

## ISOE INFORMATION SHEET

### PRELIMINARY EUROPEAN DOSIMETRIC RESULTS FOR 2005

ISOE European Technical Centre - Information Sheet No. 44 (2006)

This ISOE Information Sheet presents the average collective doses per reactor in the European countries participating in ISOE. The averages over the past three years (2003-2005) for operating PWRs and BWRs respectively are presented in Tables 1 and 2.

The increase of the European PWR average collective dose per reactor might be explained by the increase of 10% of the number of outages from 2004 to 2005 (see Table 3). In France, a steam generator replacement and a reactor vessel head replacement have been performed; in Slovenia, no outage occurred.

It should also be noted that there is one operating PWR less in Germany (Obrigheim NPP in final shutdown since May) and one BWR less in Sweden (Barsebäck 2 since June) in 2005.

The BWRs have seen an increase of the average collective dose which is mainly due to the increase of the results in Spain (no outages in 2004; in 2005, long outage at Cofrentes due to the repair of a vertical fissure in the Steam dryer, chemical decontamination and repair of tubes of CRDH), in Finland (Turbine Island

Modernization (TIMO) project at TVO NPP) and in Sweden.

The following Figures show VVER, PWR (VVER excluded) and BWR three-years rolling average collective dose trend per reactor by country from 1993 to 2005.

Table 1. PWRs average collective dose per reactor by country from 2003 to 2005

Country	Average coll. dose per reactor (man·Sv)		
	2003	2004	2005
Belgium	0.38	0.41	0.40
France	0.89	0.79	0.78
Germany	1.04	0.90	1.32
Netherlands	0.26	0.79	0.20
Slovenia	0.80	0.69	0.07
Spain	0.43	0.31	0.42
Sweden	0.54	0.58	0.63
Switzerland	0.34	0.48	0.66
United Kingdom	0.35	0.03	0.36
<b>Sub-Total</b>	<b>0.80</b>	<b>0.71</b>	<b>0.76</b>
Czech Republic	0.20	0.16	0.18
Finland	0.47	1.25	0.38
Hungary	0.76	0.38	0.47
Slovakia	0.31	0.29	0.40
<b>VVER Sub-Total</b>	<b>0.42</b>	<b>0.37</b>	<b>0.34</b>
<b>All PWRs</b>	<b>0.74</b>	<b>0.66</b>	<b>0.69</b>

Table 2. BWRs average collective dose per reactor by country from 2003 to 2005

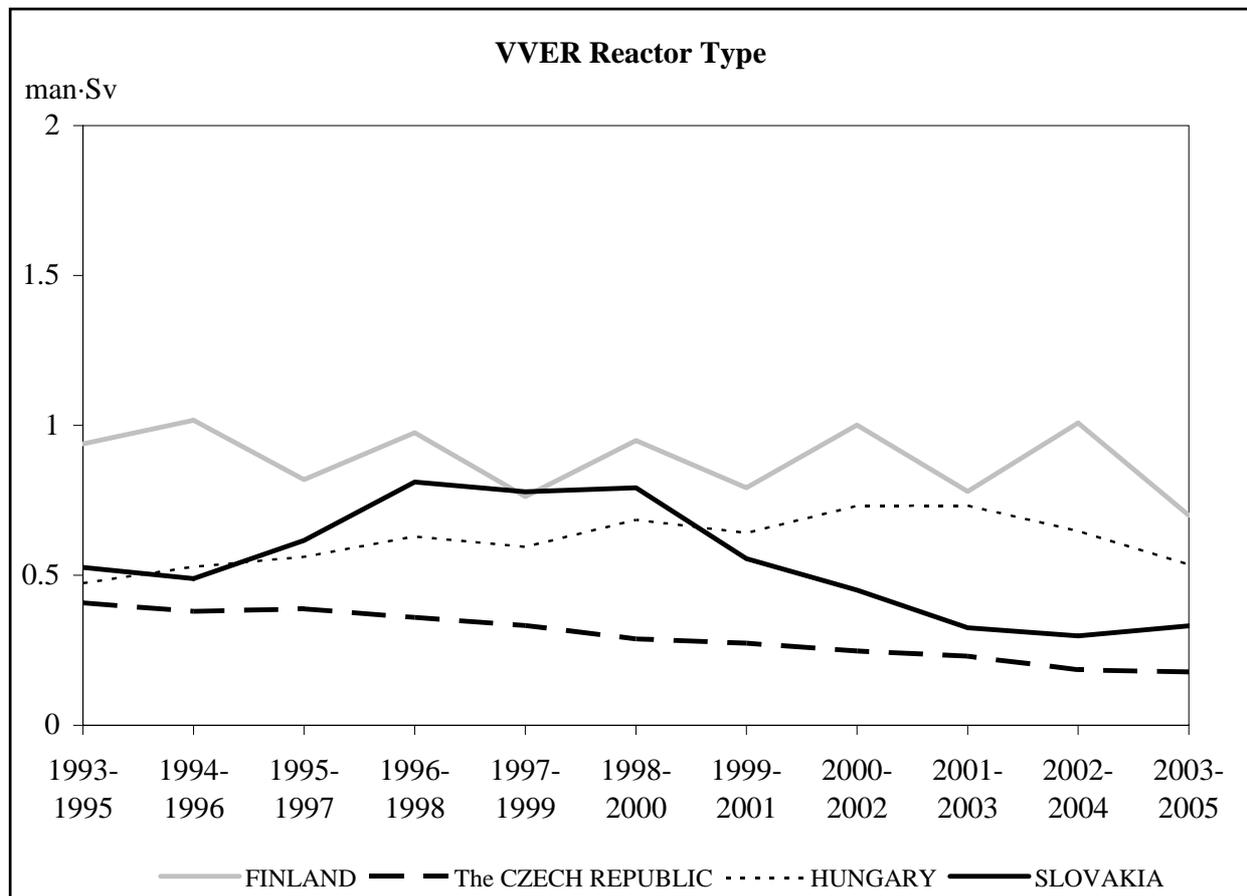
Country	Average coll. dose per reactor (man·Sv)		
	2003	2004	2005
Finland	0.54	0.74	1.14
Germany	0.93	1.06	1.01
Spain	2.22	0.46	2.32
Sweden	1.23	0.63	1.06
Switzerland	1.04	1.44	0.99
<b>All BWRs</b>	<b>1.15</b>	<b>0.84</b>	<b>1.18</b>

Table 3. Number of outages versus number of operating PWR and BWR reactors from 2003 to 2005

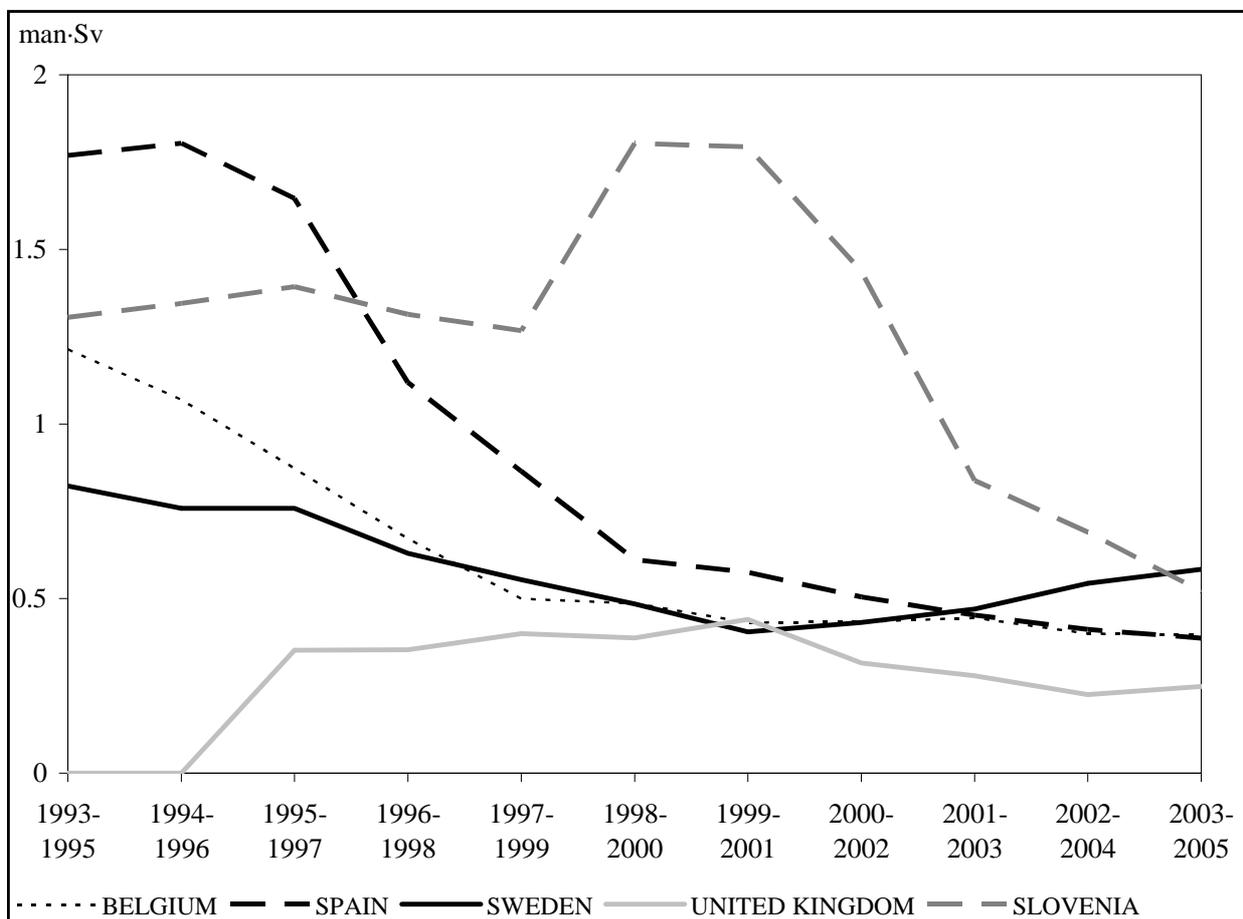
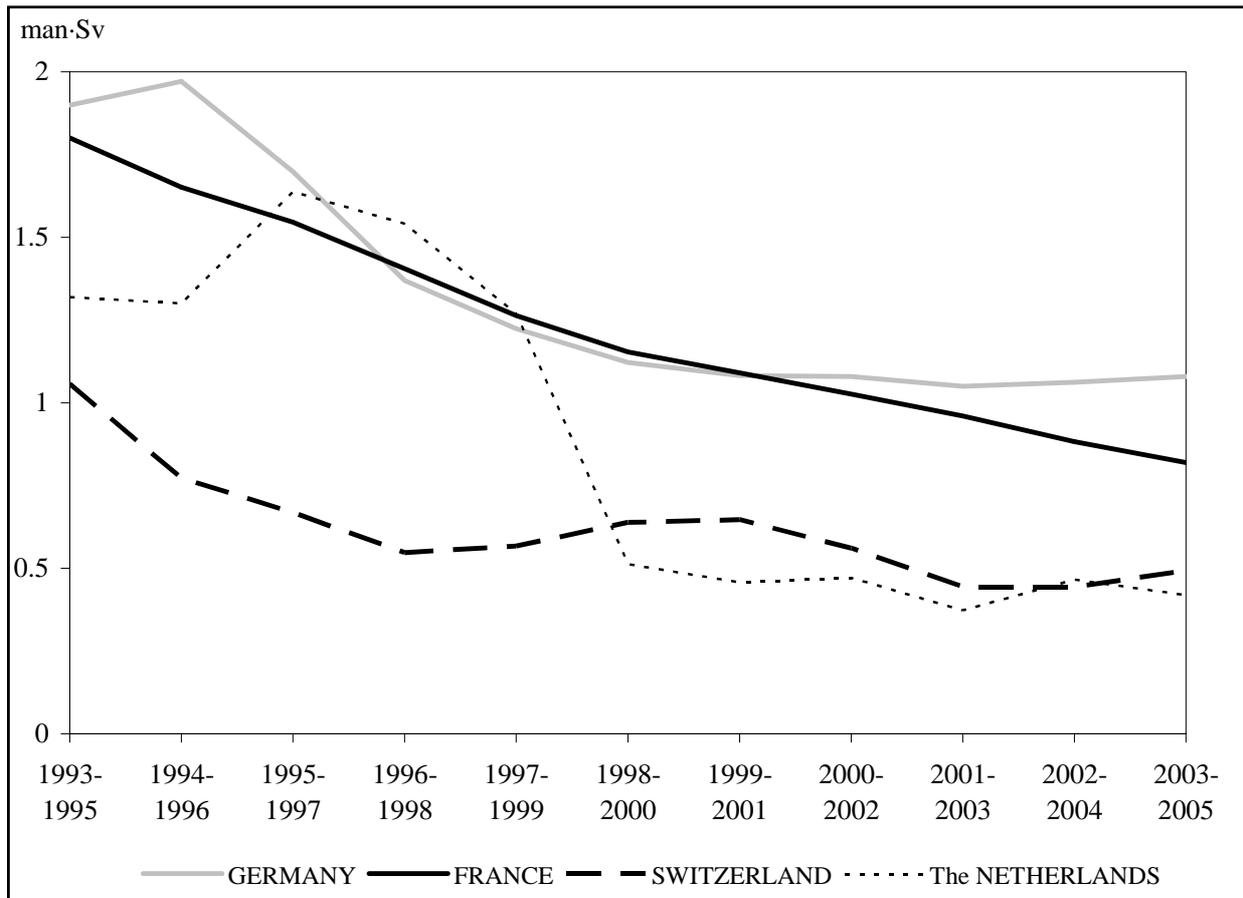
Country	Number of outages / Number of reactors		
	2003	2004	2005
<b>PWR:</b>			
Belgium	6/7	6/7	6/7
France	47/58	47/58	52/58
Germany	11/13	11/12	11/11
Netherlands	1/1	1/1	1/1
Slovenia	1/1	1/1	0/1
Spain	6/7	3/7	5/7
Sweden	3/3	3/3	3/3
Switzerland	3/3	3/3	3/3
United Kingdom	1/1	0/1	1/1
<b>Total</b>	<b>80/94</b>	<b>75/93</b>	<b>82/92</b>
<b>BWR:</b>			
Finland	2/2	2/2	2/2
Germany	5/6	6/6	6/6
Spain	2/2	0/2	2/2
Sweden	8/8	8/8	7/7
Switzerland	2/2	2/2	1/2
<b>Total</b>	<b>19/20</b>	<b>18/20</b>	<b>18/19</b>

Note: All VVER reactors have had outages every year.

### Evolution of the PWRs 3-Years Rolling Average Collective Dose per Reactor by Country



### Evolution of the PWRs 3-Years Rolling Average Collective Dose per Reactor by Country



### Evolution of the BWRs 3-Years Rolling Average Collective Dose per Reactor by Country

