq as CO2
	1999		2.90E+02	Of which 2,7 E+02 GBq as CO2
Isar 2 (KKI-2)	1995	not defined	4.50E+02	
	1996		4.70E+02	
	1997		5.20E+02	
	1998		5.00E+02	
	1999		5.40E+02	
Kruemmel (KKK)	1995	not defined	7.40E+01	
	1996		8.20E+01	
	1997		3.40E+02	
	1998		2.10E+02	
	1999		4.80E+02	
Neckarwestheim 1 (GKN-1)	1995	not defined	1.30E+01	
	1996		7.40E+00	
	1997		9.50E+00	
	1998		1.30E+02	Of which 7,4 E+00 GBq as CO2
	1999		2.40E+02	Of which 1,1 E+01 GBq as CO2
Neckarwestheim 2 (GKN-2)	1995	not defined	6.70E+01	Of which 5,7 E+01 GBq as CO2
	1996		1.80E+02	Of which 1,2 E+02 GBq as CO2
	1997		2.10E+02	Of which 6,1 E+01 GBq as CO2
	1998		2.70E+02	Of which 8,7 E+01 GBq as CO2
	1999		2.70E+02	Of which 1,1 E+02 GBq as CO2
Obrigheim (KWO)	1995	not defined	9.40E+00	Of which 9,2 E+00 GBq as CO2
	1996		6.10E+01	Of which 7,5 E+00 GBq as CO2
	1997		3.40E+01	Of which 1,1 E+01 GBq as CO2
	1998		1.60E+01	Of which 1,1 E+01 GBq as CO2
	1999		4.70E+01	Of which 9,6 E+00 GBq as CO2
Philippsburg 1 (KKP-1)	1995	not defined	4.70E+02	
	1996		5.80E+02	
	1997		5.00E+02	
	1998		5.90E+02	
	1999		6.20E+02	

Nuclear Power Stations - Airborne Discharges - Carbon-14

Member State Nuclear Power Station		Year	Carbon-14 (GBq)		
			Limit	Value	
Philippsburg 2 (KKP-2)		1995	not defined	6.00E+02	Of which 6,5 E+01 GBq as CO2
		1996		1.90E+02	Of which 4,3 E+01 GBq as CO2
		1997		2.50E+02	Of which 6,6 E+01 GBq as CO2
		1998		2.30E+02	Of which 9,1 E+01 GBq as CO2
		1999		1.80E+02	Of which 4,0 E+01 GBq as CO2
Stade (KKS)		1995	not defined	7.10E+01	Of which 1,4 E+01 GBq as CO2
		1996		1.60E+02	Of which 2,2 E+01 GBq as CO2
		1997		9.60E+01	Of which 1,8 E+01 GBq as CO2
		1998		8.60E+01	Of which 1,5 E+01 GBq as CO2
		1999		1.90E+02	Of which 2,6 E+01 GBq as CO2
Unterweser (KKU)		1995	not defined	5.70E+01	
		1996		5.10E+01	
		1997		3.90E+01	
		1998		4.90E+01	
		1999		3.70E+01	
The Netherlands					
Borssele		1995	3.00E+02	5.60E+00	
		1996		3.30E+01	
		1997		5.60E+01	
		1998		8.60E+01	
		1999		7.10E+01	
Dodewaard		1995	5.00E+02	not measured	
		1996		2.90E+01	
(stopped 26/03/97)		1997		1.10E+01	
Spain	[1]				
Trillo		1995	not defined	9.93E+01	
		1996		1.46E+02	
		1997		7.59E+01	
		1998		8.55E+01	
		1999		9.63E+01	
Sweden	[1]				
United Kingdom					
Bradwell A+B		1995	6.00E+02	3.64E+02	
		1996		3.57E+02	
		1997		2.76E+02	
		1998		3.79E+02	
		1999		1.99E+02	
Calder Hall A+B+C+D		1995	4.70E+02	3.50E+02	
		1996		3.30E+02	
		1997		3.20E+02	
		1998		3.50E+02	
		1999		3.50E+02	

Nuclear Power Stations - Airborne Discharges - Carbon-14

Member State Nuclear Power Station	Year	Carbon-14 (GBq)	
		Limit	Value
Chapelcross A+B+C+D	1995	not defined	not reported
	1996		not reported
	1997		not reported
	1998		not reported
	1999		not reported
Dungeness AA+AB	1995	5.00E+03	3.50E+03
	1996		2.50E+03
	1997		3.20E+03
	1998		3.00E+03
	1999		3.56E+03
Dungeness B1+B2	1995	5.00E+03	1.61E+02
	1996		4.90E+02
	1997		4.73E+02
	1998		4.05E+02
	1999		4.70E+02
Hartlepool A1+A2	1995	5.00E+03	8.77E+02
	1996		1.51E+03
	1997		1.61E+03
	1998		1.91E+03
	1999		1.74E+03
Heysham 1A+1B	1995	4.00E+03	8.11E+02
	1996		1.02E+03
	1997		1.30E+03
	1998		1.16E+03
	1999		6.88E+02
Heysham 2A+2B	1995	3.00E+03	9.09E+02
	1996		8.49E+02
	1997		8.17E+02
	1998		1.05E+03
	1999		1.09E+03
Hinkley Point AA+AB	1995	4.00E+03	1.12E+03
	1996		1.88E+03
	1997		1.91E+03
	1998		1.42E+03
	1999		1.60E+03
Hinkley Point BA+BB	1995	8.00E+03	8.40E+02
	1996		1.88E+03
	1997		1.41E+03
	1998		1.92E+03
	1999		1.21E+03
Hunterston B1+B2	1995	3.00E+03	1.30E+03
	1996		1.35E+03
	1997		1.67E+03
	1998		1.86E+03
	1999		2.00E+03

Nuclear Power Stations - Airborne Discharges - Carbon-14

Member State Nuclear Power Station	Year	Carbon-14 (GBq)	
		Limit	Value
Oldbury AA+AB	1995	6.00E+03	3.75E+03
	1996		3.85E+03
	1997		3.87E+03
	1998		3.72E+03
	1999		3.93E+03
Sizewell AA+AB	1995	1.50E+03	9.10E+02
	1996		1.07E+02
	1997		5.30E+02
	1998		4.65E+02
	1999		1.09E+03
Sizewell B	1995	6.00E+02	1.23E+01
	1996		5.41E+01
	1997		7.59E+01
	1998		2.30E+02
	1999		2.32E+01
Torness 1+2	1995	4.00E+03	4.90E+02
	1996	3.00E+03	5.71E+02
	1997		4.97E+02
	1998		7.66E+02
	1999		5.75E+02
Wylfa A+B	1995	2.40E+03	1.15E+03
	1996		1.24E+03
	1997		1.33E+03
	1998		1.47E+03
	1999		1.48E+03

Notes:

[1] Belgium, France, Spain (except for the Trillo NPS) and Sweden do not report on atmospheric C-14 releases.

[2] The annual discharges of C-14 are determined from experimental data obtained during a measurement period that covered a one-year fuel load cycle, weighted by the load factors of the individual units.

[3] In 1999 a discharge limit on C-14 (1,1 E+03 GBq/annum) was introduced for the St Laurent B1+B2 site.

French Nuclear Power Stations - Airborne Discharges

Member State / Nuclear Power Station		Year	Total (GBq) Halogen + Aerosol		Total (GBq) Tritium + Noble Gases	
France	[1]		Limit	Value	Limit	Value
Belleville 1+2		1995	5.50E+01	2.20E-01	1.65E+06	2.10E+04
		1996		2.60E-01		2.30E+04
		1997		9.00E-02		2.40E+04
		1998		9.80E-02		2.10E+04
		1999		8.70E-02		1.90E+04
Blayais 1+2+3+4		1995	7.40E+01	8.10E-01	2.22E+06	5.80E+04
		1996		3.40E-01		1.80E+04
		1997		1.20E-01		1.70E+04
		1998		1.60E-01		2.20E+04
		1999		1.40E+00		2.20E+04
Bugey 2+3+4+5	[2]	1995	1.11E+02	3.30E-01	2.59E+06	1.40E+04
		1996		3.40E-01		1.30E+04
		1997		3.90E-01		1.10E+04
		1998		2.50E-01		1.10E+04
		1999		3.50E-01		1.30E+04
Cattenom 1+2+3+4		1995	1.10E+02	1.80E-01	3.30E+06	2.50E+04
		1996		1.90E-01		2.30E+04
		1997		1.80E-01		2.50E+04
		1998		2.20E-01		2.40E+04
		1999		1.20E-01		2.10E+04
Chinon B1+B2+B3+B4	[3]	1995	7.50E+01	4.20E-01	2.30E+06	4.50E+04
		1996		1.00E-01		3.50E+04
		1997		7.00E-02		2.60E+04
		1998		1.20E-01		2.50E+04
		1999		5.70E-01		2.90E+04
Chooz B1+B2	[4]	1996	1.10E+01	4.00E-02	3.30E+05	1.70E+04
		1997		8.80E-01		1.10E+04
		1998		1.80E-01		1.50E+04
		1999		2.20E-01		1.00E+04
Civaux 1+2		1998	1.10E+01	2.70E-02	3.30E+05	1.10E+04
		1999		3.30E-02		1.10E+04
Creys Malville	[5]	1995	5.00E+00	1.40E-02	2.20E+05	4.60E+04
		1996		1.40E-02		4.50E+04
		1997		1.40E-02		4.40E+04
(FBR stopped 31/12/98)		1998		1.30E-02		8.00E+03
		1999		1.30E-02		3.30E+03
Cruas 1+2+3+4		1995	7.50E+01	1.80E-01	2.30E+06	2.00E+04
		1996		1.50E-01		2.60E+04
		1997		6.00E-02		1.80E+04
		1998		7.00E-02		1.60E+04
		1999		6.10E-02		1.70E+04
Dampierre 1+2+3+4		1995	7.40E+01	1.20E+00	2.22E+06	3.50E+04
		1996		1.00E-01		1.90E+04
		1997		1.10E-01		2.00E+04
		1998		1.30E-01		2.60E+04
		1999		1.60E-01		2.10E+04
Fessenheim 1+2		1995	1.11E+02	2.00E-02	1.48E+06	6.90E+03
		1996		4.00E-02		9.30E+03
		1997		3.00E-02		7.20E+03
		1998		3.50E-02		7.40E+03
		1999		5.10E-02		7.90E+03

French Nuclear Power Stations - Airborne Discharges

Nuclear Power Station	Year	Total (GBq) Halogen + Aerosol		Total (GBq) Tritium + Noble Gases	
		Limit	Value	Limit	Value
Flamanville 1+2	1995	5.50E+01	1.10E-01	1.65E+06	1.20E+04
	1996		1.30E-01		1.20E+04
	1997		1.30E-01		3.20E+04
	1998		1.60E-01		1.70E+04
	1999		4.10E-01		1.50E+04
Golfech 1+2	1995	5.50E+01	4.00E-02	1.65E+06	1.50E+04
	1996		2.00E-01		1.50E+04
	1997		8.10E-01		2.30E+04
	1998		1.50E-01		2.30E+04
	1999		7.10E-01		1.90E+04
Gravelines 1+2+3+4+5+6	1995	1.10E+02	4.30E+00	3.40E+06	2.50E+04
	1996		5.60E-01		2.60E+04
	1997		3.60E-01		2.20E+04
	1998		6.50E-01		2.00E+04
	1999		5.10E-01		2.10E+04
Nogent 1+2	1995	5.50E+01	1.60E-01	1.65E+06	1.70E+04
	1996		2.60E-01		1.30E+04
	1997		1.60E-01		1.60E+04
	1998		3.90E-01		1.20E+04
	1999		2.40E-01		1.30E+04
Paluel 1+2+3+4	1995	1.10E+02	5.50E-01	3.30E+06	3.00E+04
	1996		3.40E-01		2.90E+04
	1997		1.40E-01		2.60E+04
	1998		1.30E-01		2.50E+04
	1999		1.30E-01		2.50E+04
Penly 1+2	1995	5.50E+01	4.00E-02	1.65E+06	1.00E+04
	1996		1.00E-01		1.40E+04
	1997		1.30E-01		1.40E+04
	1998		2.20E-02		1.20E+04
	1999		2.80E-02		1.40E+04
St Alban 1+2	1995	5.50E+01	6.00E-01	1.65E+06	1.30E+04
	1996		1.40E-01		1.10E+04
	1997		1.20E-01		1.40E+04
	1998		1.60E-01		1.70E+04
	1999		1.40E-01		1.70E+04
St Laurent B1+B2 [6]	1995	5.55E+01	8.00E-02	1.48E+06	1.90E+04
	1996		7.50E-02		1.10E+04
	1997		1.00E-01		1.20E+04
	1998		4.20E-02		1.10E+04
	1999	1.60E+00 [7]	4.30E-02	4.00E+04 [8]	1.10E+04
Tricastin 1+2+3+4	1995	7.40E+01	1.40E-01	2.22E+06	2.70E+04
	1996		1.20E-01		2.70E+04
	1997		2.00E-01		2.90E+04
	1998		2.80E-01		2.50E+04
	1999		1.00E-01		2.60E+04

Notes: see next page.

Notes:

[1] The categories 'Halogen + Aerosol' and 'Tritium + Nobel Gas' are specific to France. For the period reported all discharge values for both categories are declared as 'less than' (<).

[2] Airborne discharge limits apply to the Bugey site as a whole, including unit 1 (gas-graphite reactor, shut down since June 1994).

[3] Airborne discharge limits apply to the Chinon site as a whole, including unit A3 (gas-graphite reactor, shut down since June 1990).

[4] Airborne discharge limits apply to the Chooz site as a whole, including unit A (gas-graphite reactor, shut down since October 1991).

[5] The operational life of Creys Malville (FBR) has been terminated in December 1998.

[6] Airborne discharge limits apply to the St Laurent site as a whole, including units A1 and A2 (gas-graphite reactors, shut down since April 1990 and May 1992 respectively).

[7] In 1999 separate discharge limits were introduced for airborne iodines (8,0 E-01 GBq/annum) and airborne aerosols (8,0 E-01 GBq/annum).

[8] In 1999 separate discharge limits were introduced for noble gases (3,6 E+04 GBq/annum) and airborne tritium (4,0 E+03 GBq/annum).

Nuclear Power Stations - Airborne discharges per unit of electrical energy produced (values summed over the period 1995-1999)

Member State Nuclear Power Station	electricity production (GWh)	noble gases (GBq)	H-3 (GBq)	beta-gamma (GBq)	I-131 (GBq)	noble gases (GBq/GWh)	H-3 (GBq/GWh)	noble gases + H-3 (GBq/GWh)	beta-gamma (GBq/GWh)	I-131 (GBq/GWh)	beta-gamma + I-131 (GBq/GWh)
BELGIUM											
Doel 1+2+3+4	1.06E+05	1.22E+04	6.85E+03	1.03E-02	6.25E-02	1.16E-01	6.49E-02	1.80E-01	9.77E-08	5.92E-07	6.89E-07
Tihange 1+2+3	1.11E+05	4.09E+04	2.90E+04	1.42E-01	8.32E-02	3.69E-01	2.61E-01	6.30E-01	1.29E-06	7.50E-07	2.04E-06
FINLAND											
Loviisa 1+2	3.59E+04	3.80E+04	1.04E+03	9.10E-01	8.19E-01	1.06E+00	2.90E-02	1.09E+00	2.53E-05	2.28E-05	4.82E-05
Olkiluoto 1+2	6.36E+04	8.37E+04	1.59E+03	1.30E-01	9.77E-02	1.32E+00	2.50E-02	1.34E+00	2.04E-06	1.54E-06	3.57E-06
FRANCE [1] [2]											
Belleville 1+2	7.36E+04	1.08E+05		7.55E-01		not aplicable		1.47E+00	not aplicable		1.03E-05
Blayais 1+2+3+4	1.28E+05	1.37E+05		2.83E+00		not aplicable		1.07E+00	not aplicable		2.22E-05
Bugey 2+3+4+5	1.11E+05	6.20E+04		1.66E+00		not aplicable		5.57E-01	not aplicable		1.49E-05
Cattenom 1+2+3+4	1.72E+05	1.18E+05		8.90E-01		not aplicable		6.85E-01	not aplicable		5.17E-06
Chinon B1+B2+B3+B4	1.23E+05	1.60E+05		1.28E+00		not aplicable		1.30E+00	not aplicable		1.04E-05
Cruas 1+2+3+4	1.18E+05	9.70E+04		5.21E-01		not aplicable		8.20E-01	not aplicable		4.40E-06
Dampierre 1+2+3+4	1.11E+05	1.21E+05		1.70E+00		not aplicable		1.09E+00	not aplicable		1.54E-05
Fessenheim 1+2	5.67E+04	3.87E+04		1.76E-01		not aplicable		6.82E-01	not aplicable		3.10E-06
Flamanville 1+2	7.92E+04	8.80E+04		9.40E-01		not aplicable		1.11E+00	not aplicable		1.19E-05
Golfech 1+2	8.49E+04	9.50E+04		1.91E+00		not aplicable		1.12E+00	not aplicable		2.25E-05
Gravelines 1+2+3+4+5+6	1.80E+05	1.14E+05		6.38E+00		not aplicable		6.32E-01	not aplicable		3.54E-05
Nogent 1+2	8.21E+04	7.10E+04		1.21E+00		not aplicable		8.65E-01	not aplicable		1.47E-05
Paluel 1+2+3+4	1.64E+05	1.35E+05		1.29E+00		not aplicable		8.24E-01	not aplicable		7.88E-06
Penly 1+2	8.83E+04	6.40E+04		3.20E-01		not aplicable		7.25E-01	not aplicable		3.62E-06
St Alban 1+2	8.05E+04	7.20E+04		1.16E+00		not aplicable		8.95E-01	not aplicable		1.44E-05
St Laurent B1+B2	5.57E+04	6.40E+04		3.40E-01		not aplicable		1.15E+00	not aplicable		6.10E-06
Tricastin 1+2+3+4	1.19E+05	1.34E+05		8.40E-01		not aplicable		1.13E+00	not aplicable		7.08E-06

Nuclear Power Stations - Airborne discharges per unit of electrical energy produced (values summed over the period 1995-1999)

Member State Nuclear Power Station	electricity production (GWh)	noble gases (GBq)	H-3 (GBq)	beta-gamma (GBq)	I-131 (GBq)	noble gases (GBq/GWh)	H-3 (GBq/GWh)	noble gases + H-3 (GBq/GWh)	beta-gamma (GBq/GWh)	I-131 (GBq/GWh)	beta-gamma + I-131 (GBq/GWh)
GERMANY											
Biblis A (KWB-A)	3.18E+04	7.27E+03	1.13E+03	2.47E-02	3.58E-02	2.29E-01	3.56E-02	2.65E-01	7.78E-07	1.13E-06	1.90E-06
Biblis B (KWB-B)	4.01E+04	1.44E+04	9.68E+02	1.15E-02	2.50E-02	3.59E-01	2.41E-02	3.83E-01	2.87E-07	6.23E-07	9.11E-07
Brokdorf (KBR)	5.26E+04	4.93E+04	1.67E+03	6.60E-05	3.37E-02	9.37E-01	3.18E-02	9.69E-01	1.26E-09	6.41E-07	6.43E-07
Brunsbuettel (KKB)	2.27E+04	2.42E+04	2.15E+02	2.81E-01	3.21E-02	1.07E+00	9.47E-03	1.07E+00	1.24E-05	1.42E-06	1.38E-05
Emsland (KKE)	5.23E+04	3.69E+03	9.90E+03	9.08E-04	2.43E-03	7.06E-02	1.89E-01	2.60E-01	1.74E-08	4.65E-08	6.39E-08
Grafenrheinfeld (KKG)	4.62E+04	5.72E+02	1.93E+03	1.06E-02	1.45E-03	1.24E-02	4.17E-02	5.41E-02	2.29E-07	3.14E-08	2.61E-07
Grohnde (KWG)	5.46E+04	4.42E+04	1.82E+03	4.72E-03	3.96E-02	8.10E-01	3.33E-02	8.43E-01	8.65E-08	7.25E-07	8.11E-07
Gundremmingen B+C (KRB)	9.06E+04	3.38E+02	6.86E+03	5.06E-04	5.39E-03	3.73E-03	7.57E-02	7.94E-02	5.58E-09	5.95E-08	6.51E-08
Isar 1 (KKI-1)	3.15E+04	2.17E+03	4.11E+02	4.95E-02	2.09E-01	6.89E-02	1.30E-02	8.20E-02	1.57E-06	6.63E-06	8.20E-06
Isar 2 (KKI-2)	5.27E+04	1.35E+03	5.04E+03	1.87E-03	<DL	2.56E-02	9.57E-02	1.21E-01	3.54E-08	0.00E+00	3.54E-08
Kruemmel (KKK)	4.09E+04	4.25E+04	2.04E+02	3.14E-01	9.68E-01	1.04E+00	4.99E-03	1.04E+00	7.68E-06	2.37E-05	3.13E-05
Neckarwestheim 1 (GKN-1)	2.96E+04	6.16E+03	1.14E+03	5.39E-03	2.48E-02	2.08E-01	3.85E-02	2.46E-01	1.82E-07	8.37E-07	1.02E-06
Neckarwestheim 2 (GKN-2)	5.14E+04	6.34E+03	1.12E+03	5.60E-04	8.10E-04	1.23E-01	2.18E-02	1.45E-01	1.09E-08	1.58E-08	2.66E-08
Obrigheim (KWO)	1.33E+04	1.70E+03	6.29E+02	3.81E-02	9.76E-03	1.28E-01	4.74E-02	1.76E-01	2.87E-06	7.35E-07	3.61E-06
Philippsburg 1 (KKP-1)	3.28E+04	3.30E+03	3.25E+02	9.45E-02	2.13E-01	1.01E-01	9.91E-03	1.10E-01	2.88E-06	6.49E-06	9.37E-06
Philippsburg 2 (KKP-2)	5.37E+04	1.19E+04	5.33E+03	2.20E-03	8.46E-03	2.22E-01	9.92E-02	3.21E-01	4.09E-08	1.57E-07	1.98E-07
Stade (KKS)	2.36E+04	7.60E+03	4.34E+03	8.16E-02	7.89E-03	3.22E-01	1.84E-01	5.06E-01	3.46E-06	3.34E-07	3.79E-06
Unterweser (KKU)	4.24E+04	1.79E+04	3.10E+03	6.79E-03	2.99E-03	4.23E-01	7.32E-02	4.96E-01	1.60E-07	7.05E-08	2.31E-07
SPAIN											
Almaraz 1+2	6.83E+04	1.40E+05	3.25E+04	1.42E-01	2.17E-01	2.05E+00	4.76E-01	2.53E+00	2.08E-06	3.17E-06	5.25E-06
Asco 1+2	7.08E+04	6.28E+04	1.17E+04	8.79E-02	6.46E-02	8.88E-01	1.65E-01	1.05E+00	1.24E-06	9.13E-07	2.15E-06
Cofrentes	3.84E+04	3.50E+04	5.39E+03	5.66E-01	5.81E-01	9.10E-01	1.40E-01	1.05E+00	1.47E-05	1.51E-05	2.98E-05
Jose Cabrera (Zorita)	4.36E+03	7.78E+04	2.03E+02	3.33E-02	2.34E-01	1.79E+01	4.65E-02	1.79E+01	7.65E-06	5.38E-05	6.14E-05

Nuclear Power Stations - Airborne discharges per unit of electrical energy produced (values summed over the period 1995-1999)

Member State Nuclear Power Station	electricity production (GWh)	noble gases (GBq)	H-3 (GBq)	beta-gamma (GBq)	I-131 (GBq)	noble gases (GBq/GWh)	H-3 (GBq/GWh)	noble gases + H-3 (GBq/GWh)	beta-gamma (GBq/GWh)	I-131 (GBq/GWh)	beta-gamma + I-131 (GBq/GWh)
Sta Maria de Garona	1.75E+04	1.31E+04	1.97E+03	3.02E-01	1.49E-01	7.46E-01	1.12E-01	8.58E-01	1.72E-05	8.50E-06	2.57E-05
Trillo	3.36E+04	1.77E+04	3.71E+03	2.13E-02	1.17E+00	5.28E-01	1.10E-01	6.39E-01	6.34E-07	3.49E-05	3.56E-05
Vandellos 2	3.79E+04	1.62E+03	1.10E+03	8.86E-02	2.32E-01	4.28E-02	2.91E-02	7.19E-02	2.34E-06	6.11E-06	8.45E-06
SWEDEN											
Barsebäck 1+2	3.84E+04	7.58E+04	not measured	1.53E+01	4.10E-02	1.97E+00	not aplicable	not aplicable	3.99E-04	1.07E-06	4.00E-04
Forsmark 1+2+3	1.16E+05	2.08E+05	not measured	8.97E+01	1.35E+00	1.80E+00	not aplicable	not aplicable	7.76E-04	1.17E-05	7.87E-04
Oskarshamn 1+2+3	7.28E+04	1.12E+06	not measured	1.02E+02	2.39E+00	1.54E+01	not aplicable	not aplicable	1.39E-03	3.29E-05	1.43E-03
Ringhals 1	2.50E+04	2.65E+07	not measured	6.18E+04	2.65E+01	1.06E+03	not aplicable	not aplicable	2.47E+00	1.06E-03	2.47E+00
Ringhals 2+3+4	9.50E+04	4.17E+04	not measured	2.49E-01	2.25E-01	4.39E-01	not aplicable	not aplicable	2.62E-06	2.37E-06	4.99E-06
THE NETHERLANDS [3]											
Borssele	1.63E+04	2.96E+04	2.24E+02	4.00E-05	2.57E-01	1.82E+00	1.38E-02	1.83E+00	2.46E-09	1.58E-05	1.58E-05
UNITED KINGDOM [4]											
Dungeness B1+B2	2.07E+04	7.73E+04	1.33E+04	1.22E-01	1.92E-02	3.74E+00	6.42E-01	4.39E+00	5.92E-06	9.30E-07	6.85E-06
Hartlepool A1+A2	4.21E+04	1.25E+05	7.20E+03	8.35E-02	7.87E-01	2.97E+00	1.71E-01	3.14E+00	1.98E-06	1.87E-05	2.07E-05
Heysham 1A+1B	3.97E+04	6.51E+04	5.09E+03	1.57E-01	4.35E+00	1.64E+00	1.28E-01	1.77E+00	3.96E-06	1.10E-04	1.13E-04
Heysham 2A+2B	4.35E+04	8.57E+04	9.74E+03	1.24E-01	9.96E-01	1.97E+00	2.24E-01	2.20E+00	2.84E-06	2.29E-05	2.58E-05
Hinkley Point BA+BB	4.21E+04	1.64E+05	1.05E+04	3.36E-01	8.21E-02	3.90E+00	2.49E-01	4.15E+00	7.98E-06	1.95E-06	9.93E-06
Hunterston B1+B2	4.36E+04	3.01E+05	1.57E+04	2.57E-01	no data	6.90E+00	3.59E-01	7.26E+00	5.89E-06	not aplicable	not aplicable
Sizewell B	4.06E+04	3.76E+04	3.37E+03	4.70E-02	5.58E-01	9.26E-01	8.28E-02	1.01E+00	1.16E-06	1.37E-05	1.49E-05
Torness 1+2	4.71E+04	4.75E+04	7.76E+03	6.38E-02	no data	1.01E+00	1.65E-01	1.17E+00	1.35E-06	not aplicable	not aplicable
Bradwell A+B	5.96E+03	2.54E+06	3.99E+03	8.26E-01	not measured	4.27E+02	6.70E-01	4.28E+02	1.39E-04	not aplicable	not aplicable
Calder Hall A+B+C+D	5.67E+03	1.04E+07	1.90E+04	1.70E+00	not measured	1.84E+03	3.35E+00	1.84E+03	3.00E-04	not aplicable	not aplicable
Chapelcross A+B+C+D	5.76E+03	1.19E+07	5.02E+06	not reported	not measured	2.07E+03	8.72E+02	2.95E+03	not aplicable	not aplicable	not aplicable

Nuclear Power Stations - Airborne discharges per unit of electrical energy produced (values summed over the period 1995-1999)

Member State Nuclear Power Station	electricity production (GWh)	noble gases (GBq)	H-3 (GBq)	beta-gamma (GBq)	I-131 (GBq)	noble gases (GBq/GWh)	H-3 (GBq/GWh)	noble gases + H-3 (GBq/GWh)	beta-gamma (GBq/GWh)	I-131 (GBq/GWh)	beta-gamma + I-131 (GBq/GWh)
Dungeness AA+AB	1.31E+04	4.67E+06	2.79E+03	1.37E+00	not measured	3.56E+02	2.12E-01	3.56E+02	1.04E-04	not apliccable	not apliccable
Hinkley Point AA+AB	1.28E+04	8.96E+06	1.03E+04	5.07E-01	not measured	7.01E+02	8.05E-01	7.02E+02	3.97E-05	not apliccable	not apliccable
Oldbury AA+AB	1.37E+04	6.53E+05	7.49E+03	3.95E-01	not measured	4.77E+01	5.47E-01	4.82E+01	2.89E-05	not apliccable	not apliccable
Sizewell AA+AB	6.14E+03	4.32E+06	3.35E+03	4.96E-01	not measured	7.03E+02	5.46E-01	7.03E+02	8.07E-05	not apliccable	not apliccable
Wylfa A+B	2.84E+04	1.75E+05	3.05E+04	3.23E-01	not measured	6.16E+00	1.08E+00	7.24E+00	1.14E-05	not apliccable	not apliccable

Notes:

[1] French datasets combine Noble Gases and airborne Tritium as well as 'aerosols + halogens' in single categories. These consolidated values are presented in the table.

[2] The Chooz B and Civaux power stations started production in the period under consideration. Data are therefore not taken up in the table.

[3] The Dodewaard power station ran down and stopped production in the period under consideration. Data are therefore not taken up in the table.

[4] The electrical output data for 1999 of the following power stations were not available when compiling the report: Bradwell, Calder Hall, Chapelcross, Dungeness A, Hinkley Point A, Oldbury, Sizewell A and Wylfa. Data therefore reflect the period 1995-1998.

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Belgium	[1] [2]					
Doel 1+2+3+4		1995	1.04E+05	4.70E+04	1.50E+03	3.78E+01
		1996		3.10E+04		1.89E+01
		1997		3.80E+04		2.64E+01
		1998		4.70E+04		1.60E+01
		1999		4.80E+04		2.78E+01
Tihange 1+2+3		1995	1.48E+05	3.84E+04	8.88E+02	2.25E+01
		1996		4.47E+04		5.24E+01
		1997		4.73E+04		2.44E+01
		1998		3.29E+04		2.02E+01
		1999		6.66E+04		1.27E+01
Finland	[3]					
Loviisa 1+2		1995	1.50E+05	1.20E+04	8.90E+02	7.30E-02
		1996		9.40E+03		5.50E-02
		1997		1.20E+04		1.20E-02
		1998		9.30E+03		1.20E+00
		1999		1.40E+04		1.20E-01
Olkiluoto 1+2		1995	1.80E+04	1.50E+03	3.00E+02	2.40E+01
		1996		2.40E+03		1.60E+01
		1997		1.30E+03		9.50E+00
		1998		1.20E+03		2.50E+00
		1999		1.10E+03		1.80E+00
France	[4]					
Belleville 1+2		1995	8.00E+04	3.00E+04	1.10E+03	4.00E+00
		1996		3.60E+04		6.10E+00
		1997		3.30E+04		3.30E+00
		1998		2.50E+04		2.30E+00
		1999		3.20E+04		3.30E+00
Blayais 1+2+3+4		1995	1.11E+05	4.60E+04	1.48E+03	1.40E+01
		1996		5.30E+04		4.90E+00
		1997		4.00E+04		2.20E+00
		1998		4.70E+04		1.80E+00
		1999		4.60E+04		1.70E+00
Bugey 2+3+4+5	[5]	1995	1.85E+05	3.30E+04	2.04E+04	9.60E+00
		1996		3.30E+04		1.20E+01
		1997		3.80E+04		9.60E+00
		1998		3.10E+04		7.10E+00
		1999		3.40E+04		3.40E+00
Cattenom 1+2+3+4		1995	1.60E+05	8.00E+04	2.20E+03	7.00E+00
		1996		7.20E+04		3.80E+00
		1997		7.40E+04		2.30E+00
		1998		7.30E+04		1.90E+00
		1999		8.70E+04		2.00E+00
Chinon B1+B2+B3+B4	[6]	1995	1.10E+05	4.40E+04	1.50E+03	1.00E+01
		1996		4.40E+04		1.00E+01
		1997		5.90E+04		3.20E+00
		1998		4.60E+04		2.20E+00
		1999		4.10E+04		9.20E-01

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Chooz B1+B2	[7]	1996	8.00E+04	2.00E+02	2.20E+02	1.60E-01
		1997		1.30E+04		1.90E+00
		1998		1.00E+04		1.70E+00
		1999		2.00E+04		8.90E-01
Civaux 1+2		1998	1.60E+05	9.90E+02	2.20E+02	5.50E-01
		1999		3.60E+03		3.90E-01
Creys Malville		1995	1.50E+04	2.80E+01	2.50E+02	1.00E-02
		1996		6.30E+02		2.10E-02
		1997		1.20E+00		1.80E-02
(FBR stopped 31/12/98)		1998		no data		no data
		1999		7.20E-01		8.70E-02
Cruas 1+2+3+4		1995	1.10E+05	4.30E+04	1.50E+03	3.90E+00
		1996		5.00E+04		4.40E+00
		1997		3.70E+04		2.80E+00
		1998		4.60E+04		1.80E+00
		1999		4.40E+04		1.30E+00
Dampierre 1+2+3+4		1995	1.11E+05	4.40E+04	1.48E+03	9.00E+00
		1996		4.40E+04		7.00E+00
		1997		3.80E+04		7.90E+00
		1998		3.70E+04		5.20E+00
		1999		4.00E+04		6.10E+00
Fessenheim 1+2		1995	7.40E+04	2.10E+04	9.25E+02	2.20E+00
		1996		2.00E+04		2.70E+00
		1997		2.20E+04		6.10E+00
		1998		2.20E+04		2.90E+00
		1999		2.10E+04		1.90E+00
Flamanville 1+2		1995	8.00E+04	3.10E+04	1.10E+03	3.40E+00
		1996		3.50E+04		2.00E+00
		1997		2.50E+04		2.90E+00
		1998		3.00E+04		2.80E+00
		1999		2.50E+04		2.20E+00
Golfech 1+2		1995	8.00E+04	2.70E+04	1.10E+03	4.80E+00
		1996		2.20E+04		1.70E+00
		1997		3.30E+04		2.80E+00
		1998		2.40E+04		8.30E-01
		1999		2.30E+04		1.50E+00
Gravelines 1+2+3+4+5+6		1995	1.66E+05	3.90E+04	2.18E+03	1.80E+01
		1996		5.10E+04		1.40E+01
		1997		5.80E+04		5.80E+00
		1998		5.80E+04		5.80E+00
		1999		6.80E+04		4.00E+00
Nogent 1+2		1995	8.00E+04	2.50E+04	1.10E+03	3.00E+00
		1996		3.20E+04		3.00E+00
		1997		2.20E+04		3.20E+00
		1998		4.20E+04		1.90E+00
		1999		5.00E+04		1.70E+00
Paluel 1+2+3+4		1995	1.60E+05	7.50E+04	2.20E+03	9.20E+00
		1996		7.00E+04		4.60E+00
		1997		8.10E+04		6.50E+00
		1998		7.40E+04		6.70E+00
		1999		8.40E+04		6.80E+00

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Penly 1+2		1995	8.00E+04	2.40E+04	1.10E+03	1.80E+00
		1996		2.90E+04		1.60E+00
		1997		2.40E+04		1.70E+00
		1998		3.20E+04		1.60E+00
		1999		3.30E+04		1.30E+00
St Alban 1+2		1995	8.00E+04	2.20E+04	1.10E+03	3.00E+00
		1996		4.30E+04		3.00E+00
		1997		2.30E+04		5.40E+00
		1998		3.00E+04		2.60E+00
		1999		4.40E+04		9.80E-01
St Laurent B1+B2	[8]	1995	9.25E+04	1.60E+04	1.11E+03	2.30E+00
		1996		2.00E+04		2.00E+00
		1997		1.70E+04		3.00E+00
		1998		1.90E+04		1.60E+00
		1999	4.50E+04 [24]	2.40E+04	3.00E+01 [24]	1.90E+00
Tricastin 1+2+3+4		1995	1.11E+05	2.50E+04	1.48E+03	6.40E+00
		1996		4.60E+04		5.20E+00
		1997		3.20E+04		8.60E+00
		1998		3.80E+04		5.10E+00
		1999		2.90E+04		5.40E+00
Germany	[9]					
Biblis A (KWB-A)		1995	2.96E+04	8.40E+03	1.11E+02	1.60E-01
		1996		3.60E+03		2.40E-02
		1997		1.30E+03		1.00E-01
		1998		1.30E+04		2.90E-02
		1999		1.60E+04		1.10E-01
Biblis B (KWB-B)		1995	2.96E+04	1.30E+04	1.11E+02	5.70E-01
		1996		1.10E+04		5.00E-01
		1997		1.20E+04		2.40E-01
		1998		1.70E+04		2.00E+00
		1999		1.60E+04		3.00E-01
Brokdorf (KBR)		1995	3.50E+04	1.20E+04	5.55E+01	1.10E-01
		1996		1.40E+04		2.60E-02
		1997		1.70E+04		2.20E-02
		1998		1.90E+04		1.30E-02
		1999		1.80E+04		6.90E-03
Brunsbuettel (KKB)		1995	3.70E+04	1.20E+02	1.85E+02	5.80E-02
		1996		3.50E+02		1.10E-01
		1997		2.40E+02		3.70E-02
		1998		2.80E+02		2.50E-01
		1999		2.60E+02		3.90E-01
Emsland (KKE)		1995	3.50E+04	1.00E+04	3.70E+01	2.10E-04
		1996		1.20E+04		9.80E-06
		1997		1.50E+04		<DL
		1998		1.50E+04		9.40E-06
		1998		1.70E+04		<DL
Grafenrheinfeld (KKG)		1995	4.07E+04	1.30E+04	5.55E+01	1.70E-02
		1996		1.60E+04		1.10E-02
		1997		1.60E+04		3.00E-02
		1998		1.50E+04		6.20E-02
		1999		1.40E+04		3.20E-02

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State Nuclear Power Station	Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
		Limit	Value	Limit	Value
Grohnde (KWG)	1995	4.80E+04	1.20E+04	5.55E+01	1.30E-01
	1996		1.00E+04		1.10E-01
	1997		7.40E+03		4.60E-01
	1998		1.60E+04		2.30E-02
	1999		1.90E+04		5.10E-03
Gundremmingen B+C (KRB) [10]	1995	3.70E+04	6.40E+03	1.10E+02	4.80E-01
	1996		1.10E+04		6.40E-01
	1997		1.30E+04		1.10E+00
	1998		5.40E+03		1.10E+00
	1999		6.50E+03		1.00E+00
Isar 1 (KKI-1) [11]	1995	1.85E+04	1.30E+03	1.10E+02	1.50E-01
	1996		1.00E+03		1.60E-01
	1997		1.20E+03		1.40E-01
	1998		9.00E+02		2.60E-01
	1999		3.50E+02		7.70E-02
Isar 2 (KKI-2)	1995	4.80E+04	1.90E+04	5.50E+01	<DL
	1996		2.00E+04		2.90E-04
	1997		1.70E+04		3.80E-04
	1998		1.90E+04		2.60E-04
	1999		2.40E+04		9.50E-04
Kruemmel (KKK)	1995	1.85E+04	5.80E+02	5.00E+01	1.60E-02
	1996		6.80E+02		1.40E-02
	1997		4.70E+02		2.80E-03
	1998		4.20E+02		8.60E-03
	1999		3.50E+02		1.90E-03
Neckarwestheim 1 (GKN-1)	1995	1.85E+04	1.40E+04	1.85E+01	4.60E-03
	1996		1.30E+04		4.70E-03
	1997		1.40E+04		3.50E-03
	1998		1.00E+04		5.30E-03
	1999		6.70E+03		1.90E-03
Neckarwestheim 2 (GKN-2)	1995	7.00E+04	2.10E+04	6.00E+01	2.30E-02
	1996		2.10E+04		9.90E-02
	1997		1.90E+04		2.30E-02
	1998		1.60E+04		4.90E-02
	1999		1.70E+04		3.60E-02
Obrigheim (KWO)	1995	1.80E+04	4.60E+03	3.00E+01	5.20E-01
	1996		5.70E+03		3.60E-01
	1997		5.10E+03		3.20E-01
	1998		5.20E+03		6.80E-01
	1999		6.10E+03		4.30E-01
Philippsburg 1 (KKP-1)	1995	1.80E+04	5.70E+02	1.50E+02	2.50E-01
	1996		5.40E+02		8.40E-01
	1997		4.90E+02		9.20E-01
	1998		5.20E+02		4.60E-01
	1999		5.90E+02		2.90E-01
Philippsburg 2 (KKP-2)	1995	4.80E+04	1.70E+04	5.50E+01	4.40E-01
	1996		1.50E+04		2.90E-01
	1997		1.60E+04		4.30E-01
	1998		1.70E+04		8.30E-01
	1999		1.80E+04		4.40E-01

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Stade (KKS)		1995	4.81E+04	2.70E+03	1.85E+02	3.70E-01
		1996		2.90E+03		1.80E-01
		1997		2.70E+03		1.30E-01
		1998		2.60E+03		5.00E-02
		1999	3.50E+04	3.00E+03	3.70E+01	4.30E-02
Unterweser (KKU)		1995	3.25E+04	6.00E+03	7.40E+01	1.60E-01
		1996		1.20E+04		2.00E-01
		1997		1.50E+04		1.20E-01
		1998		6.90E+03		6.00E-02
		1999		7.70E+03		7.10E-02
The Netherlands	[12]					
Borssele		1995	3.00E+04	6.10E+03	2.00E+02	7.24E-01
		1996		6.00E+03		5.14E-01
		1997		4.30E+03		1.32E+00
		1998		7.50E+03		4.46E-01
		1999		6.10E+03		3.22E-01
Dodewaard		1995	2.00E+03	2.60E+01	1.00E+02	7.83E+00
		1996		2.20E+01		6.80E+00
(stopped 26/03/97)		1997		1.80E+01		5.49E+00
Spain	[13]					
Almaraz 1+2		1995	not defined	4.28E+04	not defined	2.44E+01
		1996		4.93E+04		1.44E+01
		1997		5.41E+04		1.27E+01
		1998		6.74E+04		1.10E+01
		1999		4.86E+04		1.23E+01
Asco 1+2		1995	not defined	8.58E+04	not defined	5.21E+01
		1996		5.07E+04		1.24E+01
		1997		5.80E+04		1.98E+01
		1998		5.22E+04		1.28E+01
		1999		8.79E+04		1.16E+01
Cofrentes		1995	not defined	9.94E+01	not defined	6.31E-02
		1996		1.60E+02		1.19E-01
		1997		5.11E+02		3.92E-01
		1998		5.43E+01		6.13E-02
		1999		2.27E+02		2.67E-01
Jose Cabrera (Zorita)		1995	not defined	1.02E+03	not defined	2.38E-01
		1996		2.59E+03		1.94E-01
		1997		2.16E+03		2.02E-01
		1998		2.43E+03		8.45E-02
		1999		5.93E+03		4.48E-01
Sta Maria de Garona		1995	not defined	1.21E+02	not defined	5.91E-01
		1996		1.65E+02		7.65E-01
		1997		2.31E+02		6.50E-01
		1998		6.28E+02		1.06E+00
		1999		3.09E+02		2.60E+00
Trillo		1995	not defined	1.40E+04	not defined	6.85E-01
		1996		1.94E+04		7.61E-01
		1997		2.88E+04		1.34E+00
		1998		1.78E+04		5.60E-01
		1999		1.05E+04		7.84E-01

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Vandellos 2		1995	not defined	1.34E+04	not defined	1.73E+01
		1996		1.66E+04		1.12E+01
		1997		2.24E+04		1.96E+01
		1998		3.35E+04		9.49E+00
		1999		1.64E+04		2.01E+01
Sweden	[14]					
Barsebäck 1+2		1995	not defined	5.50E+02	not defined	5.78E+01
		1996		1.10E+03		1.94E+02
		1997		7.60E+02		5.83E+01
		1998		4.90E+02		3.57E+01
		1999		6.90E+02		2.60E+01
Forsmark 1+2+3		1995	not defined	2.35E+03	not defined	6.07E+01
		1996		1.99E+03		7.24E+01
		1997		2.00E+03		1.15E+02
		1998		1.53E+03		2.55E+01
		1999		1.42E+03		2.50E+01
Oskarshamn 1+2+3		1995	not defined	1.19E+03	not defined	9.62E+01
		1996		1.38E+03		1.30E+02
		1997		1.36E+03		5.11E+01
		1998		1.10E+03		8.21E+01
		1999		1.29E+03		2.70E+01
Ringhals 1		1995	not defined	8.32E+02	not defined	7.00E+01
		1996		7.90E+02		4.84E+01
		1997		4.90E+02		1.55E+02
		1998		5.50E+02		5.24E+01
		1999		9.86E+02		3.00E+01
Ringhals 2+3+4		1995	not defined	2.08E+04	not defined	8.12E+01
		1996		2.46E+04		4.83E+01
		1997		2.25E+04		4.70E+01
		1998		2.53E+04		4.10E+01
		1999		3.96E+04		4.20E+01
United Kingdom						
Bradwell A+B		1995	3.00E+04	2.08E+03	1.00E+03 [15]	4.43E+02
		1996		1.36E+03		3.36E+02
		1997		1.46E+03		3.83E+02
		1998		1.79E+03		3.59E+02
		1999		5.25E+02		3.00E+02
Calder Hall A+B+C+D	[16]					
Chapelcross A+B+C+D		1995	5.50E+03	5.00E+02	2.50E+04 [15]	1.60E+02
		1996		3.70E+02		1.10E+02
		1997		1.98E+02		3.97E+01
		1998		2.16E+02		4.04E+01
		1999		7.08E+02		6.75E+01
Dungeness AA+AB		1995	3.50E+04	2.17E+02	1.40E+03 [15]	2.96E+02
		1996		1.38E+03		2.82E+02
		1997		1.35E+02		2.72E+02
		1998		4.21E+02		3.86E+02
		1999		2.12E+03		4.41E+02

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Dungeness B1+B2		1995	6.50E+04	1.51E+04	2.50E+02 [17]	2.49E+01
		1996		2.52E+05		1.67E+01
		1997		2.47E+05		2.50E+01
		1998		1.72E+05		1.65E+01
		1999		1.22E+05		2.47E+01
Hartlepool A1+A2	[19]	1995	1.20E+06	2.37E+05	3.00E+02 [17]	3.40E+00
		1996		3.53E+05		5.48E+00
		1997		3.67E+05		6.37E+00
		1998		3.29E+05		2.55E+00
		1999		4.09E+05		3.15E+00
Heysham 1A+1B	[20]	1995	1.20E+06	2.52E+05	3.00E+02 [17]	7.01E+00
		1996		3.41E+05		7.82E+00
		1997		4.65E+05		6.98E+00
		1998		3.96E+05		9.17E+00
		1999		3.95E+05		1.16E+01
Heysham 2A+2B	[20]	1995	1.20E+06	3.33E+05	3.00E+02 [17]	8.70E+00
		1996		3.79E+05		1.14E+01
		1997		3.51E+05		1.01E+01
		1998		3.07E+05		1.71E+01
		1999		2.55E+05		1.75E+01
Hinkley Point AA+AB		1995	2.50E+04	7.57E+02	1.00E+03 [15]	3.76E+02
		1996		6.70E+02		1.64E+02
		1997		8.10E+02		2.23E+02
		1998		7.08E+02		2.84E+02
		1999		8.36E+02		2.73E+02
Hinkley Point BA+BB	[21]	1995	6.20E+05	4.31E+05	2.35E+02 [17]	1.61E+01
		1996		3.19E+05		8.64E+00
		1997		3.85E+05		1.49E+01
		1998		3.87E+05		1.93E+01
		1999		3.55E+05		1.90E+01
Hunterston B1+B2	[22]	1995	1.48E+06	4.49E+05	3.70E+03 [18]	2.30E+01
		1996	8.00E+05	3.99E+05	4.50E+02 [17]	4.60E+00
		1997		4.13E+05		4.12E+00
		1998		4.42E+05		1.02E+01
		1999		4.16E+05		8.67E+00
Oldbury AA+AB		1995	7.40E+04	2.33E+02	2.00E+03 [15]	3.16E+02
		1996		1.86E+02		3.11E+02
		1997		1.78E+02		2.31E+02
		1998		1.73E+02		1.75E+02
		1999		2.14E+02		1.72E+02
Sizewell AA+AB		1995	3.50E+04	6.69E+03	7.00E+02 [15]	2.23E+02
		1996		1.13E+03		2.29E+02
		1997		5.06E+03		1.35E+02
		1998		2.91E+03		1.45E+02
		1999		6.65E+02		1.16E+02
Sizewell B	[23]	1995	4.00E+04	1.07E+04	2.00E+02	1.72E+01
		1996		3.76E+04		1.99E+01
		1997	8.00E+04	4.42E+04	2.00E+02	2.13E+01
		1998		4.83E+04		1.78E+01
		1999		5.57E+04		4.58E+01

Nuclear Power Stations - Liquid Discharges - Tritium and Total beta-gamma

Member State / Nuclear Power Station		Year	Tritium (GBq)		Total Beta-Gamma (GBq) [Excluding H-3]	
			Limit	Value	Limit	Value
Torness 1+2	[22]	1995	1.20E+06	2.70E+05	4.50E+02 [17]	1.60E+00
		1996	8.00E+05	2.98E+05	4.50E+02	1.30E+00
		1997		3.24E+05		3.75E+00
		1998		3.55E+05		3.44E+00
		1999		3.35E+05		2.18E+00
Wylfa A+B		1995	4.00E+04	7.56E+03	1.50E+02	5.30E+01
		1996		9.88E+03		6.11E+01
		1997		7.02E+03		4.61E+01
		1998		9.64E+03		7.01E+01
		1999		4.59E+03		1.85E+01

Notes: see next page.

Notes:

[1] For each nuclear power station design objectives must be met to ensure that the effective dose (from liquid releases) to critical group members does not exceed 30 µSv/year (whole-body dose) and 100 µSv/year (dose equivalent to any organ or to the skin). The dose criteria are translated into annual discharge limits; typically for tritium and beta-gamma emitters.

[2] Annual discharge limits are complemented with trimestrial limits amounting to 50% of the yearly limit.

[3] Release limits must ensure that that the effective dose (from liquid releases) to critical group members does not exceed 100 µSv/year and that the global collective dose does not exceed 5 manSv/yearGWe. The dose criteria are translated into annual discharge limits; typically for tritium and bet-gamma emitters.

[4] Total beta-gamma limits and values also exclude C-14.

[5] Liquid discharge limits apply to the Bugey site as a whole, including unit 1 (shutdown since June 1994).

[6] Liquid discharge limits apply to the Chinon site as a whole, including unit A3 (shutdown since June 1990).

[7] Liquid discharge limits apply to the Chooz site as a whole, including unit A (gas-graphite reactor, shut down since October 1991).

[8] Liquid discharge limits apply to the St Laurent site as a whole, including units A1+A2 (shutdown since April 1990 and May 1992 respectively).

[9] For each nuclear power station design objectives must be met to ensure that the effective dose (from liquid releases) to critical group members does not exceed 300 µSv/year. The dose criteria are translated into annual discharge limits; typically for tritium and beta-gamma emitters.

[10] Liquid discharge limits apply to the Gundremmingen site as a whole, including unit A (shutdown since May 1983).

[11] Liquid discharge limits include effluents from the Niederaichbach (KKN) power station (shutdown since July 1974).

[12] For each nuclear power station design objectives must be met to ensure that the effective dose (from liquid releases) to critical group members does not exceed 100 µSv/year. The dose criteria are translated into annual discharge limits; typically for tritium and beta-gamma emitters. The limits are set to ensure that the dose is of the order of 1% of the regulatory dose limit.

[13] For each nuclear power station design objectives must be met to ensure that the effective dose (from liquid releases) to critical group members does not exceed 30 µSv/year (whole body) and 100 µSv/year (any organ).

[14] For each nuclear power station design objectives must be met to ensure that the effective dose (from liquid releases) to critical group members does not exceed 100 µSv/year and that the global collective dose does not exceed 5 manSv/yearGWe.

[15] Total beta-gamma limits and values also exclude Cs-137.

[16] Calder Hall data are not presented, liquid discharge limits and values are integrated in the global Sellafield site authorisation.

[17] Total beta-gamma limits and values also exclude Co-60 and S-35.

[18] Total beta-gamma limits and values also exclude S-35.

[19] Revised discharge authorisation with effect on 15/08/1995.

[20] Revised discharge authorisation with effect on 10/08/1995.

[21] Revised discharge authorisation with effect on 10/04/1995.

[22] Revised discharge authorisation with effect on 31/03/1996.

[23] Revised discharge authorisation with effect on 01/10/1997.

[24] In 1999 a separate discharge limit was introduced for liquid C-14 (3,0 E+02 GBq/annum) and for liquid iodine (3,0 E-01 GBq/annum).

Nuclear Power Stations - Liquid discharges per unit of electrical energy produced

(values summed over the period 1995-1999)

Member State Nuclear Power Station	electricity production (GWh)	H-3 (GBq)	beta-gamma (GBq)	H-3 (GBq/GWh)	beta-gamma (GBq/GWh)
BELGIUM					
Doel 1+2+3+4	1.06E+05	2.11E+05	1.27E+02	2.00E+00	1.20E-03
Tihange 1+2+3	1.11E+05	2.30E+05	1.32E+02	2.07E+00	1.19E-03
FINLAND					
Loviisa 1+2	3.59E+04	5.67E+04	1.46E+00	1.58E+00	4.07E-05
Olkiluoto 1+2	6.36E+04	7.50E+03	5.38E+01	1.18E-01	8.46E-04
FRANCE [1]					
Belleville 1+2	7.36E+04	1.56E+05	1.90E+01	2.12E+00	2.58E-04
Blayais 1+2+3+4	1.28E+05	2.32E+05	2.46E+01	1.82E+00	1.93E-04
Bugey 2+3+4+5	1.11E+05	1.69E+05	4.17E+01	1.52E+00	3.75E-04
Cattenom 1+2+3+4	1.72E+05	3.86E+05	1.70E+01	2.24E+00	9.88E-05
Chinon B1+B2+B3+B4	1.23E+05	2.34E+05	2.63E+01	1.90E+00	2.14E-04
Cruas 1+2+3+4	1.18E+05	2.20E+05	1.42E+01	1.86E+00	1.20E-04
Dampierre 1+2+3+4	1.11E+05	2.03E+05	3.52E+01	1.84E+00	3.19E-04
Fessenheim 1+2	5.67E+04	1.06E+05	1.58E+01	1.87E+00	2.78E-04
Flamanville 1+2	7.92E+04	1.46E+05	1.33E+01	1.84E+00	1.68E-04
Golfech 1+2	8.49E+04	1.29E+05	1.16E+01	1.52E+00	1.37E-04
Gravelines 1+2+3+4+5+6	1.80E+05	2.74E+05	4.76E+01	1.52E+00	2.64E-04
Nogent 1+2	8.21E+04	1.71E+05	1.28E+01	2.08E+00	1.56E-04
Paluel 1+2+3+4	1.64E+05	3.84E+05	3.38E+01	2.35E+00	2.06E-04
Penly 1+2	8.83E+04	1.42E+05	8.00E+00	1.61E+00	9.06E-05
St Alban 1+2	8.05E+04	1.62E+05	1.50E+01	2.01E+00	1.86E-04
St Laurent B1+B2	5.57E+04	9.60E+04	1.08E+01	1.72E+00	1.94E-04
Tricastin 1+2+3+4	1.19E+05	1.70E+05	3.07E+01	1.43E+00	2.59E-04
GERMANY					
Biblis A (KWB-A)	3.18E+04	4.23E+04	4.23E-01	1.33E+00	1.33E-05
Biblis B (KWB-B)	4.01E+04	6.90E+04	3.61E+00	1.72E+00	9.00E-05
Brokdorf (KBR)	5.26E+04	8.00E+04	1.78E-01	1.52E+00	3.39E-06
Brunsbuettel (KKB)	2.27E+04	1.25E+03	8.45E-01	5.50E-02	3.72E-05
Emsland (KKE)	5.23E+04	6.90E+04	2.29E-04	1.32E+00	4.38E-09
Grafenrheinfeld (KKG)	4.62E+04	7.40E+04	1.52E-01	1.60E+00	3.29E-06
Grohnde (KWG)	5.46E+04	6.44E+04	7.28E-01	1.18E+00	1.33E-05
Gundremmingen B+C (KRB)	9.06E+04	4.23E+04	4.32E+00	4.67E-01	4.77E-05

Nuclear Power Stations - Liquid discharges per unit of electrical energy produced

(values summed over the period 1995-1999)

Member State Nuclear Power Station	electricity production (GWh)	H-3 (GBq)	beta-gamma (GBq)	H-3 (GBq/GWh)	beta-gamma (GBq/GWh)
Isar 1 (KKI-1)	3.15E+04	4.75E+03	7.87E-01	1.51E-01	2.50E-05
Isar 2 (KKI-2)	5.27E+04	9.90E+04	1.88E-03	1.88E+00	3.57E-08
Kruemmel (KKK)	4.09E+04	2.50E+03	4.33E-02	6.11E-02	1.06E-06
Neckarwestheim 1 (GKN-1)	2.96E+04	5.77E+04	2.00E-02	1.95E+00	6.75E-07
Neckarwestheim 2 (GKN-2)	5.14E+04	9.40E+04	2.30E-01	1.83E+00	4.47E-06
Obrigheim (KWO)	1.33E+04	2.67E+04	2.31E+00	2.01E+00	1.74E-04
Philippsburg 1 (KKP-1)	3.28E+04	2.71E+03	2.76E+00	8.26E-02	8.41E-05
Philippsburg 2 (KKP-2)	5.37E+04	8.30E+04	2.43E+00	1.54E+00	4.52E-05
Stade (KKS)	2.36E+04	1.39E+04	7.73E-01	5.89E-01	3.27E-05
Unterweser (KKU)	4.24E+04	4.76E+04	6.11E-01	1.12E+00	1.44E-05
SPAIN					
Almaraz 1+2	6.83E+04	2.62E+05	7.48E+01	3.84E+00	1.10E-03
Asco 1+2	7.08E+04	3.35E+05	1.09E+02	4.73E+00	1.54E-03
Cofrentes	3.84E+04	1.05E+03	9.02E-01	2.73E-02	2.35E-05
Jose Cabrera (Zorita)	4.36E+03	8.20E+03	1.17E+00	1.88E+00	2.69E-04
Sta Maria de Garona	1.75E+04	1.45E+03	5.67E+00	8.28E-02	3.24E-04
Trillo	3.36E+04	9.05E+04	4.13E+00	2.69E+00	1.23E-04
Vandellos 2	3.79E+04	1.02E+05	7.77E+01	2.69E+00	2.05E-03
SWEDEN					
Barsebäck 1+2	3.84E+04	3.59E+03	3.72E+02	9.35E-02	9.69E-03
Forsmark 1+2+3	1.16E+05	9.29E+03	2.99E+02	8.03E-02	2.58E-03
Oskarshamn 1+2+3	7.28E+04	6.32E+03	3.86E+02	8.69E-02	5.31E-03
Ringhals 1	2.50E+04	3.65E+03	3.56E+02	1.46E-01	1.42E-02
Ringhals 2+3+4	9.50E+04	1.33E+05	2.60E+02	1.40E+00	2.73E-03
THE NETHERLANDS [2]					
Borssele	1.63E+04	3.00E+04	3.33E+00	1.84E+00	2.04E-04
UNITED KINGDOM [3]					
Dungeness B1+B2	2.07E+04	8.08E+05	1.08E+02	3.91E+01	5.22E-03
Hartlepool A1+A2	4.21E+04	1.70E+06	2.10E+01	4.03E+01	4.98E-04
Heysham 1A+1B	3.97E+04	1.85E+06	4.26E+01	4.66E+01	1.07E-03
Heysham 2A+2B	4.35E+04	1.63E+06	6.48E+01	3.74E+01	1.49E-03
Hinkley Point BA+BB	4.21E+04	1.88E+06	7.80E+01	4.46E+01	1.85E-03

Nuclear Power Stations - Liquid discharges per unit of electrical energy produced

(values summed over the period 1995-1999)

Member State Nuclear Power Station		electricity production (GWh)	H-3 (GBq)	beta-gamma (GBq)	H-3 (GBq/GWh)	beta-gamma (GBq/GWh)
Hunterston B1+B2		4.36E+04	2.12E+06	5.06E+01	4.86E+01	1.16E-03
Sizewell B		4.06E+04	1.97E+05	1.22E+02	4.84E+00	3.00E-03
Torness 1+2		4.71E+04	1.58E+06	1.23E+01	3.36E+01	2.61E-04
Bradwell A+B		5.96E+03	6.69E+03	1.52E+03	1.12E+00	2.55E-01
Calder Hall A+B+C+D	[4]	5.67E+03				
Chapelcross A+B+C+D		5.76E+03	1.28E+03	3.50E+02	2.23E-01	6.08E-02
Dungeness AA+AB		1.31E+04	2.15E+03	1.24E+03	1.64E-01	9.42E-02
Hinkley Point AA+AB		1.28E+04	2.95E+03	1.05E+03	2.30E-01	8.19E-02
Oldbury AA+AB		1.37E+04	7.70E+02	1.03E+03	5.62E-02	7.54E-02
Sizewell AA+AB		6.14E+03	1.58E+04	7.32E+02	2.57E+00	1.19E-01
Wylfa A+B		2.84E+04	3.41E+04	2.30E+02	1.20E+00	8.11E-03

Notes:

[1] The Chooz B and Civaux power stations started production in the period under consideration. Data are therefore not taken up in the table.

[2] The Dodewaard power station ran down and stopped production in the period under consideration. Data are therefore not taken up in the table.

[3] The electrical output data for 1999 of the following power stations were not available when compiling the report: Bradwell, Calder Hall, Chapelcross, Dungeness A, Hinkley Point A, Oldbury, Sizewell A and Wylfa. Data therefore reflect the period 1995-1998.

[4] Calder Hall data are not presented, liquid discharges are integrated in the global Sellafield site authorisation.

Nuclear Power Stations (PWR) - Liquid Discharges - Beta-Gamma Emitters (GBq)

Member State / Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Belgium															
Doel 1+2+3+4	1995	2.12E-01	1.90E+00	9.70E-01		1.21E+01	1.17E+01	7.04E-02	2.99E-02		3.73E+00	5.10E+00	1.70E-02		2.00E+00
	1996	9.37E-02	1.23E+00	1.54E+00		4.17E+00	5.89E+00		8.76E-02		2.68E+00	2.92E+00		5.10E-03	2.73E-01
	1997	7.98E-01	2.24E+00	4.25E-01		6.95E+00	1.09E+01				7.75E-01	4.08E+00		2.20E-02	2.05E-01
	1998	1.81E-01	2.91E+00	5.27E-01		3.08E+00	6.67E+00				7.41E-01	1.94E+00		2.19E-02	3.54E-02
	1999	4.28E-02	9.32E+00	2.43E+00		3.54E+00	9.42E+00				5.57E-01	2.25E+00	2.21E-02	2.13E-01	2.73E-02
Tihange 1+2+3	1995	1.65E+00	1.15E+01	5.26E+00	1.25E+00	1.58E-01	5.06E-01		7.01E-01	2.21E-01	3.73E-01	6.02E-01	2.03E-02	1.01E-02	8.80E-02
	1996	2.87E+00	1.29E+01	2.55E+01	5.65E-01	7.21E-01	1.23E+00	3.47E-01	1.48E+00	8.41E-01	2.88E-01	5.04E+00	4.93E-02	2.46E-02	7.31E-02
	1997	3.18E+00	9.73E+00	6.30E+00	5.85E-01	4.30E-01	7.66E-01	1.31E-01	9.17E-01	2.03E-01	2.02E-01	1.59E+00	3.06E-02	1.53E-02	2.24E-02
	1998	1.87E+00	8.46E+00	4.60E+00	1.36E+00	2.48E-01	1.05E+00	1.04E-02	6.50E-01	1.33E-01	1.02E-01	1.58E+00	4.19E-02	2.10E-02	5.20E-04
	1999	3.59E-01	6.22E+00	3.84E+00	3.56E-01	9.03E-02	2.88E-01	3.39E-03	7.21E-01	1.44E-01	1.45E-01	4.03E-01	1.15E-02	5.75E-03	
Finland															
Loviisa 1+2	1995	9.20E-03	3.20E-03	7.30E-03		4.30E-03	5.60E-03	9.50E-03	1.40E-03		3.20E-02				
	1996	1.60E-03	5.10E-04	4.20E-03		1.60E-02	1.60E-02		8.20E-04		1.60E-02				5.50E-05
	1997	2.60E-04	2.90E-04	1.30E-03		2.50E-03	6.70E-03		7.90E-04		3.40E-04				
	1998	8.20E-02	4.50E-02	8.90E-01		3.90E-02	1.20E-01		3.00E-02		3.20E-02				1.30E-04
	1999	1.40E-02	1.10E-03	1.00E-02		8.40E-03	4.00E-02	1.00E-03			4.20E-02			2.80E-06	
France															
Belleville 1+2	1995	1.00E+00	9.20E-01	1.40E+00		1.20E-01	2.40E-01	1.30E-02	6.10E-02		1.20E-01				
	1996	2.30E+00	1.00E+00	1.80E+00	4.00E-02	1.10E-01	2.60E-01	3.00E-02	1.10E-01		3.00E-01	1.30E-01			1.00E-02
	1997	8.00E-01	6.50E-01	1.10E+00	1.80E-01	2.00E-02	7.00E-02	1.00E-02	7.00E-02		1.90E-01	1.20E-01			
	1998	6.90E-01	2.90E-01	6.30E-01		2.90E-02	7.30E-02	1.40E-01	5.00E-02		2.00E-01	6.40E-02			
	1999	8.70E-01	3.40E-01	1.70E+00		3.70E-02	8.50E-02	2.00E-02	7.90E-02		8.10E-02	9.60E-02			
Blayais 1+2+3+4	1995	8.90E+00	1.20E+00	2.70E+00		2.90E-01	5.80E-01	5.80E-02	1.20E-01		1.30E-01	3.50E-01			
	1996	2.50E+00	9.40E-01	8.70E-01	1.00E-01	9.00E-02	2.10E-01	3.00E-02	4.00E-02		6.00E-02	3.00E-02			
	1997	8.60E-01	5.20E-01	5.10E-01	6.00E-02	3.00E-02	7.00E-02	2.00E-02	2.00E-02		8.00E-02	2.00E-02			
	1998	8.00E-01	1.70E-01	4.90E-01	2.00E-02	2.50E-02	7.90E-02	2.40E-02	1.70E-02		4.60E-02	2.00E-02			1.30E-01
	1999	5.70E-01	1.90E-01	4.30E-01		3.60E-02	9.20E-02	2.90E-02	2.30E-02		8.40E-02				2.50E-01

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Bugey 2+3+4+5	1995	1.00E+00	2.40E+00	1.90E+00	1.90E-01	2.00E-01	4.20E-01	1.00E-01	1.40E-01		2.60E+00	5.80E-01			
	1996	1.30E+00	6.00E+00	2.00E+00	7.50E-01	1.20E-01	2.70E-01	8.00E-02	1.70E-01		7.50E-01	1.90E-01			
	1997	2.20E+00	2.00E+00	2.70E+00	4.00E-02	6.70E-01	9.20E-01	7.00E-02	1.80E-01		5.80E-01	1.60E-01			
	1998	8.20E-01	2.10E+00	1.90E+00	6.00E-02	5.70E-01	1.00E+00	1.00E-01	1.30E-01		3.20E-01	9.00E-02			
	1999	6.60E-01	7.70E-01	9.40E-01		1.40E-01	4.30E-01	1.10E-01	5.70E-02		7.80E-02	2.40E-01			
Cattenom 1+2+3+4	1995	2.50E+00	2.10E+00	1.20E+00		2.50E-01	5.90E-01	1.50E-02	8.30E-02		1.20E-01				
	1996	4.60E-01	6.30E-01	1.10E+00		2.60E-01	9.10E-01	8.00E-03	2.00E-02		4.00E-02	3.80E-01			1.00E-02
	1997	2.00E-01	4.90E-01	5.70E-01	1.00E-02	4.00E-02	2.00E-01	1.00E-02	1.00E-02		9.00E-02	6.20E-01			1.00E-02
	1998	1.90E-01	5.90E-01	4.20E-01	4.00E-02	6.70E-02	3.00E-01	5.00E-03	2.90E-02		9.30E-02	1.00E-01			4.00E-02
	1999	2.40E-01	4.90E-01	4.30E-01	2.00E-02	5.30E-02	2.70E-01	4.00E-03	6.30E-02		3.40E-02	3.60E-01			4.00E-02
Chinon B1+B2+B3+B4	1995	5.70E-01	2.20E+00	8.90E-01		1.70E-01	3.30E-01	8.00E-02	1.00E-01		6.10E-01	3.70E-01			1.00E-02
	1996	5.90E+00	5.10E-01	1.40E+00		1.70E-01	3.30E-01	7.00E-02	1.00E-01		6.00E-01	1.20E+00			5.00E-02
	1997	2.00E+00	3.10E-01	4.00E-01		9.00E-02	9.00E-02	5.00E-02	5.00E-02		1.20E-01	2.00E-02			6.00E-02
	1998	8.40E-01	2.00E-01	3.80E-01		8.70E-02	1.20E-01	8.20E-02	6.00E-02		7.80E-02	8.00E-02			2.50E-01
	1999	2.80E-01	1.30E-01	1.40E-01		7.00E-02	7.80E-02	5.60E-02	5.50E-02		8.40E-02	1.50E-02			1.60E-02
Chooz B1+B2	1996	1.00E-02	1.00E-01	5.00E-03		1.00E-02	1.00E-03	1.00E-02	1.00E-02		2.00E-02				
	1997	2.20E-01	7.80E-01	5.00E-02		2.00E-02	5.00E-02	3.40E-01	5.00E-02		6.00E-02				
	1998	8.80E-01	6.70E-01	3.00E-02		1.30E-02	5.20E-02	6.00E-03	1.20E-02		2.20E-02				
	1999	4.80E-01	9.40E-02	5.40E-02		3.40E-02	1.50E-01	2.30E-02	3.50E-02		2.20E-02				
Civaux 1+2	1998	7.40E-02	3.20E-01	2.00E-02		1.80E-02	2.10E-02	1.80E-02	7.00E-02		1.70E-02				
	1999	1.40E-01	9.40E-02	1.60E-02		9.00E-03	1.10E-02	1.40E-02	1.00E-01		1.00E-02				
Creys Malville	1995		1.00E-03	1.30E-03		1.00E-03	1.40E-03	9.00E-04	1.10E-03						
	1996		2.00E-03	2.00E-03		2.00E-03	5.00E-03	2.00E-03	3.00E-03						
	1997		1.00E-03	2.00E-03		2.00E-03	3.00E-03	1.00E-03	3.00E-03						
(FBR stopped 31/12/98)	1998 [1]														
	1999		9.00E-04	1.00E-03		1.00E-03	1.00E-03	1.00E-03	7.90E-02						
Cruas 1+2+3+4	1995	1.60E+00	8.50E-01	7.60E-01	1.10E-02	4.80E-02	8.40E-02	4.30E-02	3.40E-02		3.30E-01	6.70E-02			7.10E-02
	1996	1.70E+00	1.30E+00	4.90E-01	1.00E-01	9.00E-02	1.30E-01	1.10E-01	3.00E-02		4.10E-01	2.00E-02			1.00E-02
	1997	1.30E+00	6.30E-01	4.60E-01	9.00E-02	4.00E-02	6.00E-02	2.00E-02	3.00E-02		1.20E-01				9.00E-02
	1998	6.90E-01	3.80E-01	3.10E-01	2.00E-02	4.10E-02	1.20E-01	1.50E-02	2.10E-02		1.20E-01	1.50E-02			3.90E-02
	1999	3.30E-01	3.30E-01	3.00E-01	6.40E-02	2.10E-02	8.20E-02	1.70E-02	1.70E-02		3.90E-02	2.40E-02			5.00E-02

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Dampierre 1+2+3+4	1995	3.80E+00	1.40E+00	8.90E-01	8.00E-02	6.60E-01	1.00E+00	1.70E-01	1.10E-01		6.20E-01	6.00E-02			2.80E-01
	1996	2.60E+00	2.10E+00	8.40E-01	1.60E-01	2.00E-01	4.60E-01	1.00E-02	7.00E-02		4.10E-01	3.00E-02			3.00E-02
	1997	2.50E+00	2.70E+00	1.00E+00	1.50E-01	5.00E-02	2.20E-01	3.00E-02	8.00E-02		6.00E-01	4.40E-01			6.00E-02
	1998	1.00E+00	2.10E+00	8.20E-01	1.00E-01	7.50E-02	2.90E-01	1.20E-02	9.40E-02		5.00E-01	2.20E-01			5.00E-02
	1999	1.10E+00	2.20E+00	1.20E+00	2.00E-01	7.70E-02	3.30E-01	4.50E-02	9.60E-02		4.30E-01	3.20E-01			6.60E-02
Fessenheim 1+2	1995	4.50E-01	1.10E+00	2.70E-01		3.00E-02	5.00E-02	2.00E-02	3.00E-02		9.00E-02				
	1996	3.50E-01	1.60E+00	2.30E-01	2.00E-02	3.00E-02	3.00E-02	2.00E-02	3.00E-02		1.30E-01	2.00E-01			
	1997	4.60E-01	3.70E+00	2.20E-01	5.00E-02	3.50E-01	2.80E-01	1.70E-01	7.00E-02		4.20E-01	3.40E-01			
	1998	1.20E+00	1.00E+00	2.70E-01	4.00E-02	3.30E-02	3.30E-02	1.60E-02	2.30E-02		1.40E-01	9.00E-02			8.00E-02
	1999	7.10E-01	6.30E-01	1.30E-01	1.00E-02	2.80E-02	4.00E-02	2.50E-02	3.10E-02		1.90E-01	5.00E-02			2.00E-02
Flamanville 1+2	1995	2.20E-01	9.50E-01	5.80E-01	4.00E-02	4.60E-01	8.00E-01	3.00E-02	3.00E-02		1.20E-01	1.30E-01			
	1996	1.90E-01	7.30E-01	3.30E-01	1.00E-02	1.20E-01	3.50E-01	3.00E-02	3.00E-02		1.00E-01	1.10E-01			
	1997	3.90E-01	5.10E-01	1.10E+00	3.00E-02	1.50E-01	4.20E-01	2.00E-02	3.00E-02		4.00E-02	1.70E-01			
	1998	2.30E-01	5.70E-01	8.50E-01	2.00E-02	1.60E-01	5.70E-01	1.00E-02	3.40E-02		9.30E-02	3.40E-01			
	1999	2.10E-01	2.00E-01	5.80E-01		1.00E-01	8.10E-01	1.00E-02	2.00E-02		2.70E-02	2.70E-01			
Golfech 1+2	1995	8.90E-01	2.70E+00	6.10E-01	2.50E-01	2.00E-03	8.00E-03	2.00E-03	1.10E-01		1.50E-01				
	1996	1.20E-01	9.00E-01	5.30E-01		2.00E-03	7.00E-03	6.00E-03	9.00E-02		6.00E-03	2.00E-02			1.00E-02
	1997	3.30E-01	1.10E+00	1.00E+00	1.00E-02	5.00E-02	1.50E-01	9.00E-03	1.60E-01		2.00E-02				1.00E-02
	1998	1.70E-01	1.10E-01	4.40E-01		1.20E-02	5.80E-02	6.00E-03	3.60E-02		7.00E-03				
	1999	1.50E-01	2.30E-01	6.40E-01	1.20E-02	7.30E-02	3.10E-01	5.00E-03	4.60E-02		8.00E-03	1.80E-02			4.00E-03
Gravelines 1+2+3+4+5+6	1995	2.10E+00	4.00E+00	1.40E+00		3.70E+00	5.00E+00	7.00E-02	2.00E-01		1.10E+00	3.00E-01			
	1996	2.10E+00	3.80E+00	1.70E+00	7.00E-02	1.40E+00	2.70E+00	8.00E-02	2.70E-01		7.80E-01	9.40E-01			
	1997	1.40E+00	2.00E+00	1.10E+00	6.00E-02	1.60E-01	3.10E-01	2.00E-02	1.40E-01		2.00E-01	3.80E-01			
	1998	1.20E+00	2.10E+00	1.40E+00	9.00E-02	1.00E-01	3.30E-01	1.60E-02	1.50E-01		2.30E-01	1.60E-01			
	1999	1.50E+00	1.00E+00	1.10E+00	7.00E-03	3.80E-02	1.70E-01	1.40E-02	9.30E-02		7.90E-02	1.80E-02			
Nogent 1+2	1995	6.70E-01	9.40E-01	7.80E-01	8.00E-02	1.00E-01	2.20E-01	5.00E-03	6.00E-02		1.10E-01	2.00E-02			
	1996	7.80E-01	8.90E-01	6.20E-01	1.20E-01	1.10E-01	2.20E-01	5.00E-03	6.00E-02		9.00E-02	8.00E-02			1.00E-02
	1997	4.50E-01	8.40E-01	1.30E+00	1.80E-01	7.00E-02	1.20E-01	5.00E-03	1.30E-01		3.00E-02	2.00E-02			
	1998	1.80E-01	5.40E-01	9.50E-01	6.00E-02	1.70E-02	5.40E-02	4.00E-03	6.40E-02		2.80E-02	5.00E-02			
	1999	1.20E-01	6.30E-01	6.20E-01	3.00E-02	2.40E-02	6.40E-02	6.00E-03	7.40E-02		3.80E-02	8.00E-02			

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Paluel 1+2+3+4	1995	1.20E+00	3.20E+00	2.10E+00	2.30E-01	8.10E-02	3.50E-01	4.70E-02	1.60E-01		7.80E-01	1.00E+00			
	1996	5.10E-01	2.10E+00	1.20E+00	5.00E-02	4.00E-02	1.70E-01	3.00E-02	1.10E-01		1.80E-01	2.20E-01			
	1997	5.70E-01	2.40E+00	1.70E+00	6.00E-02	2.00E-02	1.30E-01	1.00E-02	1.90E-01		5.30E-01	9.20E-01			
	1998	7.30E-01	2.90E+00	1.10E+00	2.30E-01	6.80E-02	3.10E-01	1.70E-02	1.50E-01		5.50E-01	6.80E-01			
	1999	6.20E-01	1.90E+00	1.80E+00	2.00E-01	1.00E-01	5.00E-01	1.10E-02	1.30E-01		2.90E-01	1.20E+00			
Penly 1+2	1995	4.90E-01	4.50E-01	3.80E-01		1.10E-01	1.40E-01	1.00E-02	5.00E-02		8.00E-02	8.00E-02			2.00E-02
	1996	2.20E-01	2.00E-01	3.30E-01		2.10E-01	4.80E-01	6.00E-03	3.00E-02		2.00E-02	5.00E-02			1.00E-02
	1997	5.40E-01	2.20E-01	4.00E-01		1.10E-01	2.40E-01	6.00E-03	6.00E-02		6.00E-02	2.00E-02			
	1998	2.90E-01	1.50E-01	3.90E-01		1.70E-01	4.30E-01	6.00E-03	4.80E-02		3.00E-02	8.00E-02			2.00E-02
	1999	8.00E-02	3.40E-01	2.10E-01		1.50E-01	4.20E-01	5.10E-03	3.20E-02		3.90E-02	3.00E-02			1.00E-02
St Alban 1+2	1995	4.00E-01	8.40E-01	8.60E-01		9.00E-02	2.00E-01	2.00E-02	5.00E-02		3.00E-01	2.10E-01			
	1996	1.80E-01	1.00E+00	5.60E-01		2.40E-01	5.80E-01	1.00E-02	2.00E-02		2.50E-01	9.00E-02			
	1997	2.20E-01	2.20E+00	2.20E+00	4.00E-02	1.30E-01	2.60E-01	2.00E-02	1.40E-01		9.00E-02	5.00E-02			
	1998	5.70E-01	7.60E-01	6.70E-01	4.00E-02	8.00E-02	2.30E-01	6.00E-03	5.90E-02		4.60E-02	7.00E-02			
	1999	1.10E-01	2.30E-01	4.50E-01	1.00E-02	1.80E-02	8.00E-02	6.00E-03	2.50E-02		3.10E-02	2.00E-02			
St Laurent B1+B2	1995	8.60E-01	8.10E-01	3.20E-01	3.00E-02	2.00E-02	3.00E-02	5.00E-02	3.00E-02		9.00E-02				
	1996	8.60E-01	3.00E-01	1.80E-01	6.00E-02	4.00E-02	8.00E-02	5.00E-02	2.00E-02		2.40E-01	4.00E-02			1.10E-01
	1997	8.20E-01	1.20E+00	3.90E-01	2.20E-01	3.00E-02	5.00E-02	1.00E-02	2.00E-02		1.60E-01				1.40E-01
	1998	2.30E-01	5.40E-01	4.40E-01	6.00E-02	5.50E-02	1.00E-01	2.00E-03	1.80E-02		9.30E-02	2.00E-02			3.00E-02
	1999	3.60E-01	7.00E-01	3.10E-01	3.00E-02	2.40E-02	6.60E-02	2.00E-03	1.00E-02		2.90E-01	2.00E-02			1.30E-01
Tricastin 1+2+3+4	1995	8.90E-01	3.20E+00	1.30E+00	1.40E-01	7.00E-02	1.70E-01	6.00E-02	9.00E-02		3.60E-01	9.00E-02			7.00E-02
	1996	9.80E-01	2.40E+00	9.50E-01	4.00E-02	8.00E-02	2.50E-01	2.00E-02	1.00E-01		2.50E-01	1.10E-01			1.00E-02
	1997	1.10E+00	4.70E+00	9.00E-01	7.00E-02	6.90E-01	6.00E-01	6.00E-02	1.60E-01		1.70E-01	1.80E-01			
	1998	1.10E+00	2.10E+00	8.70E-01		3.30E-01	3.60E-01	1.20E-02	1.10E-01		6.10E-02	4.80E-02			
	1999	1.50E+00	2.50E+00	7.70E-01	7.80E-02	1.10E-01	2.30E-01	2.40E-02	7.90E-02		1.10E-01	3.10E-02			1.00E-02
Germany															
Biblis A (KWB-A)	1995	3.50E-03		7.40E-02		1.10E-03	3.60E-03	1.80E-02			4.70E-03	5.10E-04			3.70E-02
	1996	5.80E-04		9.00E-03			2.40E-04	6.60E-04		1.30E-05	2.60E-04				1.20E-02
	1997	1.00E-03	1.60E-03	3.30E-02			4.40E-04	3.30E-03		4.30E-04	2.10E-02				2.90E-02
	1998	2.70E-04		5.60E-03		1.30E-04	7.30E-04	1.90E-05		8.10E-06	6.20E-03	8.20E-05			1.60E-02
	1999	3.20E-04	1.10E-03	2.30E-02		8.00E-04	2.90E-03	2.50E-04	6.40E-05	2.90E-04	2.20E-02	3.70E-04			5.40E-02

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Biblis B (KWB-B)	1995	2.00E-03	1.10E-03	1.50E-01		3.10E-04	2.30E-02	2.20E-03			1.50E-01	1.00E-01			1.30E-01
	1996	2.30E-03	3.20E-04	1.10E-01		1.20E-02	4.90E-02	3.10E-03		3.90E-05	1.30E-01	5.80E-02			1.30E-01
	1997	1.30E-03	5.70E-03	6.30E-02		2.80E-03	1.90E-02	6.70E-04			8.90E-02	1.90E-02			3.70E-02
	1998	3.30E-03	7.90E-02	1.00E+00		1.90E-02	5.00E-02			1.50E-03	8.20E-01	1.50E-03			2.80E-02
	1999		9.20E-04	2.70E-02		4.70E-03	2.30E-02	8.90E-04		2.20E-03	2.10E-01	1.80E-02			8.50E-03
Brokdorf (KBR)	1995		2.40E-03	1.30E-02		2.50E-05		1.10E-02		2.00E-04		1.30E-04			
	1996		3.40E-04	9.20E-03		3.90E-04			2.60E-04						
	1997		8.30E-05	2.80E-03		4.70E-04	6.70E-04	1.20E-03		2.50E-04					
	1998			1.30E-04		8.70E-04	9.30E-04	5.70E-03							
	1999			7.70E-04		2.90E-03	3.10E-03								1.20E-04
Emsland (KKE)	1995		2.70E-05	4.30E-05			1.10E-05	1.10E-04				1.70E-05			
	1996			9.80E-06											
	1997														
	1998														9.40E-06
	1999														
Grafenrheinfeld (KKG)	1995	2.00E-04	7.60E-04	7.10E-03	5.50E-04					4.40E-04	1.40E-03				7.00E-03
	1996		3.90E-04	8.90E-03				4.20E-04		1.90E-04	8.40E-04				4.50E-04
	1997	5.70E-04	2.50E-04	9.40E-03							1.30E-03	2.60E-04			1.60E-02
	1998	5.10E-04	4.20E-03	2.30E-02					4.20E-06	5.80E-04	7.00E-03	1.20E-03			2.30E-03
	1999		4.80E-03	1.90E-02					1.80E-05	4.80E-04	4.80E-03				3.20E-03
Grohnde (KWG)	1995		3.30E-04	2.00E-02		4.30E-04	5.60E-04	3.00E-02		1.50E-03	1.40E-02		2.70E-02	2.80E-03	2.70E-03
	1996			5.80E-03		1.80E-03	1.90E-03	1.10E-02					1.10E-02	1.40E-03	3.10E-04
	1997		9.20E-05	2.10E-02		4.20E-04	7.70E-04			1.30E-04	9.40E-05		1.70E-02	1.70E-03	
	1998			1.40E-02		4.70E-04	8.00E-04	2.10E-03			8.60E-04		3.40E-03		1.50E-03
	1999			3.80E-03							5.80E-05		8.80E-04		3.70E-04
Isar 2 (KKI-2)	1995														
	1996											2.90E-04			
	1997											3.80E-04			
	1998			2.60E-04											
	1999							9.50E-04							
Neckarwestheim 1 (GKN-1)	1995		3.90E-04	6.70E-04		1.30E-05	5.30E-04	2.10E-04		2.00E-04	1.70E-04	2.70E-04	2.30E-05		9.30E-04
	1996												8.50E-04		3.70E-04
	1997						1.40E-04	6.50E-04			7.80E-04				7.60E-05
	1998						1.40E-05			1.60E-05	5.90E-04				1.10E-04
	1999		4.20E-05	5.00E-04							8.90E-04				4.40E-04

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Neckarwestheim 2	1995		1.60E-03	6.80E-04		1.30E-03	3.30E-03	2.10E-03		8.30E-05	4.80E-04		7.20E-05		
(GKN-2)	1996	6.70E-04	1.50E-03	1.60E-03		3.80E-04	2.10E-03	4.70E-03	5.90E-05	5.50E-05		3.20E-04	1.60E-04		
	1997	4.50E-03	1.10E-03	6.30E-04		3.70E-04	1.10E-03	3.20E-03		5.20E-04	8.90E-04	1.20E-04			
	1998	2.90E-04	1.90E-03	9.70E-03		3.10E-04	9.60E-04		2.00E-03		4.20E-03	2.50E-03			
	1999		2.80E-05	2.50E-03		1.10E-02	1.40E-02		2.40E-04		3.30E-03	5.30E-04			
Obrigheim (KWO)	1995	9.20E-02	1.60E-02	3.30E-02		9.00E-04	7.10E-03	8.50E-04	1.00E-03		8.90E-03		4.00E-04	6.80E-04	
	1996	7.00E-02	2.60E-02	7.50E-02		1.70E-03	4.60E-03		8.00E-04	1.30E-03	9.20E-03		2.50E-04	4.00E-04	
	1997	3.10E-02	1.60E-02	7.70E-02	4.40E-03	1.50E-03	1.20E-02		7.70E-04	1.50E-04	2.50E-03		1.70E-04	1.90E-04	
	1998	1.00E-01	1.20E-01	7.80E-02	5.30E-03	8.50E-03	1.40E-01	2.80E-04	5.70E-03		4.90E-02	1.30E-02	1.10E-04	1.20E-04	1.40E-04
	1999	7.20E-02	2.30E-02	1.10E-01	8.20E-03	8.90E-04	1.10E-02		1.80E-03	1.70E-03	7.80E-04	7.80E-04	9.00E-05	1.80E-04	3.70E-04
Philippsburg 2 (KKP-2)	1995	5.90E-02	3.90E-02	1.00E-01	1.10E-02	8.80E-03	1.60E-02	2.20E-03	1.00E-02	1.40E-02	1.20E-01	2.70E-03		6.00E-04	2.40E-03
	1996	1.30E-02	3.30E-02	1.00E-01	5.00E-03	1.60E-02	3.20E-02	5.00E-03	7.00E-03	8.20E-03	1.90E-02	3.40E-03		1.00E-03	3.80E-03
	1997	2.20E-02	7.20E-03	4.60E-02		2.50E-02	5.40E-02	1.40E-02	2.60E-03	3.50E-03	5.40E-03	1.70E-03			4.10E-03
	1998	3.80E-02	2.50E-02	6.60E-03		7.00E-02	2.30E-01		5.20E-03	1.50E-02	6.00E-02	7.50E-02	2.00E-04	7.20E-04	8.20E-02
	1999	4.80E-03	5.30E-03	3.70E-02		4.20E-02	1.50E-01	8.10E-03	4.80E-04	2.10E-04	9.90E-03	2.90E-03	2.90E-04	9.50E-05	6.90E-04
Stade (KKS)	1995	1.00E-01	1.20E-02	8.30E-02	7.50E-03	3.30E-04	3.90E-02		1.20E-03	3.60E-03	8.80E-02	8.60E-04		1.80E-04	3.80E-03
	1996	1.90E-02	8.00E-03	5.70E-02		4.20E-04	1.90E-02	6.40E-05	4.10E-04	3.50E-04	4.30E-02	5.00E-04		9.80E-05	1.80E-03
	1997	1.60E-02	8.00E-03	2.80E-02	3.90E-03	2.20E-04	2.20E-02		1.50E-04	1.40E-03	2.10E-02	8.30E-04	1.80E-05	1.10E-04	8.90E-04
	1998	6.30E-03	1.40E-03	1.10E-02	3.00E-03	5.50E-05	5.40E-03		3.50E-04	2.70E-03	1.40E-02	4.90E-04	2.10E-05	1.60E-05	5.90E-04
	1999	5.60E-03	3.30E-03	1.10E-02		9.30E-05	6.80E-03		1.20E-04		4.10E-03	2.70E-04		3.00E-05	2.70E-03
Unterweser (KKU)	1995			3.50E-02			9.20E-04				4.40E-02				7.60E-02
	1996			4.80E-02							9.50E-03				1.40E-01
	1997			9.80E-02	1.10E-03		1.40E-03				9.60E-03				1.40E-02
	1998			1.60E-02			2.50E-04				1.10E-02				3.40E-02
	1999			2.50E-02			1.40E-03	5.90E-04			2.80E-02				
The Netherlands															
Borssele	1995	2.24E-02	6.01E-02	3.36E-01	2.97E-02		7.24E-03	1.32E-01	5.07E-03	6.52E-03	7.24E-03				7.20E-04
	1996	1.90E-02	3.34E-02	2.32E-01	3.19E-02		1.59E-02		5.14E-03	1.85E-02	2.06E-03				1.08E-02
	1997	3.04E-02	1.37E-01	5.39E-01	4.49E-02		4.10E-02	9.25E-03	1.06E-02	3.83E-02	1.59E-02				2.64E-03
	1998	9.81E-03	5.62E-02	1.20E-01	5.71E-02	8.90E-04	7.58E-03	7.67E-02	5.35E-03	1.92E-02	4.01E-03				8.90E-04
	1999	8.05E-03	2.32E-02	1.04E-01	1.61E-02	6.12E-03	1.96E-02	1.61E-03	3.22E-03	6.12E-03	3.20E-04				

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Spain															
Almaraz 1+2	1995	1.76E-02	4.66E+00	2.53E+00	8.04E-01	9.13E-01	1.81E+00	1.08E+00	3.02E-01	3.24E-01	2.17E-02	1.13E+00	8.93E-01	1.56E+00	
	1996	2.88E-02	4.11E+00	2.98E+00	1.76E-01	9.03E-01	1.88E+00	8.01E-01	4.24E-01	1.72E-01	5.96E-02	1.71E+00			
	1997	1.68E-01	4.00E+00	2.31E+00	3.88E-01	1.09E+00	1.77E+00	2.22E-01	2.83E-01	1.15E-01	7.03E-02	1.95E+00			
	1998	1.66E-01	2.23E+00	2.37E+00	6.04E-01	6.44E-01	1.49E+00	3.00E-02	3.10E-01	3.14E-02	4.27E-01	2.57E+00			
	1999	3.55E-01	2.54E+00	2.07E+00	4.68E-01	1.42E-01	4.71E-01	2.22E-04	4.02E-01	1.61E-01	4.26E+00	6.25E-01			
Asco 1+2	1995	1.40E-01	2.80E+01	9.42E+00	1.76E+00	1.74E+00	2.93E+00	1.93E-01	9.08E-01	1.94E+00	1.18E-01	2.09E+00	3.95E-01	2.47E-01	
	1996	1.15E-02	3.89E+00	2.57E+00	8.03E-01	3.95E-01	1.13E+00	1.01E-02	2.33E-01	4.58E-01	2.03E-02	8.48E-01	1.05E+00	4.60E-01	
	1997	9.01E-02	8.43E+00	2.20E+00	3.90E+00	2.57E-01	5.53E-01	3.07E-03	7.88E-01	8.51E-01		7.60E-01	1.21E-01	2.07E-01	
	1998	5.75E-01	4.20E+00	1.53E+00	1.58E+00	2.18E-01	8.12E-01	2.21E-02	4.25E-01	5.91E-01	2.43E-02	6.55E-01	7.32E-01	5.38E-01	
	1999	1.84E+00	1.81E+00	1.48E+00	1.54E+00	4.33E-01	9.27E-01	1.32E-01	2.77E-01	5.41E-01	1.72E-02	1.03E+00	5.31E-01	2.92E-01	
Jose Cabrera (Zorita)	1995			1.46E-02		2.93E-02	1.87E-01							5.21E-04	
	1996		4.19E-02	5.89E-03		1.70E-02	7.28E-02	1.95E-02						8.39E-04	
	1997		2.48E-02	1.56E-02	5.44E-03	1.91E-02	7.34E-02	1.83E-02							
	1998		9.96E-05	9.46E-03		8.78E-04	4.44E-02	1.07E-02							
	1999		1.11E-01	5.35E-02		4.86E-04	1.92E-01	1.64E-02	2.04E-02						
Trillo	1995	2.38E-02	9.08E-02	3.85E-01	2.55E-02	1.92E-03	4.84E-02		2.69E-02	1.99E-02	4.61E-02		3.79E-04	2.62E-04	7.44E-03
	1996	3.99E-02	6.11E-02	3.58E-01	5.39E-02	5.76E-03	8.54E-02	3.16E-05	1.99E-02	3.43E-02	6.26E-02		2.99E-04		1.30E-02
	1997	2.36E-02	1.11E-01	4.02E-01	1.11E-01	7.01E-03	1.14E-01	3.18E-01	2.39E-02	8.08E-02	2.95E-02	2.11E-02			5.74E-02
	1998	2.00E-02	3.38E-02	2.18E-01	1.79E-02		2.09E-02	1.07E-01	1.73E-02	6.80E-02	1.46E-02	1.87E-03	3.55E-03		6.80E-03
	1999	3.94E-02	4.89E-02	3.77E-01	1.85E-02	2.41E-02	6.01E-02	6.54E-02	2.36E-02	5.29E-02	3.96E-02	3.67E-03	5.60E-04		9.78E-03
Vandellos 2	1995		3.78E+00	7.21E+00	7.44E-01	8.70E-01	1.34E+00	2.48E-02	5.16E-01	4.66E-01			3.45E-01	4.29E-01	
	1996		2.57E+00	4.81E+00	2.61E-01	2.82E-01	5.18E-01	4.12E-02	2.53E-01	3.34E-01			3.95E-01	4.80E-01	
	1997		7.91E+00	5.64E+00	1.39E+00	3.52E-01	5.81E-01	4.50E-02	2.57E-01	8.17E-01			5.57E-01	7.64E-01	
	1998		2.18E+00	3.92E+00	9.71E-03	8.21E-01	1.16E+00	1.62E-02	1.30E-01	1.37E-01			2.94E-01	3.70E-01	
	1999		1.04E+01	3.87E+00	4.88E-01	1.18E+00	1.65E+00	1.71E-01	2.71E-01	3.36E-01			3.97E-01	4.89E-01	
Sweden															
Ringhals 2+3+4	1995	2.71E+00	3.93E+01	1.41E+01	8.00E+00	9.55E-01	1.37E+00	4.93E-02	1.72E+00	4.40E+00	1.91E+00	1.26E+00			
	1996	3.04E+00	1.92E+01	1.00E+01	5.09E+00	5.57E-01	5.90E-01	2.44E-01	8.43E-01	1.26E+00	1.61E+00	2.24E+00	9.50E-03	8.65E-03	
	1997	2.20E+00	1.97E+01	6.90E+00	1.92E+00	1.38E-01	1.81E-01	2.04E-02	5.70E-01	6.00E-01	1.24E+01	1.69E+00	1.41E-02	7.60E-03	
	1998	5.36E+00	2.05E+01	5.31E+00	1.40E+00	2.51E-02	6.75E-02	2.10E-03	4.79E-01	9.41E-01	4.39E+00	9.60E-01	6.30E-03	1.01E-02	
	1999	2.56E+00	2.91E+01	3.45E+00	2.61E+00	2.43E-02	4.61E-02	4.35E-02	4.54E-01	9.24E-01	1.23E+00	3.33E-01	3.18E-03	4.01E-03	

Notes: [1] No data available for the year 1998.

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m

Nuclear Power Stations (BWR) - Liquid Discharges - Beta-Gamma Emitters (GBq)

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Finland															
Olkiluoto 1+2	1995		1.60E+00	8.10E+00	7.20E-01	4.40E+00	4.90E+00	6.10E-02	3.60E+00	5.50E-01		7.10E-02	2.30E-02	1.20E-02	
	1996		8.20E-01	5.90E+00	6.80E-01	2.50E+00	4.00E+00	2.20E-01	1.40E+00	9.50E-03	7.30E-03	1.20E-02	7.10E-02	1.40E-02	
	1997		6.80E-01	3.60E+00	1.80E-01	1.30E+00	2.80E+00	5.20E-03	9.10E-01			1.10E-02	1.40E-02	9.70E-03	
	1998		1.20E-01	9.00E-01	1.10E-01	2.80E-01	8.80E-01	1.10E-02	1.10E-01	3.40E-02	1.90E-02	3.20E-03	2.60E-03		
	1999		2.50E-01	7.90E-01	1.20E-01	7.10E-02	3.20E-01	1.00E-01	9.00E-02	7.10E-03	3.20E-02	3.00E-03	3.40E-03		
Germany															
Brunsbuettel (KKB)	1995			2.20E-02		7.50E-04	3.20E-02		6.80E-04					8.90E-05	
	1996		9.20E-03	3.60E-02	2.20E-03	5.20E-04	2.30E-02		2.50E-02				1.10E-04	2.10E-04	
	1997		4.00E-05	9.70E-03			5.70E-03		2.90E-03				6.70E-06	8.50E-04	2.60E-05
	1998		7.40E-03	6.10E-02	2.30E-03	2.30E-04	2.10E-02		2.60E-02	1.50E-03	2.40E-03		5.80E-03	5.90E-04	
	1999	7.20E-05	1.20E-02	1.60E-01	9.10E-03	7.90E-04	3.50E-02	3.40E-04	3.40E-02	1.70E-04	5.40E-04	1.20E-03	3.40E-04	9.50E-04	
(KRB)	1995	7.00E-03	6.70E-03	1.50E-01	3.20E-03	8.80E-03	1.60E-01		9.20E-02			3.60E-03			
	1996	3.50E-03	7.90E-03	1.20E-01	2.10E-03		6.70E-02		1.10E-01	6.10E-04		2.70E-03			
	1997		4.50E-03	2.50E-01	8.10E-02		1.40E-01		2.00E-01			2.30E-02			
	1998	9.40E-03	5.00E-03	1.70E-01	3.50E-02	2.50E-04	8.60E-02		1.20E-01						
	1999	2.30E-03	4.30E-03	3.40E-01		3.10E-04	1.50E-01		1.70E-01	2.20E-04	2.40E-03				
Isar 1 (KKI-1)	1995		9.10E-03	4.30E-02	4.80E-02	2.70E-03	8.10E-03	1.10E-02	5.40E-03	1.40E-04	1.50E-03	6.70E-04			4.00E-05
	1996		1.10E-02	7.00E-02	1.00E-02	1.20E-03	9.80E-03	3.90E-03	9.00E-03	7.30E-04	4.70E-04	3.70E-04			
	1997		4.40E-03	5.80E-02	8.90E-03	8.50E-04	5.10E-03	1.20E-02	4.50E-03	1.60E-03	2.80E-04	3.20E-03			
	1998		1.40E-02	7.60E-02	2.30E-02	2.80E-03	8.00E-03	2.30E-02	9.60E-03	4.00E-03	4.00E-04				4.20E-05
	1999		6.20E-03	4.40E-02	4.00E-03	1.70E-03	6.60E-03	3.30E-04	2.40E-03	1.70E-05					
Kruemmel (KKK)	1995			5.40E-03			2.40E-04	6.20E-03							
	1996			3.50E-03			5.00E-04	1.90E-03				5.70E-03			
	1997			1.70E-03				1.10E-03							
	1998			4.90E-03								3.20E-03			
	1999			1.90E-03											
Philippsburg 1 (KKP-1)	1995	1.90E-03	4.40E-03	8.90E-02	1.80E-02	6.00E-04	1.10E-03	3.40E-02	1.00E-02						
	1996	2.10E-03	4.00E-02	1.90E-01	1.30E-01	4.60E-03	1.00E-02	4.30E-02	2.50E-02	2.80E-03	3.50E-03		1.20E-03	2.20E-03	
	1997	1.30E-03	1.80E-02	2.20E-01	1.40E-02	1.70E-03	7.30E-03	1.30E-01	2.60E-02	4.00E-04	7.00E-04	5.00E-04			
	1998	7.60E-03	6.80E-03	1.20E-01	6.00E-03	6.80E-03	3.30E-02	2.90E-02	8.20E-03	9.20E-05					
	1999	1.40E-02	3.20E-03	9.50E-02	1.60E-02	1.10E-03	1.80E-02	4.20E-02	7.80E-03				9.50E-04	3.40E-04	
The Netherlands															
Dodewaard	1995	7.80E-03	1.02E-01	3.67E+00	1.40E+00	4.70E-02	6.10E-01		1.42E+00		7.80E-03	1.64E-01			
	1996		1.16E-01	3.83E+00	4.08E-02	4.76E-02	6.25E-01		1.63E+00			1.77E-01			

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
	1997														

Member State Nuclear Power Station	Year	Ag-110m	Co-58	Co-60	Cr-51	Cs-134	Cs-137	I-131	Mn-54	Nb-95	Sb-124	Sb-125	Sr-89	Sr-90	Te-123m
Spain															
Cofrentes	1995			2.42E-02		9.69E-04	8.63E-03		3.31E-03				7.31E-03	1.53E-02	
	1996		2.27E-04	2.58E-02		1.56E-03	1.38E-02	6.79E-05	3.05E-03				1.86E-02	4.85E-02	
	1997		8.51E-05	1.27E-01	2.65E-04	1.72E-02	6.24E-02	1.62E-03	7.72E-03	7.29E-04			1.37E-03	1.61E-01	
	1998			4.66E-02	3.90E-04	4.06E-05	3.76E-03	1.25E-05	3.28E-03	1.37E-04			4.52E-04	1.41E-03	
	1999		2.26E-03	1.47E-01	1.61E-03	1.25E-02	6.21E-02	9.87E-05	9.54E-03	2.33E-03			4.58E-03	1.43E-03	
Sta Maria de Garona	1995	1.92E-04	2.38E-03	3.47E-01	1.55E-02	5.04E-03	1.10E-01	1.74E-03	7.38E-02		1.85E-05		9.96E-04	6.28E-03	
	1996		1.50E-02	3.81E-01	3.88E-02	2.33E-03	1.38E-01		1.35E-01	2.38E-04	2.58E-03		5.41E-04	5.39E-03	
	1997		1.15E-02	3.33E-01	1.14E-02	8.25E-04	1.40E-01		1.31E-01	2.32E-04	1.47E-03		1.87E-04	3.52E-03	
	1998		3.97E-03	6.07E-01	4.59E-02	2.28E-03	2.06E-01		1.36E-01		4.86E-04		5.62E-04	8.74E-03	
	1999	1.48E-03	6.62E-02	5.41E-01	1.87E-01	2.39E-02	1.47E-01		1.07E+00	4.61E-05	1.88E-02		1.98E-04	6.67E-03	
Sweden															
Barsebäck 1+2	1995	4.40E-02	6.20E+00	3.00E+01	1.10E+01	3.10E-01	2.50E+00	3.20E-01	5.70E+00	3.50E-01	3.30E-01	7.70E-01			
	1996	8.40E-01	6.50E+01	5.20E+01	1.30E+01	3.10E-02	7.40E-01	1.60E-01	6.00E+01	2.40E-01	3.80E-01	3.50E-01		1.80E-03	
	1997	2.60E-02	5.80E+00	2.00E+01	2.50E+01		8.30E-01	1.60E-02	5.20E+00	9.20E-02	4.90E-01	2.60E-01		8.80E-04	
	1998	9.50E-02	3.70E+00	9.20E+00	1.60E+01	1.90E-02	1.00E+00	4.50E-02	2.40E+00	3.40E-01	1.30E+00	4.20E-01		8.80E-04	
	1999	1.80E-01	3.00E+00	1.50E+01	5.30E+00		6.10E-01	6.60E-02	1.50E+00	1.80E-01	2.50E-01	2.30E-02		1.50E-03	
Forsmark 1+2+3	1995	1.30E+00	7.61E+00	2.50E+01	2.37E+00	1.64E+00	3.76E+00	6.11E+00	2.13E+00	3.65E-01	2.01E+00	6.73E-01			
	1996	2.71E+00	4.12E+00	3.21E+01	1.62E+00	7.71E+00	8.48E+00	4.03E+00	1.84E+00	7.33E-01	1.04E+00	7.30E-02		1.10E-02	
	1997	8.20E+00	7.60E+00	4.91E+01	4.80E+00	1.30E+01	1.50E+01	1.34E+00	2.90E+00	7.45E-02	1.40E+00	3.10E-01			
	1998	1.30E+00	9.40E-01	1.20E+01	1.30E+00	2.40E+00	3.72E+00	3.70E-01	7.00E-01	1.20E-01	7.40E-01				
	1999	6.19E-01	1.20E+00	8.70E+00	1.67E+00	2.75E+00	6.35E+00	4.16E-02	1.12E+00	3.80E-02	6.71E-01	3.18E-01			
Oskarshamn 1+2+3	1995	1.15E-01	9.52E+00	4.17E+01	2.45E+01	4.00E-01	4.82E+00	1.50E-01	5.24E+00	6.68E-01	5.60E-01	3.80E+00			
	1996	1.42E+00	8.82E+00	4.30E+01	5.94E+01	8.60E-02	2.32E+00	5.98E-02	4.49E+00	6.44E-01	1.66E+00	3.49E+00		1.60E-02	
	1997	1.51E+00	2.51E+00	1.40E+01	2.13E+01	1.26E+00	2.16E+00	7.23E-01	1.97E+00	1.68E-01	5.16E-01	1.10E+00		6.04E-03	
	1998	1.44E+00	3.94E+00	1.44E+01	5.32E+01	3.80E-01	1.01E+00	1.67E-02	2.43E+00	3.06E-01	1.14E+00	8.60E-01		2.99E-03	
	1999	9.05E-01	2.08E+00	1.10E+01	6.17E+00	4.50E-01	8.80E-01	8.70E-02	1.81E+00	7.10E-02	6.74E-01	1.29E+00		2.19E-03	
Ringhals 1	1995	1.05E-01	4.35E+00	3.79E+01	4.01E+00	2.75E+00	5.63E+00	5.24E-01	8.34E-01	1.35E-01	7.76E-02	2.16E-01			
	1996	2.53E-01	3.94E+00	2.53E+01	4.60E+00	3.25E-01	1.73E+00	3.79E-01	2.54E+00	1.54E-01	1.03E-01	1.53E-01	4.14E-01	5.18E-02	
	1997	4.80E-01	1.10E+01	1.10E+02	5.90E+00	4.20E-01	5.30E+00	8.70E-01	9.90E+00	2.70E-01	3.70E-01	2.50E+00	1.50E+00	5.90E-02	
	1998	3.20E-01	3.00E+00	3.00E+01	3.60E+00	9.50E-01	1.00E+01	2.70E-01	2.20E+00	1.20E-01	2.70E-01	1.40E-01	8.40E-02	3.50E-02	
	1999	2.41E-01	4.25E+00	1.42E+01	1.97E+00	1.48E-01	2.26E+00	2.85E-02	2.35E+00	1.71E+00	3.61E-01	6.13E-01	6.36E-02	2.48E-02	

UK Nuclear Power Stations (GCR) - Liquid Discharges - Beta-Gamma Emitters

Nuclear Power Station Type	Year	Co-60 (GBq)		Cs-134 (GBq)		Cs-137 (GBq)		S-35 (GBq)		Sr-90 (GBq)	
		Limit	Value	Limit	Value	Limit	Value	Limit	Value	Limit	Value
Bradwell A+B	1995	not defined	3.10E+00	not defined	1.10E+02	7.50E+02	3.66E+02	not defined	1.80E+02	not defined	3.50E+01
GCR	1996		1.50E+00		1.20E+02		3.93E+02		1.38E+02		7.90E+00
	1997		1.40E+00		1.40E+02		4.66E+02		8.90E+01		2.20E+01
	1998		1.50E+00		8.50E+01		3.23E+02		1.30E+02		2.90E+01
	1999 [1]		1.50E+00		8.90E+01		3.37E+02		1.00E+02		1.80E+01
Chapelcross A+B+C+D	1995	not defined	1.50E+00	not defined	9.00E-01	not defined [2]	1.30E+01	not defined	1.80E+01	not defined	4.80E+01
GCR	1996		1.90E+00		1.40E+00		1.70E+01		2.10E+01		4.20E+01
	1997		1.10E+00		4.00E-01		4.90E+00		6.90E+00		1.30E+01
	1998		1.70E+00		4.00E-01		4.90E+00		8.90E+00		1.50E+01
	1999 [3]		4.00E-01		3.00E-01		3.80E+00		1.10E+01		2.40E+01
Dungeness AA+AB	1995	not defined	3.20E-01	not defined	1.10E+02	1.20E+03	5.06E+02	not defined	8.10E+01	not defined	2.00E+01
GCR	1996		2.20E-01		1.80E+02		5.54E+02		7.50E+01		1.80E+01
	1997		2.30E-01		1.60E+02		5.30E+02		1.10E+02		1.50E+01
	1998		2.90E-01		2.50E+02		7.08E+02		9.50E+01		1.40E+01
	1999 [1]		3.80E-01		2.50E+02		3.30E+02		1.30E+02		2.40E+01
Hinkley Point AA+AB	1995	not defined	3.70E+00	not defined	1.60E+02	1.50E+03	6.05E+02	not defined	1.40E+02	not defined	1.30E+01
GCR	1996		2.50E+00		1.00E+02		4.06E+02		1.00E+02		1.10E+01
	1997		1.20E+00		9.60E+01		4.84E+02		1.30E+02		1.30E+01
	1998		1.10E+00		1.20E+02		4.93E+02		1.10E+02		8.60E+00
	1999 [1]		2.80E+00		1.60E+02		4.39E+02		1.60E+02		1.50E+01
Oldbury AA+AB	1995	not defined	3.40E-01	not defined	7.20E+00	7.00E+02	4.70E+01	not defined	2.80E+02	not defined	2.40E+01
GCR	1996		4.80E-01		6.70E+00		5.10E+01		2.50E+02		2.10E+01
	1997		2.50E-01		4.30E+00		4.17E+01		2.10E+02		2.20E+01
	1998		2.60E-01		1.00E+01		6.20E+01		1.60E+02		2.50E+01
	1999 [1]		2.20E-01		4.70E+00		6.60E+01		1.50E+02		1.50E+01
Sizewell AA+AB	1995	not defined	3.80E-01	not defined	4.50E+01	1.00E+03	1.71E+02	not defined	9.20E+01	not defined	4.10E+01
GCR	1996		1.90E-01		1.00E+02		3.60E+02		3.10E+01		3.90E+01
	1997		1.70E-01		1.20E+01		9.80E+01		5.80E+01		3.90E+01
	1998		1.30E-01		6.30E+00		7.06E+01		1.10E+02		3.60E+01
	1999 [1]		1.40E-01		2.60E+01		6.87E+01		4.50E+01		2.40E+01

Nuclear Power Station Type	Year	Co-60 (GBq)		Cs-134 (GBq)		Cs-137 (GBq)		S-35 (GBq)		Sr-90 (GBq)	
		Limit	Value	Limit	Value	Limit	Value	Limit	Value	Limit	Value
Wylfa A+B	1995	not defined	2.30E+00	not defined	2.50E-01	not defined [2]	2.20E+00	not defined	2.40E+01	not defined	3.00E-01
GCR	1996		4.30E+00		2.70E-01		3.00E+00		2.80E+01		2.00E-01
	1997		2.70E+00		1.00E-01		1.60E+00		1.80E+01		8.00E-02
	1998		1.40E+00		1.20E+00		1.20E+00		6.40E+01		1.40E-01
	1999 [3]		8.60E-01		1.50E-01		6.40E-01		1.10E+01		5.00E-02

Remark: Calder Hall data are not presented, liquid discharge limits and values are integrated in the global Sellafield site authorisation.

Notes:

[1] Data (except for Cs-137) have been inferred from the average isotopic composition for 1995 to 1998, scaled to the reported 1999 total beta (excluding H-3 and Cs-137).

[2] Chapelcross and Wylfa have no statutory Cs-137 discharge limit.

[3] Data have been inferred from the average isotopic composition for 1995 to 1998, scaled to the reported 1999 total beta (excluding H-3).

UK Nuclear Power Stations (AGR) - Liquid Discharges - Beta-Gamma Emitters

Nuclear Power Station Type	Year	Co-60 (GBq)		S-35 (GBq)	
		Limit	Value	Limit	Value
Dungeness B1+B2	1995	3.00E+01	2.59E+00	2.00E+03	2.06E+01
AGR	1996		1.66E+00		3.16E+02
	1997		1.59E+00		3.57E+02
	1998		1.26E+00		2.02E+02
	1999		2.00E+00		2.42E+02
Hartlepool A1+A2	1995	3.00E+01	4.67E+00	3.00E+03	3.56E+02
AGR	1996		1.45E+01		8.99E+02
	1997		4.83E+00		8.04E+02
	1998		3.27E+00		3.25E+02
	1999		3.11E+00		8.64E+02
Heysham 1A+1B	1995	3.00E+01	1.24E+00	2.80E+03	1.13E+02
AGR	1996		1.02E+00		2.23E+02
	1997		6.87E-01		2.62E+02
	1998		1.00E+00		2.41E+02
	1999		3.00E-01		1.44E+02
Heysham 2A+2B	1995	3.00E+01	8.82E-01	2.30E+03	5.45E+01
AGR	1996		6.89E-01		3.58E+01
	1997		5.64E-01		4.86E+01
	1998		1.09E+00		3.39E+01
	1999		1.01E+00		2.41E+01
Hinkley Point BA+BB	1995	3.30E+01	4.04E-01	5.00E+03	1.35E+03
AGR	1996		4.00E-01		7.95E+02
	1997		7.10E-01		8.68E+02
	1998		4.40E-01		5.78E+02
	1999		4.20E-01		5.91E+02
Hunterston B1+B2	1995	not applicable	3.80E+00	2.60E+04	1.70E+03
AGR	1996	3.00E+01	1.86E+00	1.00E+04	1.37E+03
	1997		1.10E+00		1.36E+03
	1998		1.90E+00		2.36E+03
	1999		9.80E-01		2.62E+03
Torness 1+2	1995	3.00E+01	6.70E-01	1.00E+04	4.20E+01
AGR	1996		5.02E-01		4.40E+01
	1997		4.52E-01		7.70E+01
	1998		4.53E-01		4.83E+01
	1999		4.23E-01		4.51E+00

Nuclear Power Stations - Liquid Discharges - Alpha Emitters

Member State / Nuclear Power Station	Year	Alpha emitters (GBq) Limit	Value
Belgium			
Doel 1+2+3+4	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Tihange 1+2+3	1995	not defined	1.86E-03
	1996		1.12E-02
	1997		1.97E-03
	1998		9.40E-04
	1999		8.60E-04
Finland			
Loviisa 1+2	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Olkiluoto 1+2	1995	not defined	2.50E-04
	1996		2.60E-05
	1997		2.80E-04
	1998		<DL
	1999		<DL
France [1]			
Germany			
Biblis A (KWB-A)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Biblis B (KWB-B)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Brokdorf (KBR)	1995	not defined	5.70E-04
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Brunsbuettel (KKB)	1995	not defined	1.80E-04
	1996		4.10E-05
	1997		1.40E-04
	1998		<DL
	1999		<DL

Nuclear Power Stations - Liquid Discharges - Alpha Emitters

Member State / Nuclear Power Station	Year	Alpha emitters (GBq) Limit	Value
Emsland (KKE)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Grafenrheinfeld (KKG)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Grohnde (KWG)	1995	not defined	7.40E-05
	1996		1.10E-04
	1997		<DL
	1998		8.70E-04
	1999		<DL
Gundremmingen B+C (KRB)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Isar 1 (KKI-1)	1995	not defined	<DL
	1996		2.20E-03
	1997		1.70E-03
	1998		1.50E-03
	1999		<DL
Isar 2 (KKI-2)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Kruemmel (KKK)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Neckarwestheim 1 (GKN-1)	1995	not defined	<DL
	1996		9.30E-05
	1997		<DL
	1998		<DL
	1999		3.30E-04
Neckarwestheim 2 (GKN-2)	1995	not defined	2.20E-04
	1996		9.60E-05
	1997		<DL
	1998		<DL
	1999		<DL

Nuclear Power Stations - Liquid Discharges - Alpha Emitters

Member State / Nuclear Power Station	Year	Alpha emitters (GBq) Limit	Value
Obrigheim (KWO)	1995	not defined	1.10E-04
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Philippsburg 1 (KKP-1)	1995	not defined	5.00E-04
	1996		3.00E-03
	1997		4.80E-03
	1998		2.10E-03
	1999		<DL
Philippsburg 2 (KKP-2)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
Stade (KKS)	1995	not defined	3.30E-04
	1996		3.00E-04
	1997		8.10E-05
	1998		7.30E-06
	1999		2.70E-05
Unterweser (KKU)	1995	not defined	<DL
	1996		<DL
	1997		<DL
	1998		<DL
	1999		<DL
The Netherlands			
Borssele	1995	2.00E-01	<DL
	1996		<DL
	1997		<DL
	1998		3.00E-04
	1999		<DL
Dodewaard	1995	5.00E-02	<DL
	1996		<DL
(stopped 26/03/97)	1997		4.00E-04
Spain [2]			
Sweden			
Barsebäck 1+2	1995	not defined	<DL
	1996		1.89E-04
	1997		9.20E-05
	1998		2.86E-05
	1999		8.61E-05

Nuclear Power Stations - Liquid Discharges - Alpha Emitters

Member State / Nuclear Power Station		Year	Alpha emitters (GBq) Limit	Value
Forsmark 1+2+3		1995	not defined	<DL
		1996		1.29E-03
		1997		>DL
		1998		4.13E-04
		1999		1.74E-03
Oskarshamn 1+2+3		1995	not defined	5.19E-03
		1996		5.82E-03
		1997		1.76E-03
		1998		2.74E-03
		1999		1.56E-03
Ringhals 1		1995	not defined	5.13E-03
		1996		3.43E-03
		1997		6.30E-03
		1998		1.10E-02
		1999		3.65E-03
Ringhals 2+3+4		1995	not defined	6.12E-03
		1996		1.13E-02
		1997		2.57E-03
		1998		4.15E-03
		1999		2.16E-02
United Kingdom				
Bradwell A+B	[3]	1995	not defined	7.66E-01
		1996		3.80E-01
		1997		2.81E-01
		1998		5.20E-01
		1999		3.78E-01
Calder Hall A+B+C+D	[2]			
Chapelcross A+B+C+D	[3]	1995	1.00E+02	7.00E-01
		1996		1.00E+00
		1997		3.00E-01
		1998		4.00E-01
		1999		2.00E-01
Dungeness AA+AB	[3]	1995	not defined	9.44E-02
		1996		9.47E-02
		1997		6.18E-02
		1998		3.10E-01
		1999		1.98E-01
Dungeness B1+B2	[2]			
Hartlepool A1+A2	[2]			
Heysham 1A+1B	[2]			
Heysham 2A+2B	[2]			

Nuclear Power Stations - Liquid Discharges - Alpha Emitters

Member State / Nuclear Power Station		Year	Alpha emitters (GBq) Limit	Value
Hinkley Point AA+AB	[3]	1995	not defined	5.48E+00
		1996		3.06E+00
		1997		2.29E+00
		1998		2.03E+00
		1999		4,29E+00
Hinkley Point BA+BB	[2]			
Hunterston B1+B2		1995	1.00E+00	no data
		1996		5.03E-02
		1997		6.00E-02
		1998		9.03E-02
		1999		1.10E-01
Oldbury AA+AB	[3]	1995	not defined	1.08E-01
		1996		1.50E-01
		1997		2.43E-01
		1998		1.58E-01
		1999		1.09E-01
Sizewell AA+AB	[3]	1995	not defined	5.27E-02
		1996		9.13E-02
		1997		6.62E-02
		1998		2.44E-02
		1999		3.59E-02
Sizewell B	[2]			
Torness 1+2		1995	4.50E+00	9.00E-03
		1996	1.00E+00	5.97E-03
		1997		7.09E-03
		1998		6.88E-03
		1999		6.57E-03
Wylfa A+B	[3]	1995	not defined	1.80E-02
		1996		1.35E-01
		1997		1.70E-02
		1998		7.90E-03
		1999		1.53E-02

Notes:

[1] French NPS are not allowed to discharge alpha emitters.

[2] Data not available.

[3] Data collected from BNFL's yearly report (reference 5).

Figure 1: normalised annual discharges (GBq/GWh) from NPS by reactor type (data exclude French [PWR] and Swedish [BWR+PWR] NPS)

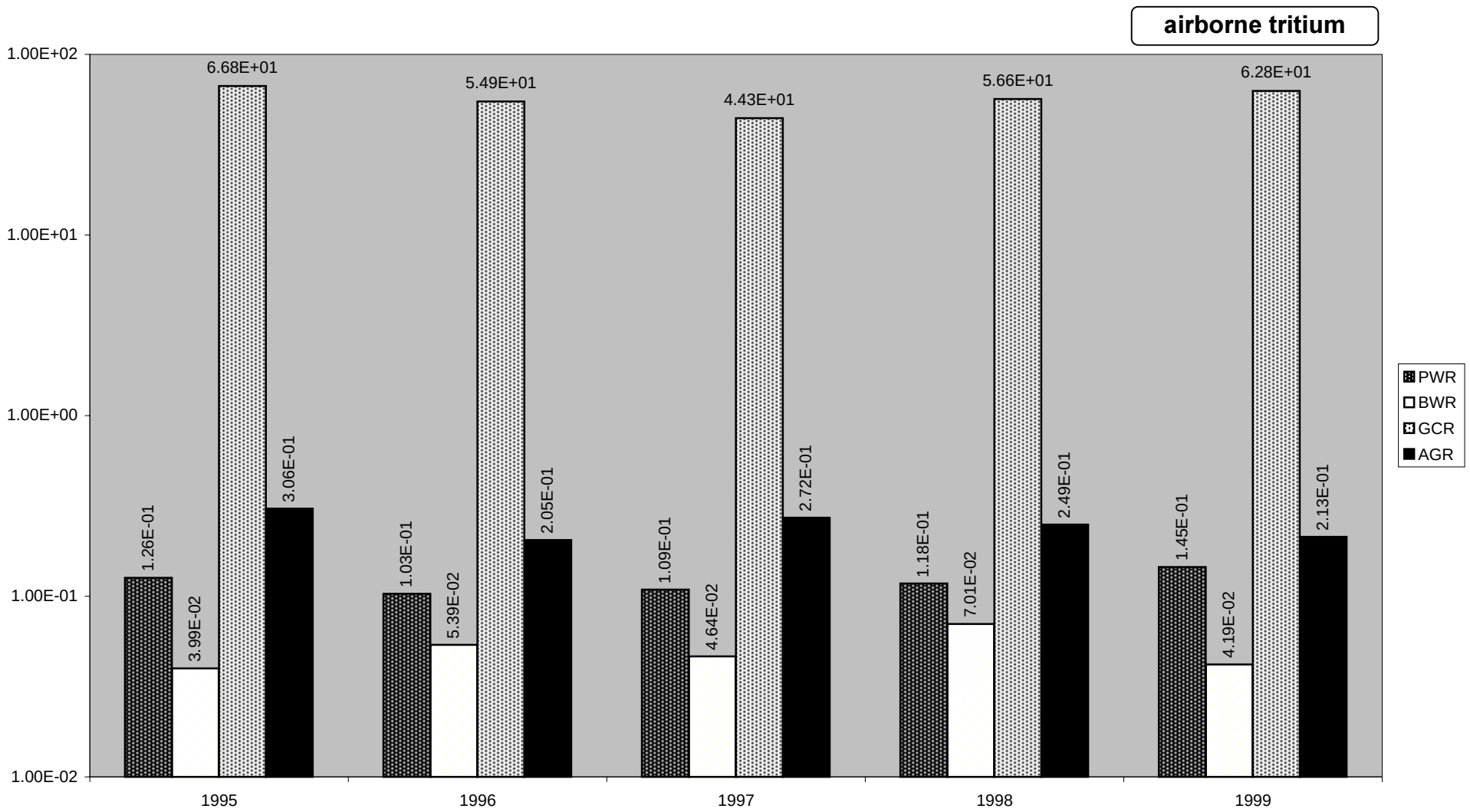


Figure 2: normalised annual discharges (GBq/GWh) from NPS by reactor type (data exclude French NPS)

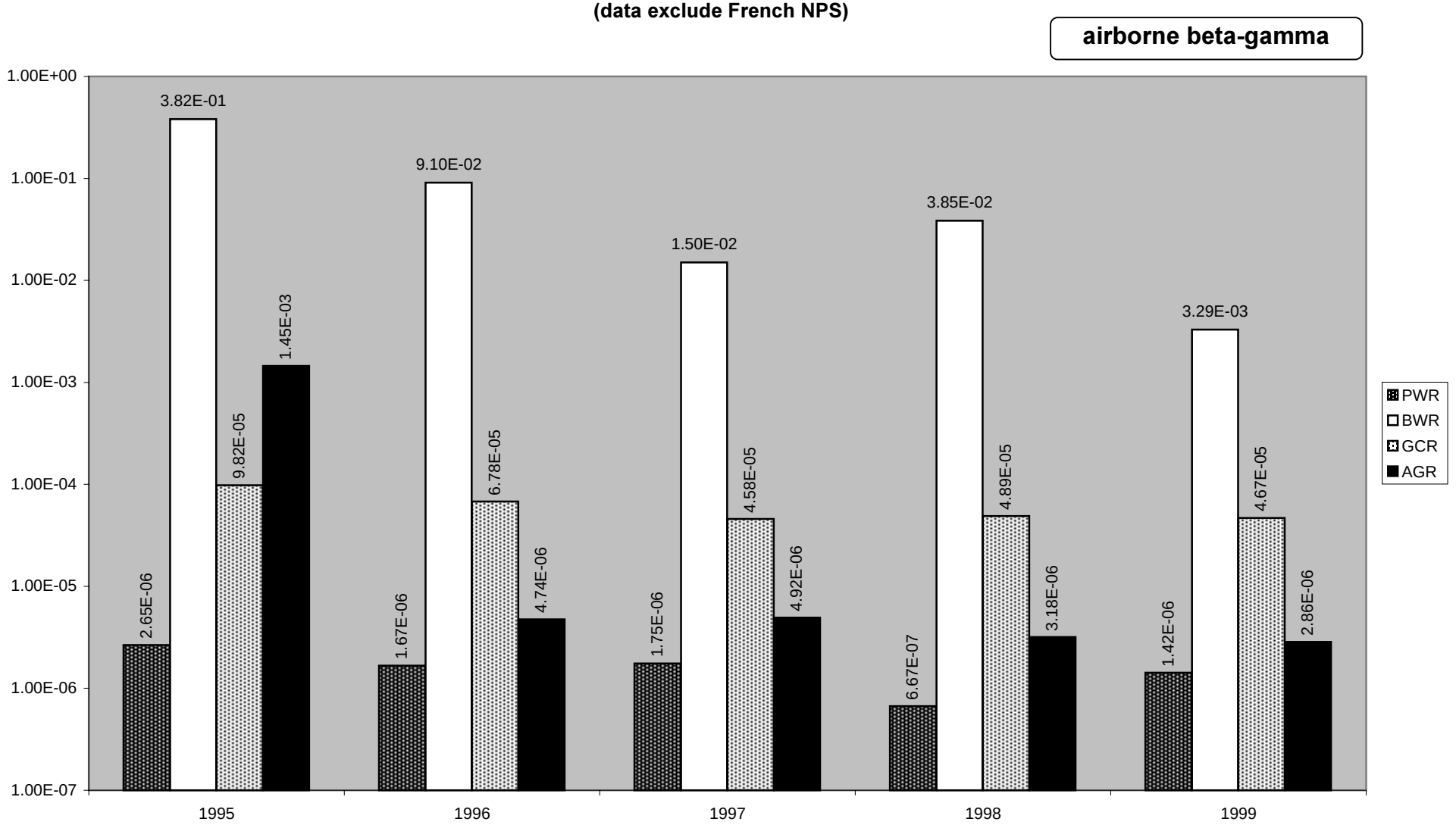


Figure 3: normalised annual discharges (GBq/GWh) from NPS by reactor type (data exclude French NPS)

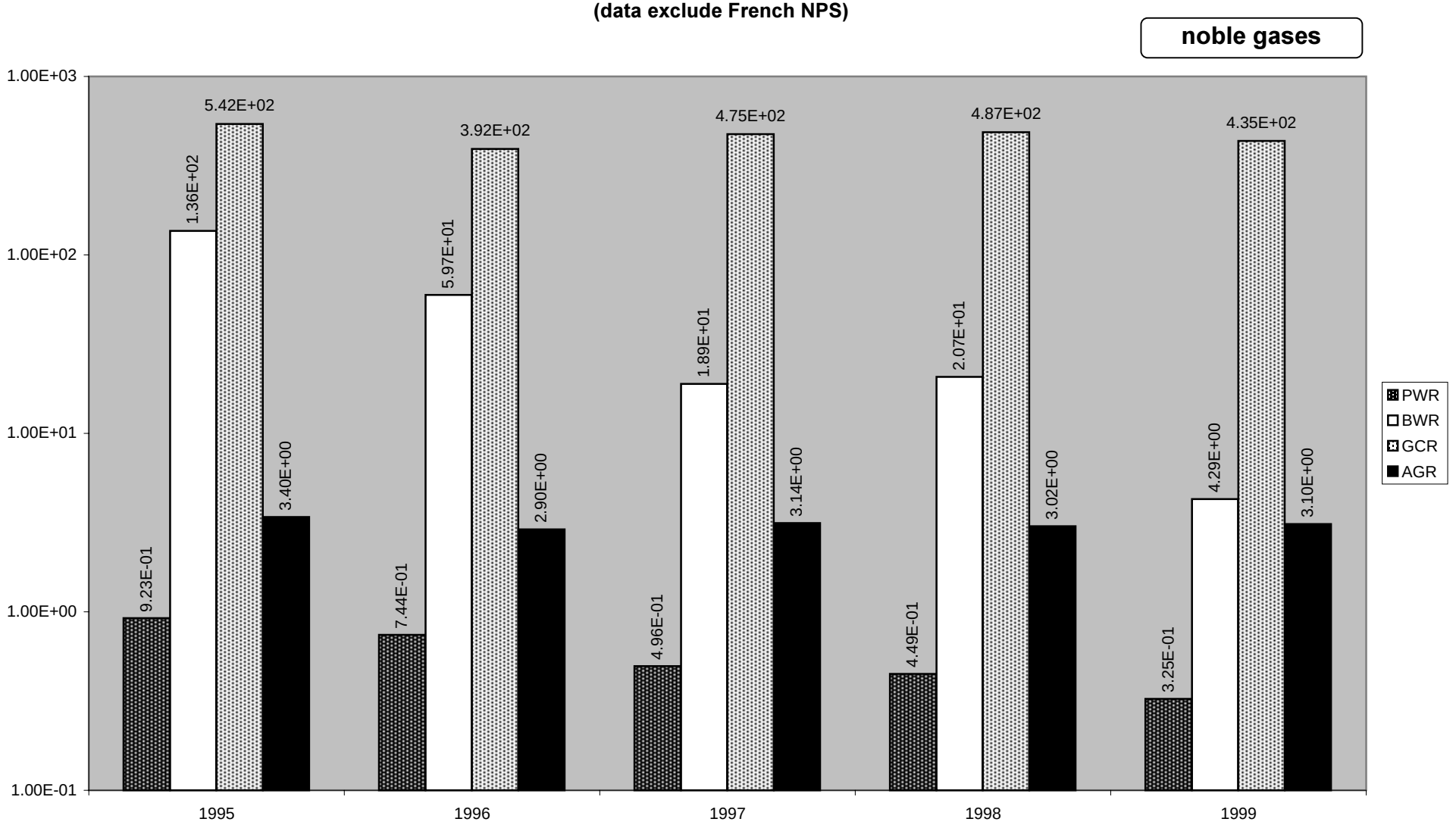


Figure 4: normalised annual discharges (GBq/GWh) from NPS by reactor type
(data for Scottish AGR stations not available)
GCR do not routinely release atmospheric I-131

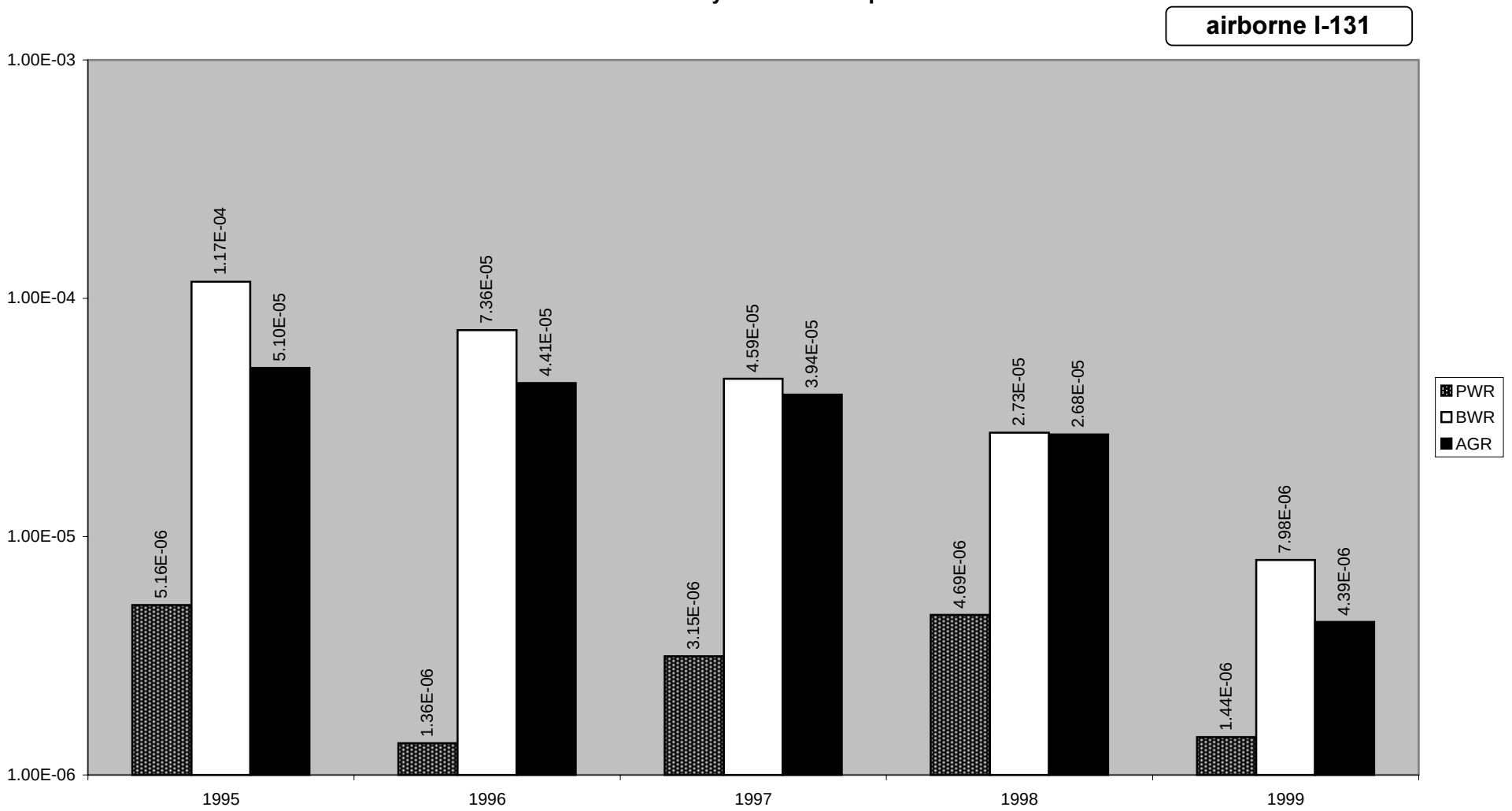


Figure 5: normalised annual discharges (GBq/GWh) from NPS by reactor type (data exclude French, Belgian, Spanish and Swedish NPS)

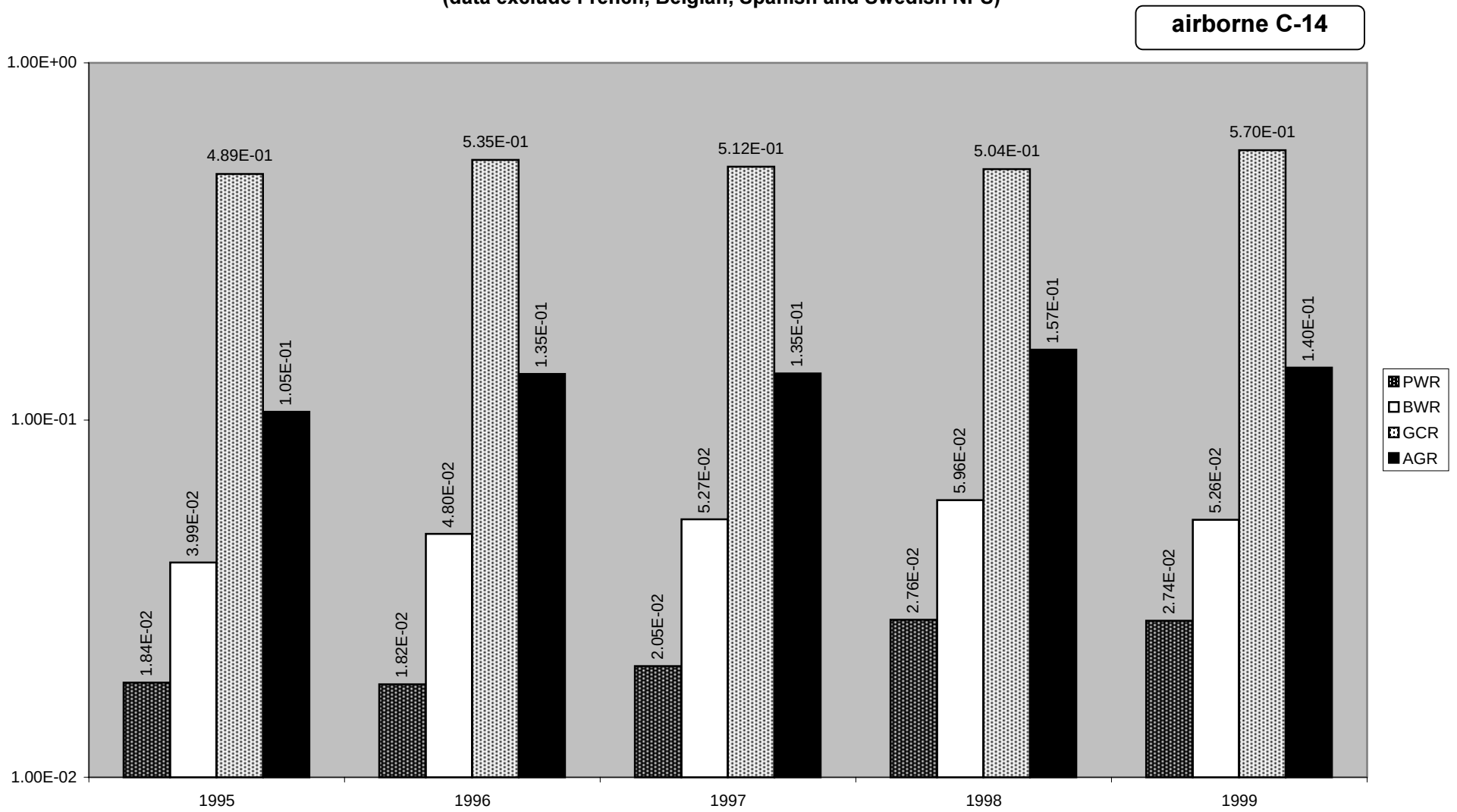


Figure 6: normalised annual discharges (GBq/GWh) from NPS by reactor type

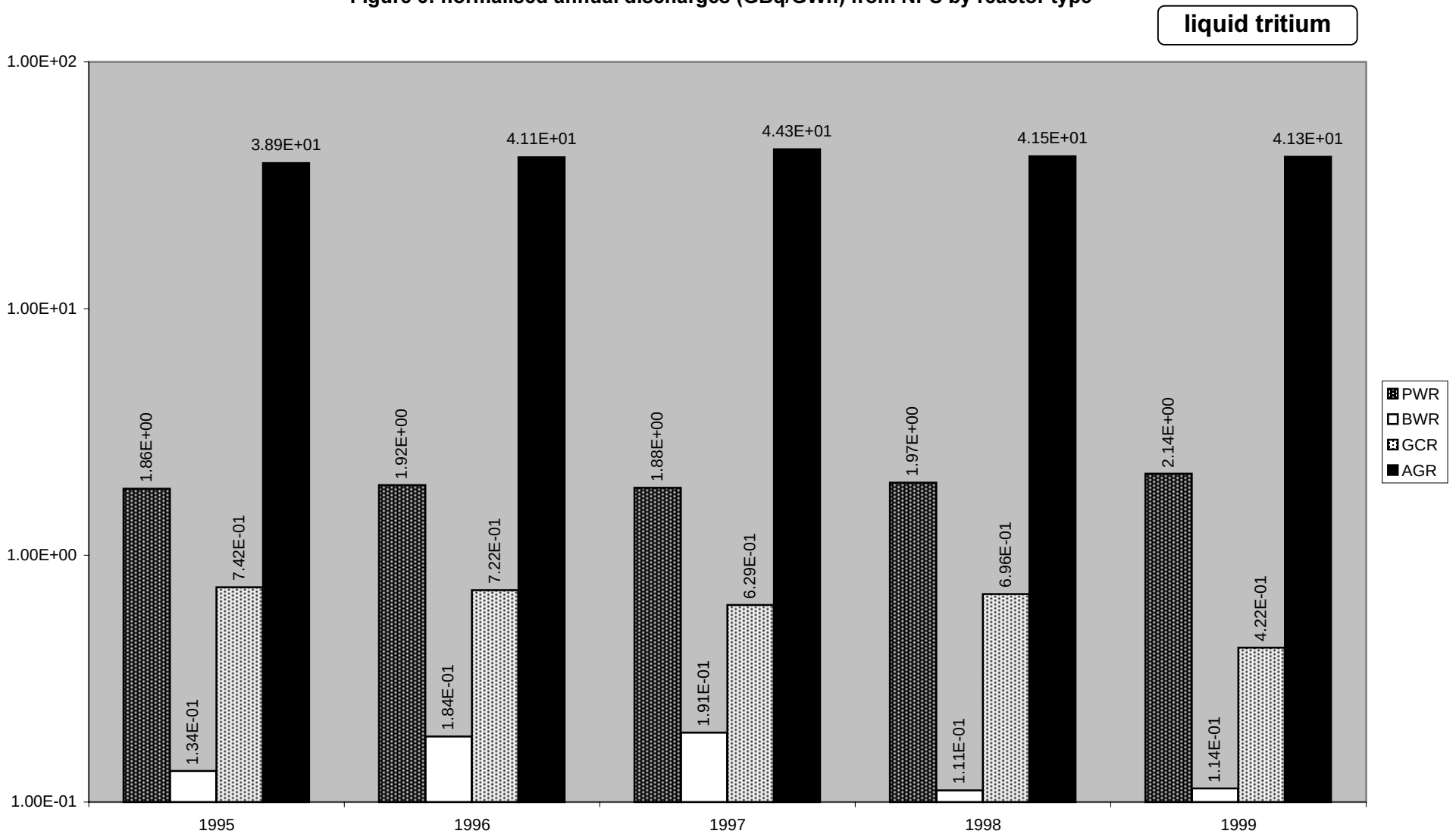
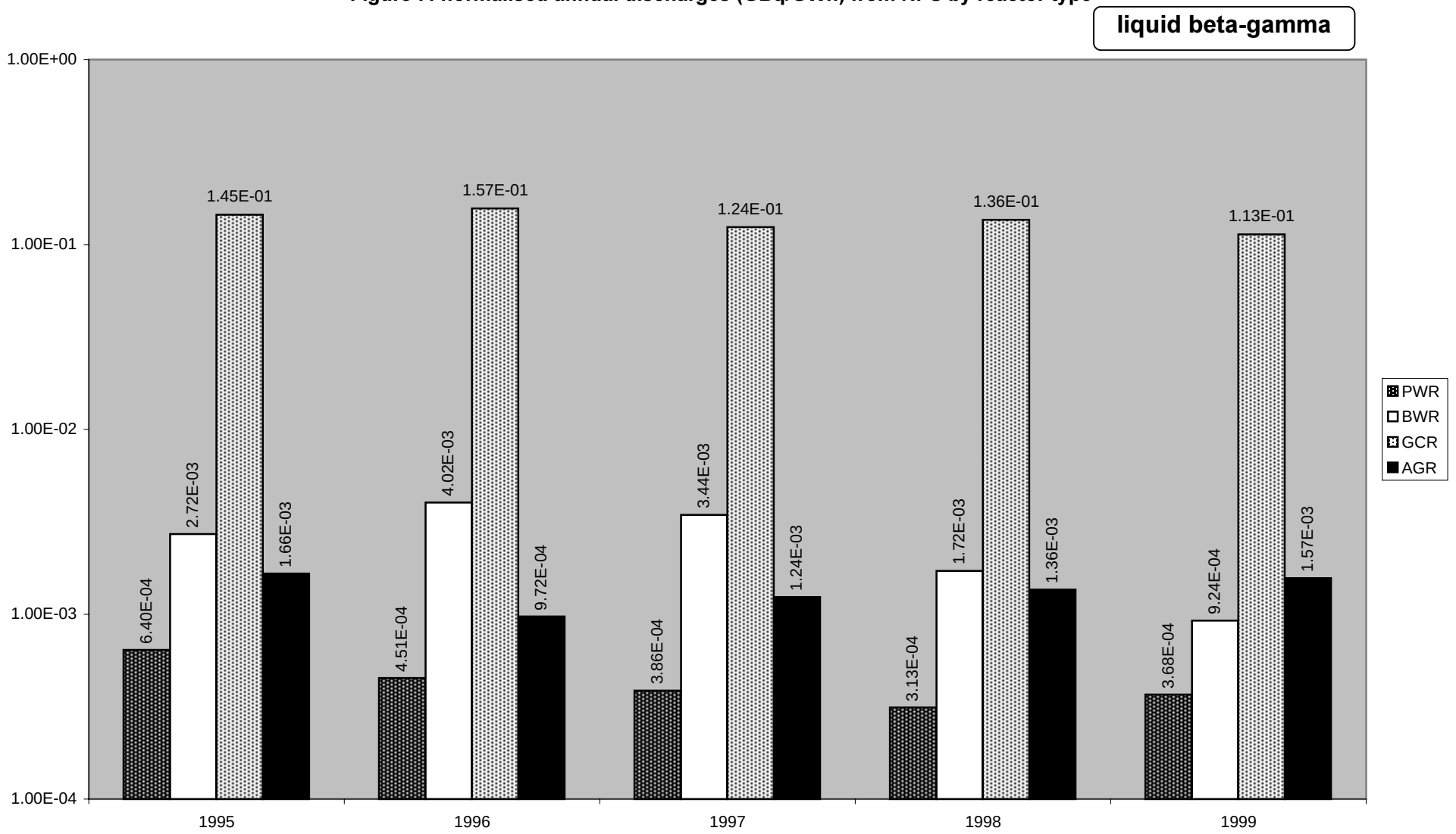


Figure 7: normalised annual discharges (GBq/GWh) from NPS by reactor type



Nuclear Fuel Reprocessing Plants - Airborne Discharges

Member State / NFRP		Year	Tritium (GBq) Limit	Tritium (GBq) Value	Total Beta-Gamma (GBq) (excluding H-3) Limit	Total Beta-Gamma (GBq) (excluding H-3) Value	Krypton-85 (GBq) Limit	Krypton-85 (GBq) Value	Carbon-14 (GBq) Limit	Carbon-14 (GBq) Value	Iodines (GBq) Limit	Iodines (GBq) Value	Total Alpha (GBq) Limit	Total Alpha (GBq) Value
France														
La Hague (site)		1995	2.20E+06	2.80E+04	7.40E+01	2.10E-02	4.80E+08	2.30E+08	not defined	not measured	1.10E+02	3.30E+01	not defined	not measured
		1996		7.47E+04		2.00E-02		2.59E+08	not defined	not measured		3.97E+01	not defined	not measured
		1997		7.57E+04		3.12E-02		2.97E+08	not defined	not measured		1.82E+01	not defined	not measured
		1998		7.16E+04		4.68E-02		3.19E+08	not defined	not measured		1.69E+01	not defined	not measured
		1999		7.97E+04		1.21E-01		2.95E+08	not defined	not measured		8.11E+00	not defined	not measured
Marcoule (site)	[1]	1995	1.00E+07	4.70E+05	8.00E+01	3.30E+00	6.00E+07	1.50E+07	not defined	not measured	1.50E+02	4.40E+01	4.00E-01	2.40E-02
		1996		7.50E+05		1.70E+00		1.60E+07	not defined	not measured		4.90E+01		2.30E-02
	[2]	1997		7.90E+05		5.30E-01		5.70E+06	not defined	not measured		1.50E+01		6.30E-03
United Kingdom														
Dounreay (site)	[3]	1995	4.00E+04	3.40E+01	4.50E+01 [4]	7.40E+00	1.00E+06	4.94E+05	not defined	not measured	7.00E+00 [5]	3.25E-01	1.00E+00	1.90E-01
		1996		2.76E+02		1.15E+00		2.18E+03	not defined	not measured		3.53E-02		2.87E-02
		1997		3.83E+01		8.42E-01		0.00E+00 [7]	not defined	not measured		2.70E-02		6.36E-02
		1998		2.50E+01		3.20E-01		0.00E+00 [7]	not defined	not measured		4.60E-02		5.70E-02
	[6]	1999	2.00E+03	1.90E+02		1.80E-01	3.00E+06	0.00E+00 [7]	not defined	not measured	1.25E+00 [8]	8.00E-02	9.80E-01	3.70E-02
Sellafield (site)	[9] [10]	1995	1.44E+06	5.87E+05	3.38E+02 [4]	3.34E+00	5.90E+08	9.70E+07 [11]	8.37E+03	4.22E+03 [12]	1.29E+02 [13]	2.12E+01	2.76E+00	1.13E-01
		1996		5.36E+05		2.90E+00		1.01E+08		3.83E+03	1.21E+02 [14]	2.71E+01		1.81E-01
		1997	1.43E+06 [15]	1.67E+05		1.61E+00	4.70E+08 [15]	9.50E+07	8.15E+03 [15]	1.81E+03		2.74E+01		2.11E-01
		1998		2.51E+05		1.54E+00		9.90E+07		2.57E+03		2.98E+01		5.29E-01
		1999		2.36E+05		7.83E-01		9.07E+07		2.65E+03		2.93E+01		1.62E-01

Notes: see next page.

Notes:

[1] Values for airborne discharges are site-related, encompassing discharges from the Phénix FBR (Phénix being run for research purposes only).

[2] Nuclear fuel reprocessing stopped on 30/09/1997.

[3] Airborne discharge limits and values exclude DFR (Dounreay Fast Reactor - shutdown March 1997) and PFR (Prototype Fast Reactor - shutdown March 1994).

[4] Also excluding Kr-85.

[5] Individual limits for I-129 and I-131 are 4,00E+00 GBq/a and 3,00E+00 GBq/a respectively (discharge values are detailed in next table).

[6] Revised discharge authorisation with effect on 16/08/1999. In addition to the formerly existing limits for DFR, PFR and FCA (fuel cycle area), the new authorisation enforces discharge limits for part of the premises known as 'west minor sources' and 'east minor sources'. Both minor sources marginally contribute to the total activity discharges. The atmospheric discharge values presented for 1999 are therefore restricted to the FCA.

[7] Noble gases were not discharged during the years 1997-1999 due to shutdown of PFR fuel reprocessing activities.

[8] Individual limits for I-129 and I-131 are 1,10E+00 GBq/a and 1,50E-01 GBq/a respectively (discharge values are detailed in next table).

[9] Discharge limits and values are aggregated data for individual locations on the site.

[10] Airborne discharge values and limits exclude the Calder Hall reactors.

[11] Compared to earlier years, discharges increased following the start of THORP (THermal Oxide Reprocessing Plant) operations.

[12] Compared to earlier years, discharges decrease following the diversion (commenced 1994) of effluents from the aerial to the liquid stream.

[13] Individual limits for I-129 and I-131 are 7,40E+01 GBq/a and 5,50E+01 GBq/a respectively (discharge values are detailed in next table).

[14] Discharge limit for I-129 modified to 6,60E+01 GBq/a (with effect on 28/03/1996).

[15] Modification of discharge limit linked to THORP operations.

Nuclear Fuel Reprocessing Plants - Airborne Discharges of Individual Nuclides (GBq/annum)

Member State NFRP	Nuclide	1995		1996		1997		1998		1999	
		Limit	Value	Limit	Value	Limit	Value	Limit	Value	Limit	Value
France											
La Hague (site)	(no data available)										
Marcoule (site)	(no data available)										
United Kingdom											
Dounreay (site)	Ce-144	7.00E+00	7.11E-01	unchanged	1.63E-02	unchanged	1.91E-02	unchanged	1.90E-02	unchanged	2.40E-02
	Cm-242	1.00E+00	1.02E-01	unchanged	7.56E-03	unchanged	4.86E-04	unchanged	2.20E-04	2.70E-01	3.60E-04
	Cm-244	1.00E-01 [1]	1.44E-02	unchanged	1.36E-02	unchanged	1.09E-03	unchanged	6.90E-03	5.40E-02 [1]	4.80E-04
	Cs-134	1.00E+00	2.27E-01	unchanged	5.10E-03	unchanged	5.20E-03	unchanged	3.40E-03	8.40E-02	3.30E-03
	Cs-137	7.00E+00	3.71E+00	unchanged	1.77E-01	unchanged	1.71E-01	unchanged	8.00E-02	unchanged	3.80E-02
	I-129	4.00E+00	3.05E-01	unchanged	2.06E-02	unchanged	1.25E-02	unchanged	2.80E-02	1.10E+00	5.60E-02
	I-131	3.00E+00	1.96E-02	unchanged	1.47E-02	unchanged	1.45E-02	unchanged	1.80E-02	1.50E-01	2.40E-02
	Kr-85	1.00E+06	4.94E+05	unchanged	2.18E+03	unchanged	0.00E+00 [2]	unchanged	0.00E+00 [2]	3.00E+06	0.00E+00 [2]
	Pu-241	5.00E+00	2.18E+00	unchanged	5.97E-01	unchanged	2.29E+00	unchanged	5.60E-01	3.30E+00	1.90E-01
	Ru-106	7.00E+00	8.39E-01	unchanged	3.06E-02	unchanged	3.61E-02	unchanged	2.40E-02	3.90E+00	2.70E-02
	Sr-90	5.00E+00	2.37E+00	unchanged	6.63E-01	unchanged	1.05E+00	unchanged	9.90E-01	4.20E+00	5.70E-01
Sellafield (site)	Am-241+Cm-242	7.40E-01	3.86E-02	unchanged	4.92E-02	unchanged	6.50E-02	unchanged	4.98E-02	unchanged	7.67E-02
	Cs-137	1.83E+01	6.15E-01	unchanged	8.45E-01	unchanged	6.21E-01	unchanged	4.41E-01	unchanged	5.83E-01
	I-129	7.40E+01	2.01E+01	6.60E+01	2.48E+01	unchanged	2.48E+01	unchanged	2.65E+01	unchanged	2.53E+01
	I-131	5.50E+01	1.14E+00	unchanged	2.33E+00	unchanged	2.61E+00	unchanged	3.22E+00	unchanged	4.02E+00
	Kr-85	5.90E+08	9.70E+07	unchanged	1.01E+08	4.70E+08	9.50E+07	unchanged	9.90E+07	unchanged	9.07E+07
	Pu alpha	1.22E+00	5.39E-02	unchanged	6.40E-02	unchanged	1.01E-01	unchanged	3.38E-02	unchanged	1.07E-01
	Pu-241	1.72E+01	7.56E-01	unchanged	5.86E-01	unchanged	7.92E-01	unchanged	2.66E-01	unchanged	8.31E-01
	Ru-106	9.60E+01	8.05E-01	unchanged	8.80E-01	unchanged	7.06E+00	unchanged	1.10E+00	unchanged	9.60E-01
	Sb-125	5.00E+00	1.00E+00	unchanged	7.60E-01	unchanged	2.20E-01	unchanged	1.80E-01	unchanged	2.53E-01
	Sr-90	9.40E+00	9.50E-02	unchanged	1.28E-01	unchanged	1.01E-01	unchanged	6.00E-02	unchanged	6.33E-02

Notes:

[1] Including any Cm-243 present

[2] Noble gases were not discharged during the years 1997, 1998 and 1999.

Nuclear Fuel Reprocessing Plants - Liquid Discharges

Member State / NFRP		Year	Tritium (GBq) Limit	Tritium (GBq) Value	Total Beta-Gamma (GBq) (excluding H-3) Limit	Total Beta-Gamma (GBq) (excluding H-3) Value	Total Alpha (GBq) Limit	Total Alpha (GBq) Value	Carbon-14 (GBq) Limit	Carbon-14 (GBq) Value
France										
La Hague (site)		1995	3.70E+07	9.61E+06	1.70E+06	5.29E+04	1.70E+03	7.01E+01	not defined	not measured
		1996		1.06E+07		2.94E+04		4.61E+01	not defined	9.94E+03
		1997		1.20E+07		2.67E+04		4.77E+01	not defined	9.65E+03
		1998		1.05E+07		2.65E+04		4.72E+01	not defined	9.76E+03
		1999		1.29E+07		1.58E+04		3.95E+01	not defined	9.93E+03
Marcoule (site)	[1]	1995	2.50E+06	2.58E+05	1.50E+05 [2]	8.59E+03	1.50E+02	1.13E+01	not defined	not measured
		1996		2.68E+05		9.97E+03		1.15E+01	not defined	not measured
	[3]	1997		1.62E+05		9.13E+03		1.19E+01	not defined	not measured
									not defined	not measured
United Kingdom										
Dounreay (site)		1995	1.30E+05	1.10E+03	1.10E+05	7.00E+03	7.50E+02 [4]	8.60E+01	not defined	not measured
		1996		2.03E+03		6.28E+03		7.10E+01	not defined	not measured
		1997		8.24E+02		9.52E+02		2.55E+01	not defined	not measured
		1998		4.54E+02		5.84E+02		1.20E+01	not defined	not measured
	[5]	1999	3.08E+04	1.37E+02	4.90E+04	2.79E+02	2.70E+02	1.73E+00	not defined	not measured
Sellafield (site)	[6][7]	1995	3.10E+07	2.67E+06	4.00E+05 [8]	1.88E+05 [8]	1.00E+03 [8]	3.97E+02 [8]	2.08E+04	1.24E+04
		1996		3.01E+06		1.43E+05		2.75E+02		1.06E+04
		1997		2.56E+06		1.38E+05		1.85E+02		4.42E+03
		1998		2.31E+06		8.59E+04		1.74E+02		3.74E+03
		1999		2.52E+06		1.10E+05		1.33E+02		5.76E+03

Notes: see next page.

Notes:

[1] Values for liquid discharges are site-related, encompassing discharges from the Phénix FBR (Phénix being run for research purposes only).

[2] Limit and value also exclude Sr-90 and Cs-137.

[3] Nuclear fuel reprocessing stopped on 30/09/1997.

[4] Limit and value exclude Cm-242 end Cm-244.

[5] Revised discharge authorisation with effect on 16/08/1999.

[6] Liquid discharge limits and values include Calder Hall reactors.

[7] Revised discharge authorisation with effect on 01/01/1995.

[8] Total alpha and total beta-gamma are overall control measures that do not reproduce precisely the contribution of individual nuclides.

Nuclear Fuel Reprocessing Plants - Liquid Discharges of Individual Nuclides (GBq/annum)

Member State NFRP	Nuclide	1995		1996		1997		1998		1999	
		Limit	Value	Limit	Value	Limit	Value	Limit	Value	Limit	Value
France											
La Hague (site)	Ag-110m		1.40E-02		no data		no data		no data		no data
	Am-241	3.00E+02	9.46E+00	unchanged	4.64E+00	unchanged	6.11E+00	unchanged	3.81E+00	unchanged	3.49E+00
	Ce-144+Pr-144		8.46E-01		3.00E-01		2.94E+00		1.16E+00		1.81E+00
	Cm-242		no data		5.60E-04		no data		no data		no data
	Cm-244		7.12E+00		1.89E+00		2.58E+00		1.82E+00		1.23E+00
	Co-57		7.70E-01		8.51E-01		1.37E+00		9.04E-01		3.78E-01
	Co-58		1.52E+01		1.78E+01		1.65E+01		6.10E+00		1.44E+00
	Co-60		5.48E+02		3.85E+02		4.86E+02		5.14E+02		3.21E+02
	Cs-134		3.63E+02		1.68E+02		2.08E+02		1.49E+02		5.79E+01
	Cs-137	2.20E+05 [1]	4.62E+03	unchanged	2.42E+03	unchanged	2.46E+03	unchanged	2.51E+03	unchanged	1.29E+03
	Eu-154		6.49E+00		4.59E-01		4.09E+00		8.79E-01		4.74E-01
	Eu-155		no data		no data		2.26E-01		2.41E-01		8.89E-02
	I-129		1.53E+03		1.69E+03		1.63E+03		1.78E+03		1.83E+03
	Mn-54		3.06E+01		1.51E+01		4.81E+01		4.18E+01		1.16E+01
	Ni-63		no data		no data		1.30E+02		9.73E+01		8.55E+01
	Np-237		5.48E-01		3.04E-01		no data		no data		2.09E-01
	Pu-238		1.14E+01		8.88E+00		9.97E+00		1.54E+01		1.21E+01
	Pu-239+Pu-240		5.69E+00		4.61E+00		5.36E+00		6.00E+00		4.00E+00
	Pu-241		4.80E+02		2.20E+02		2.09E+02		2.34E+02		2.21E+02
	Ru-106+Rh-106		1.52E+04		1.69E+04		1.96E+04		2.29E+04		1.38E+04
	Sb-125		2.95E+03		1.95E+03		1.33E+03		8.30E+02		5.13E+02
	Sr-89		2.87E+02		9.41E+01		3.72E+01		2.40E+01		3.20E+01
	Sr-90	2.20E+05 [1]	1.48E+04	unchanged	5.03E+03	unchanged	1.86E+03	unchanged	1.26E+03	unchanged	8.49E+02
	Tc-99		1.00E+02		1.17E+02		1.30E+02		2.15E+02		4.27E+02
	U nat		7.79E+00		1.44E+01		6.30E+00		7.00E+00		9.86E+00
	Zn-65		7.90E-02		2.67E+00		1.68E+00		2.18E+00		2.42E-01
	Zr-95+Nb-95		no data		1.65E-01		3.93E-01		no data		no data

Nuclear Fuel Reprocessing Plants - Liquid Discharges of Individual Nuclides (GBq/annum)

Member State NFRP	Nuclide	1995		1996		1997		1998		1999	
		Limit	Value	Limit	Value	Limit	Value	Limit	Value	Limit	Value
Marcoule (site)	Ce-144+Pr-144		5.80E+00		1.58E+01		7.48E+00				
	Cm-242+Cm-244		4.52E-01		5.89E-02		7.00E-02				
	Co-60		2.46E+01		3.26E+01		2.58E+01				
	Cs-134		7.74E+00		8.00E+00		3.05E+00				
	Cs-137	6.00E+03	1.13E+02	unchanged	1.15E+02	unchanged	8.47E+01				
	Eu-154		no data		no data		6.42E-03				
	I-129		9.26E+00		8.78E+00		5.71E+00				
	Mn-54		1.26E+00		1.86E+01		1.85E+00				
	Pu-238+Am-241		1.01E+00		1.54E+00		2.89E+00				
	Pu-239+Pu-240		5.45E-01		8.09E-01		1.64E+00				
	Ru-103		1.90E+00		7.16E-02		1.28E-01				
	Ru-106+Rh-106		6.27E+03		6.51E+03		6.83E+03				
	Sb-125		6.72E+01		5.27E+01		3.29E+01				
	Sr-90	6.00E+03	2.64E+02	unchanged	3.64E+02	unchanged	2.77E+02				
	U nat		8.71E+00		8.59E+00		6.96E+00				
	Zr-95+Nb-95		7.81E+00		2.05E+00		2.33E+00				
United Kingdom											
Dounreay (site)	Ag-110m	4.00E+02	6.00E+00	unchanged	1.40E+01	unchanged	6.00E+00	unchanged	6.00E+00	1.30E+02	3.56E-01
	Ce-144	1.20E+04	3.30E+01	unchanged	3.00E+01	unchanged	7.60E+00	unchanged	6.00E+00	4.20E+02	1.71E+00
	Cm-242	1.00E+03	6.50E+00	unchanged	6.00E-01	unchanged	5.00E-01	unchanged	5.00E-01	4.00E+01	1.60E-02
	Co-60	1.00E+03	2.70E+01	unchanged	3.50E+01	unchanged	2.17E+01	unchanged	1.00E+01	4.60E+02	3.61E+00
	Cs-137	5.00E+04	3.70E+03	unchanged	4.61E+03	unchanged	3.26E+02	unchanged	1.82E+02	2.30E+04	1.57E+02
	Pu-241	1.50E+04	5.50E+02	unchanged	3.56E+02	unchanged	2.52E+02	unchanged	9.60E+01	2.30E+03	8.67E+00
	Ru-106	1.20E+04	7.60E+02	unchanged	1.78E+03	unchanged	1.45E+01	unchanged	7.40E+01	4.10E+03	2.29E+00
	Sr-90	1.20E+04	6.00E+02	unchanged	5.87E+02	unchanged	2.23E+02	unchanged	1.71E+02	7.70E+03	1.63E+02
	Zr-95+Nb-95	6.00E+03	1.30E+02	unchanged	1.27E+02	unchanged	1.20E+01	unchanged	1.20E+01	4.00E+02	9.44E-01

Nuclear Fuel Reprocessing Plants - Liquid Discharges of Individual Nuclides (GBq/annum)

Member State NFRP	Nuclide		1995		1996		1997		1998		1999	
			Limit	Value	Limit	Value	Limit	Value	Limit	Value	Limit	Value
Sellafield (site)	Ag-110m			1.20E+02		1.30E+02		1.20E+02		1.20E+02		9.00E+01
	Am-241		3.00E+02	1.12E+02	unchanged	7.36E+01	unchanged	5.05E+01	unchanged	4.72E+01	unchanged	3.50E+01
	Ce-144		8.00E+03	1.10E+03	unchanged	7.79E+02	unchanged	4.94E+02	unchanged	7.62E+02	unchanged	6.02E+02
	Cm-242			3.10E+01		9.00E+00		4.00E+00		6.00E+00		3.00E+00
	Cm-243+Cm-244			8.00E+00		7.00E+00		4.00E+00		3.00E+00		2.00E+00
	Co-60	[2]	1.30E+04	1.29E+03	unchanged	4.29E+02	unchanged	1.47E+03	unchanged	2.41E+03	unchanged	8.90E+02
	Cs-134		6.60E+03	5.11E+02	unchanged	2.71E+02	unchanged	2.99E+02	unchanged	3.19E+02	unchanged	3.40E+02
	Cs-137		7.50E+04	1.22E+04	unchanged	1.03E+04	unchanged	7.94E+03	unchanged	7.54E+03	unchanged	9.12E+03
	Eu-152			1.80E+02		1.40E+02		1.20E+02		1.60E+02		1.10E+02
	Eu-154			1.40E+02		8.00E+01		1.60E+02		1.00E+02		5.00E+01
	Eu-155			7.60E+01		5.00E+01		6.00E+01		9.00E+01		4.00E+01
	Fe-55			4.00E+01		4.00E+01		1.00E+01		1.00E+01		2.00E+01
	I-129		2.00E+03	2.53E+02	unchanged	4.12E+02	unchanged	5.19E+02	unchanged	5.53E+02	unchanged	4.85E+02
	Mn-54			8.00E+01		5.00E+01		6.00E+01		7.00E+01		4.00E+01
	Ni-63			4.10E+02		3.40E+02		4.10E+02		4.00E+02		5.80E+02
	Np-237			1.80E+02		4.00E+01		3.00E+01		4.00E+01		4.00E+01
	Pm-147			6.10E+02		4.20E+02		3.90E+02		3.90E+02		4.10E+02
	Pu alpha		7.00E+02	3.11E+02	unchanged	2.09E+02	unchanged	1.47E+02	unchanged	1.40E+02	unchanged	1.15E+02
	Pu-241		2.70E+04	7.69E+03	unchanged	4.35E+03	unchanged	3.26E+03	unchanged	3.54E+03	unchanged	2.87E+03
	Ru-103			1.90E+02		2.00E+02		1.30E+02		1.50E+02		1.30E+02
	Ru-106		6.30E+04	7.26E+03	unchanged	9.01E+03	unchanged	9.81E+03	unchanged	5.58E+03	unchanged	2.72E+03
	S-35			6.50E+02		8.80E+02		4.50E+02		4.30E+02		3.20E+02
	Sb-125			9.30E+03		6.70E+03		3.40E+03		4.80E+03		7.90E+03
	Sr-89			3.80E+02		2.90E+02		3.30E+02		8.80E+02		6.00E+02
	Sr-90		4.80E+04	2.77E+04	unchanged	1.60E+04	unchanged	3.73E+04	unchanged	1.77E+04	unchanged	3.12E+04
	Tc-99	[3]	2.00E+05	1.92E+05	unchanged	1.55E+05	unchanged	8.42E+04	unchanged	5.27E+04	unchanged	6.88E+04
	U nat	[4]	2.04E+03	1.35E+03	unchanged	1.16E+03	unchanged	7.59E+02	unchanged	5.54E+02	unchanged	5.36E+02
	Zn-65			1.70E+02		1.20E+02		1.30E+02		1.40E+02		7.00E+01
	Zr-95+Nb-95		9.00E+03	7.43E+02	unchanged	1.15E+03	unchanged	3.64E+02	unchanged	6.47E+02	unchanged	1.82E+02

Notes:

[1] The limit of 2,2E+05 GBq/a is applicable to (Sr-90 + Cs-137).

[2] Due to increased discharges from the THORP fuel storage ponds as a result of handling older oxide fuel, the discharges of Co-60 increased by an order of magnitude in 1995 compared to previous years.

[3] Due to continuous operation of EARP (Enhanced Actinide Removal Plant) engaged in the reprocessing of historic wastes (previously diverted to interim storage) from Magnox reprocessing, has significantly increased Tc-99 discharges.

Nuclear Fuel Reprocessing Plants - Liquid Discharges of Individual Nuclides (GBq/annum)

Member State NFRP	Nuclide	1995		1996		1997		1998		1999	
		Limit	Value	Limit	Value	Limit	Value	Limit	Value	Limit	Value

[4] The limit and discharge values are expressed in kg.

Nuclear Fuel Reprocessing Plants - Liquid Discharges of Cs-137, Pu-241, Ru-106, Sb-125, Sr-90 and Tc-99 (in GBq/annum and in % of total)

Member State NFRP	Nuclide	1995		1996		1997		1998		1999	
		Value	% total	Value	% total	Value	% total	Value	% total	Value	% total
France											
La Hague (site)	Total	4.10E+04		2.90E+04		2.82E+04		3.06E+04		1.95E+04	
	Cs-137	4.62E+03	11.27	2.42E+03	8.34	2.46E+03	8.72	2.51E+03	8.20	1.29E+03	6.62
	Pu-241	4.80E+02	1.17	2.20E+02	0.76	2.09E+02	0.74	2.34E+02	0.76	2.21E+02	1.13
	Ru-106+Rh-106	1.52E+04	37.07	1.69E+04	58.28	1.96E+04	69.50	2.29E+04	74.84	1.38E+04	70.77
	Sb-125	2.95E+03	7.20	1.95E+03	6.72	1.33E+03	4.72	8.30E+02	2.71	5.13E+02	2.63
	Sr-90	1.48E+04	36.10	5.03E+03	17.34	1.86E+03	6.60	1.26E+03	4.12	8.49E+02	4.35
	Tc-99	1.00E+02	0.24	1.17E+02	0.40	1.30E+02	0.46	2.15E+02	0.70	4.27E+02	2.19
Marcoule (site)	Total	6.78E+03		7.14E+03		7.28E+03					
	Cs-137	1.13E+02	1.67	1.15E+02	1.61	8.47E+01	1.16				
	Pu-241 (no data)	-----	-----	-----	-----	-----	-----				
	Ru-106+Rh-106	6.27E+03	92.48	6.51E+03	91.18	6.83E+03	93.82				
	Sb-125	6.72E+01	0.99	5.27E+01	0.74	3.29E+01	0.45				
	Sr-90	2.64E+02	3.89	3.64E+02	5.10	2.77E+02	3.80				
	Tc-99 (no data)	-----	-----	-----	-----	-----	-----				
United Kingdom											
Dounreay (site)	Total	5.81E+03		7.54E+03		8.63E+02		5.58E+02		3.38E+02	
	Cs-137	3.70E+03	63.68	4.61E+03	61.14	3.26E+02	37.78	1.82E+02	32.62	1.57E+02	46.45
	Pu-241 (no data)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Ru-106	7.60E+02	13.08	1.78E+03	23.57	1.45E+01	1.68	7.40E+01	13.26	2.29E+00	0.68
	Sb-125 (no data)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	Sr-90	6.00E+02	10.33	5.87E+02	7.79	2.23E+02	25.84	1.71E+02	30.65	1.63E+02	48.22
	Tc-99 (no data)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Sellafield (site)	Total	2.65E+05		2.09E+05		1.52E+05		1.00E+05		1.25E+05	
	Cs-137	1.22E+04	4.60	1.03E+04	4.93	7.94E+03	5.22	7.54E+03	7.54	9.12E+03	7.30
	Pu-241	7.69E+03	2.90	4.35E+03	2.08	3.26E+03	2.14	3.54E+03	3.54	2.78E+03	2.22
	Ru-106	7.26E+03	2.74	9.01E+03	4.31	9.81E+03	6.45	5.58E+03	5.58	2.72E+03	2.18
	Sb-125	9.30E+03	3.51	6.70E+03	3.21	3.40E+03	2.24	4.80E+03	4.80	7.90E+03	6.32
	Sr-90	2.77E+04	10.45	1.60E+04	7.66	3.73E+04	24.54	1.77E+04	17.70	3.12E+04	24.96

Nuclear Fuel Reprocessing Plants - Liquid Discharges of Cs-137, Pu-241, Ru-106, Sb-125, Sr-90 and Tc-99 (in GBq/annum and in % of total)

Member State NFRP	Nuclide	1995		1996		1997		1998		1999	
		Value	% total	Value	% total	Value	% total	Value	% total	Value	% total
	Tc-99	1.92E+05	72.45	1.55E+05	74.16	8.42E+04	55.39	5.27E+04	52.70	6.88E+04	55.04

Fig.8: La Hague site - liquid discharges

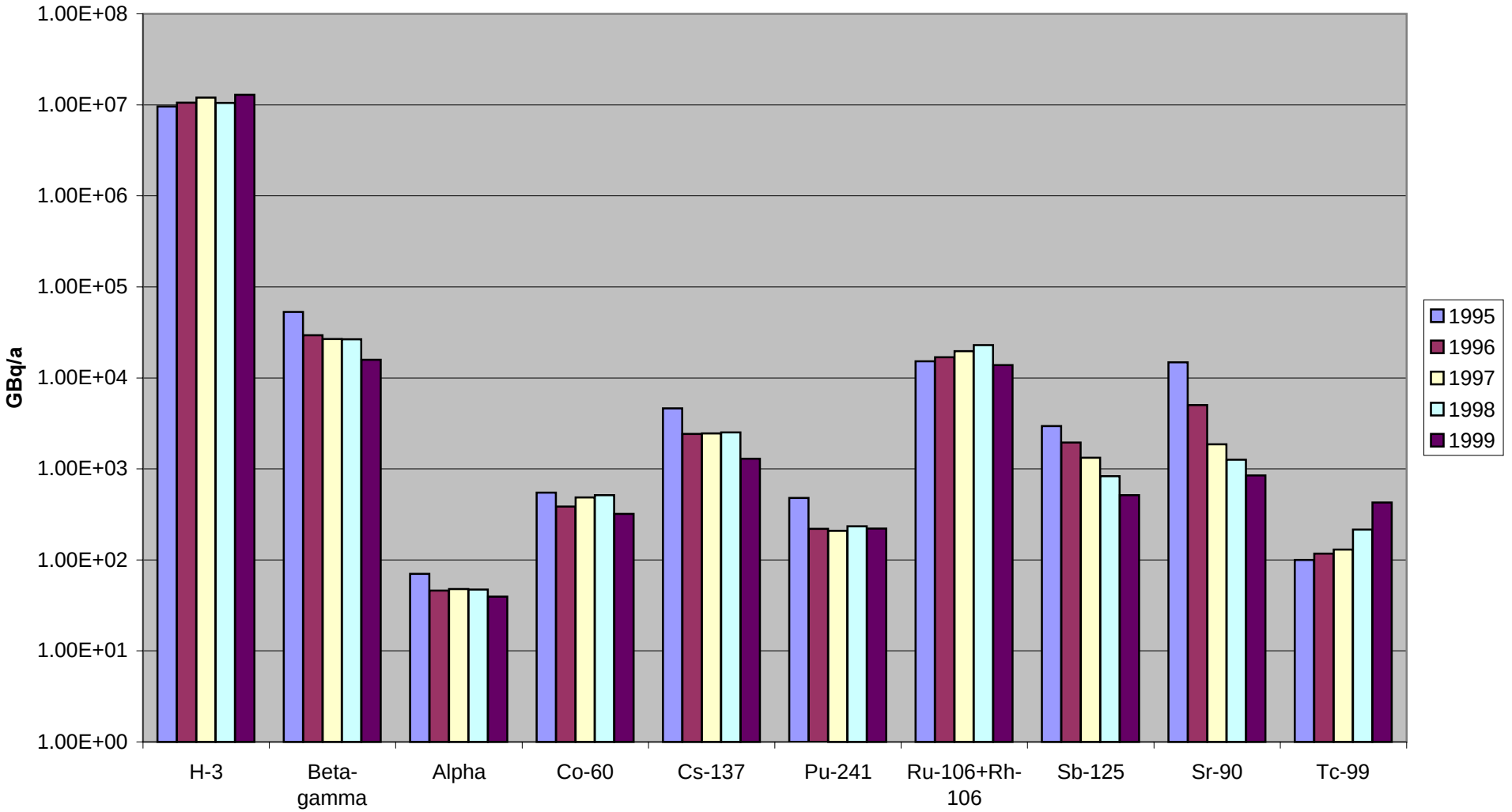


Fig.9: Marcoule site - liquid discharges

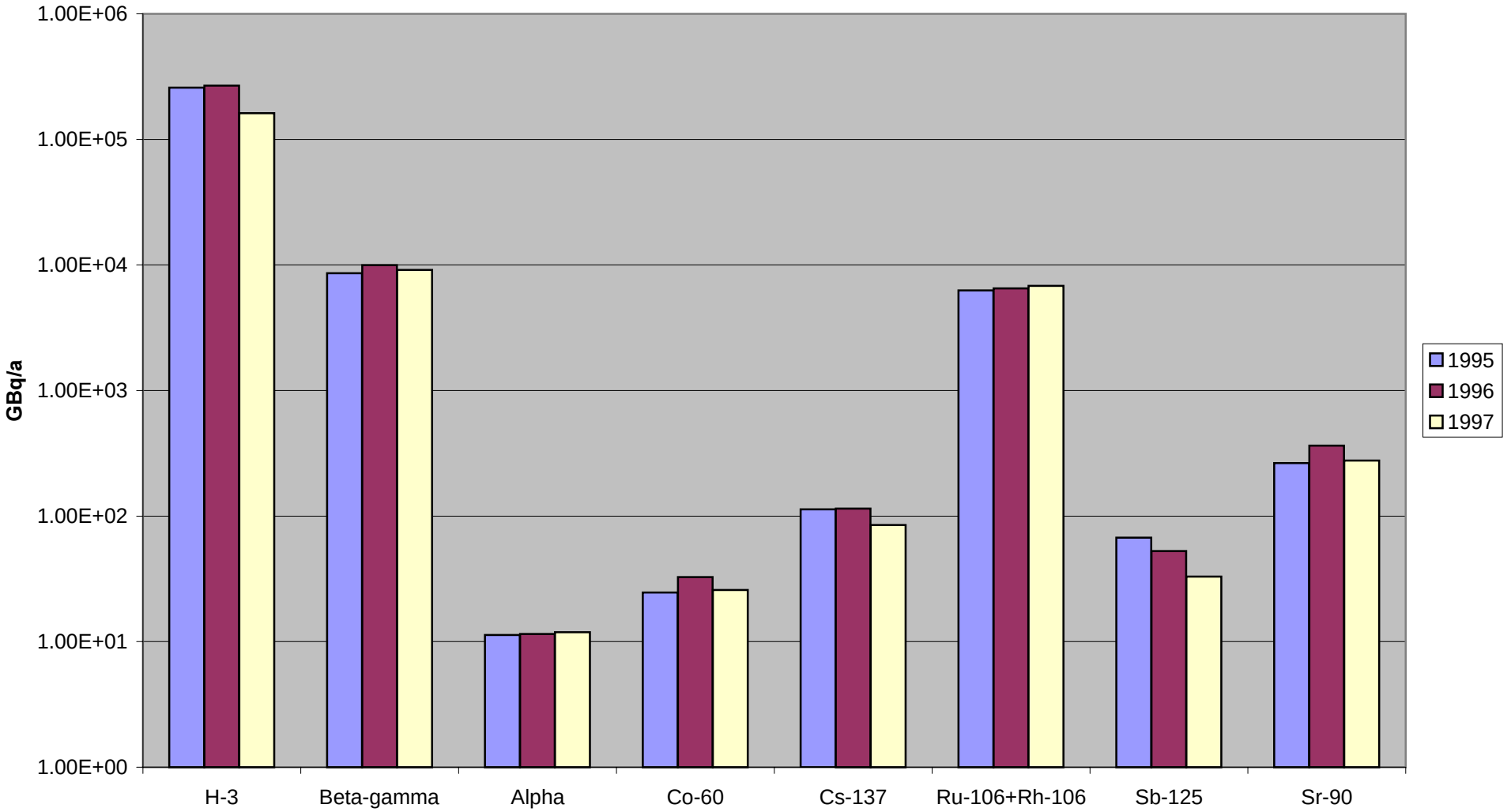


Fig.10: Sellafield site - liquid discharges

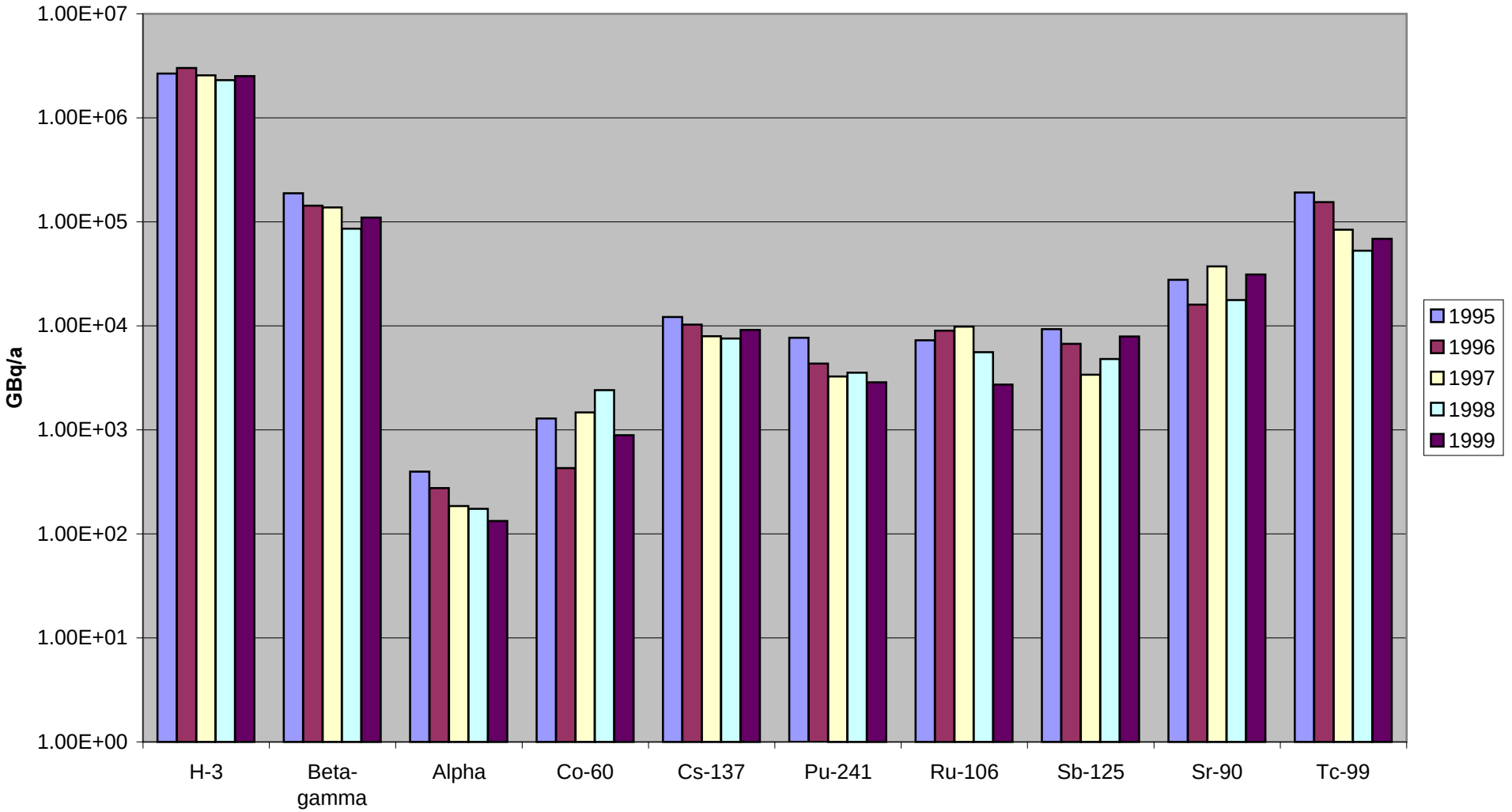
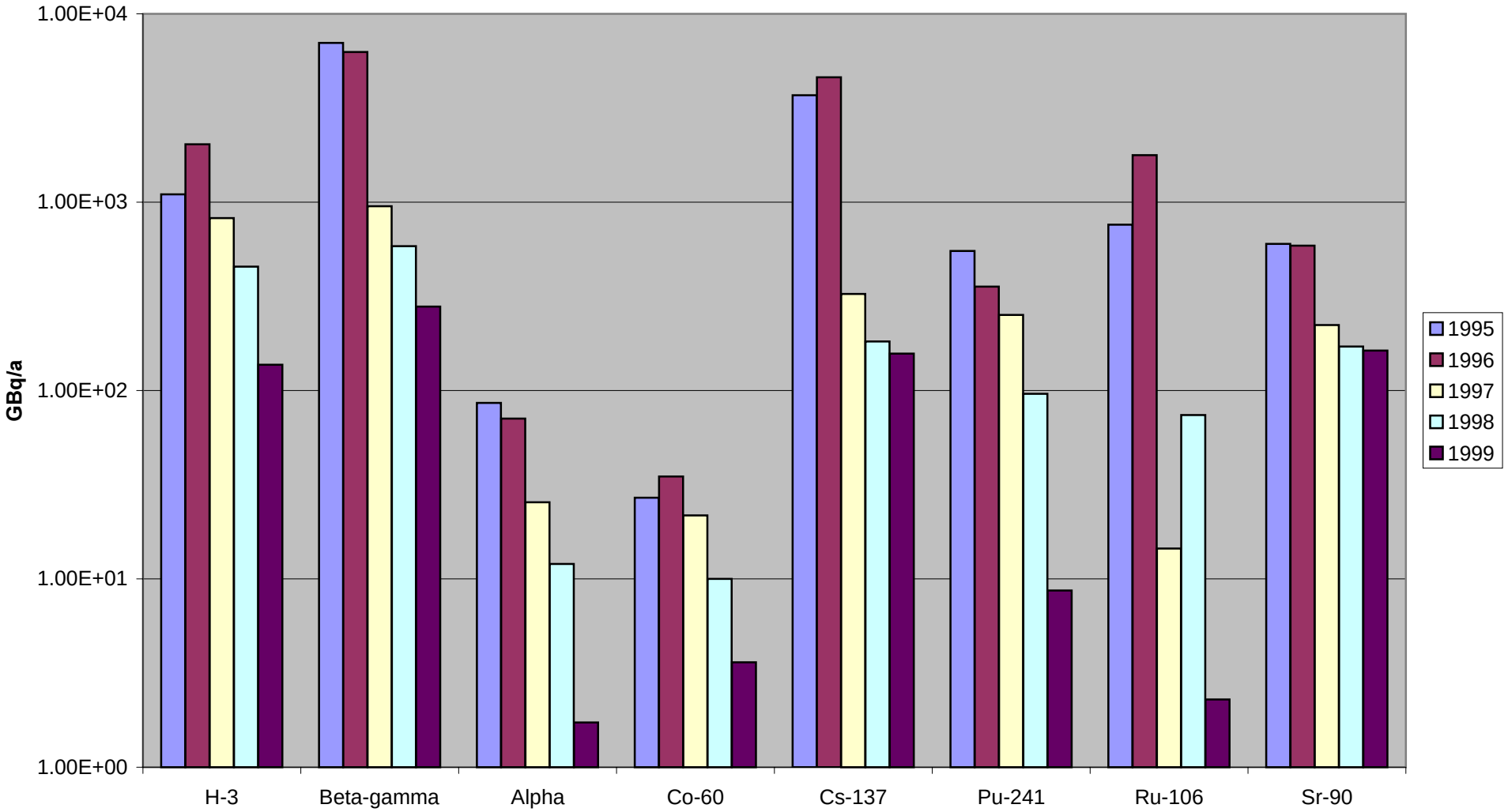


Fig.11: Dounreay site - liquid discharges



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ABSTRACT

The report covers operational nuclear power stations of capacity greater than 50 MWe and nuclear fuel reprocessing plants in the European Union. Data on radioactive gaseous and liquid effluent discharges from these installations are given for the period 1995 –1999, expressed both in absolute terms (GBq/annum) and normalised to net electricity production from the fuel ($GBq/GWe_{1995\text{-}1999}$).

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