

1- Introduction and Aims

Once a year, ENRESA (Spanish National Radioactive Waste Management Company) prepares a report on the Environmental Radioactivity Surveillance Programme for El Cabril, a near surface disposal facility for low and intermediate level waste (LILW) located in the northeastern part of the province of Córdoba (Spain).



The Environmental Radioactivity Surveillance Programme (ERSP) includes a set formed by the network of monitoring systems and the sampling, analysis and measurements procedures, intended to determine the possible increase in radiation levels and the presence of radionuclides in the environment due to the existence of nuclear facilities in the immediate area, with the main aim being to evaluate the radiological impact of operation of the facility.

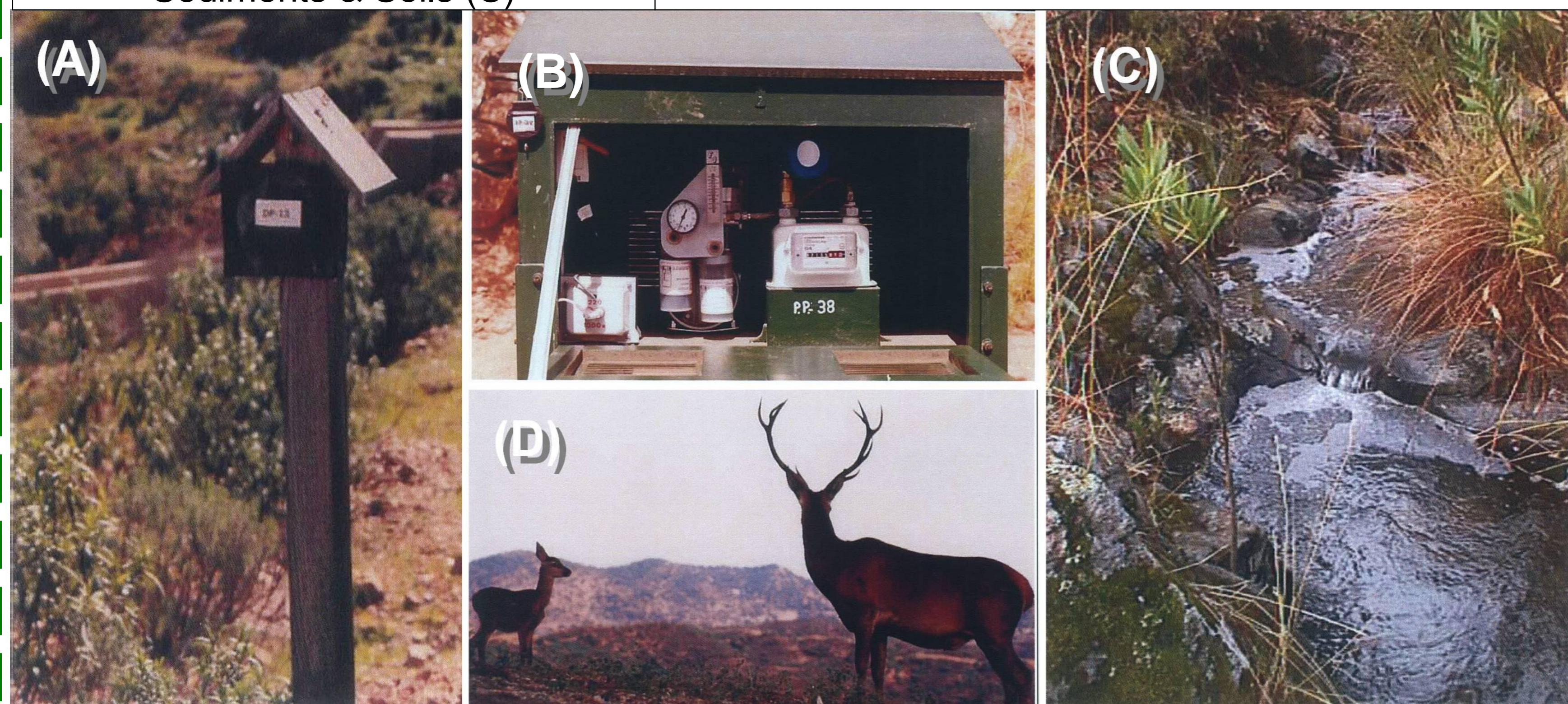
2- Methodology and Results



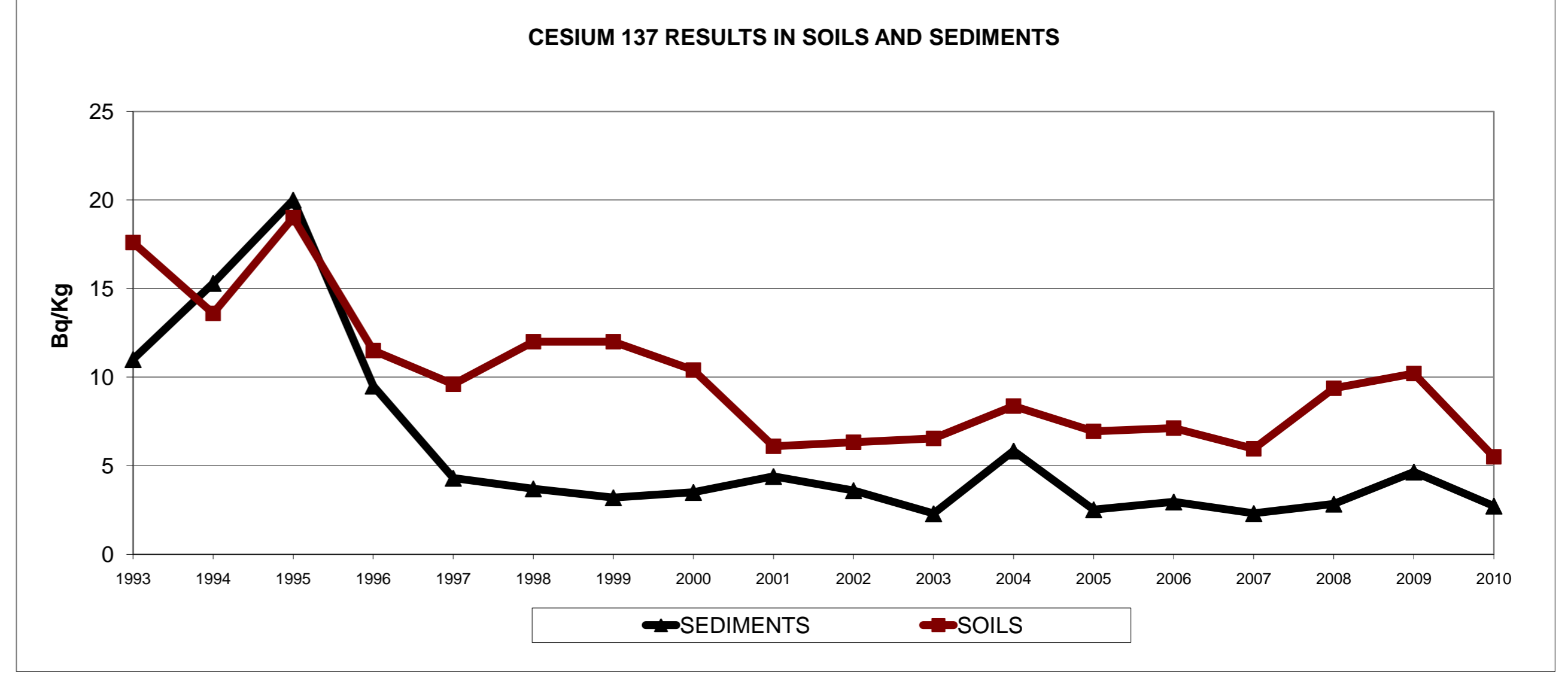
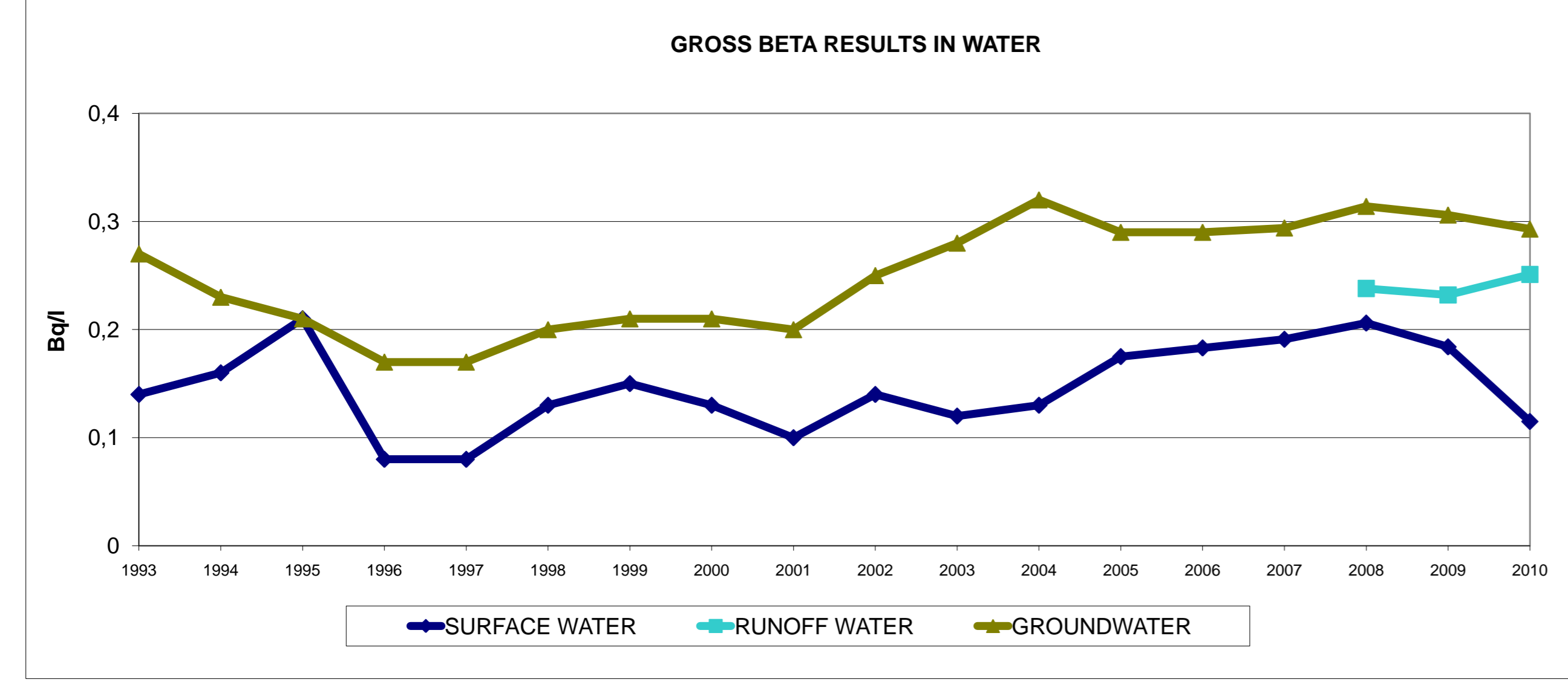
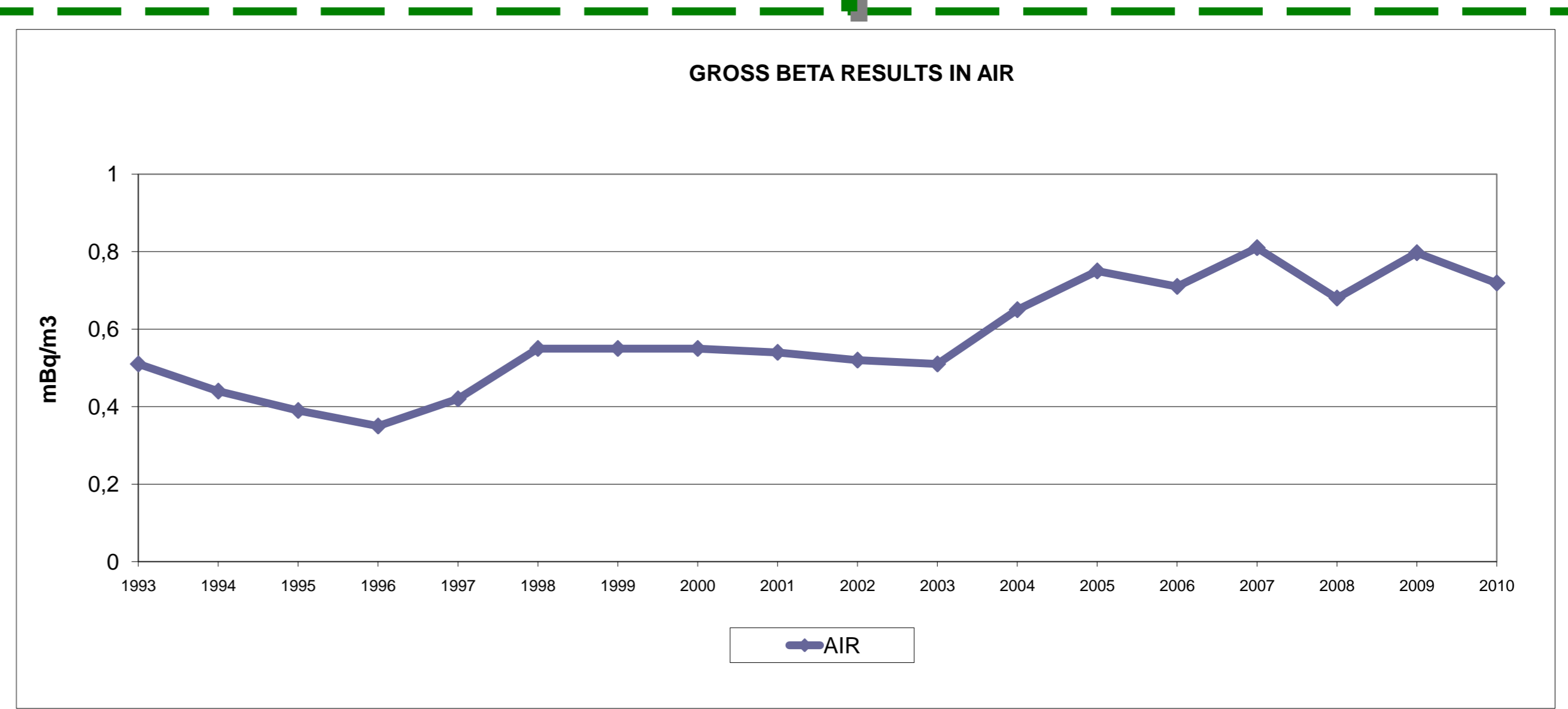
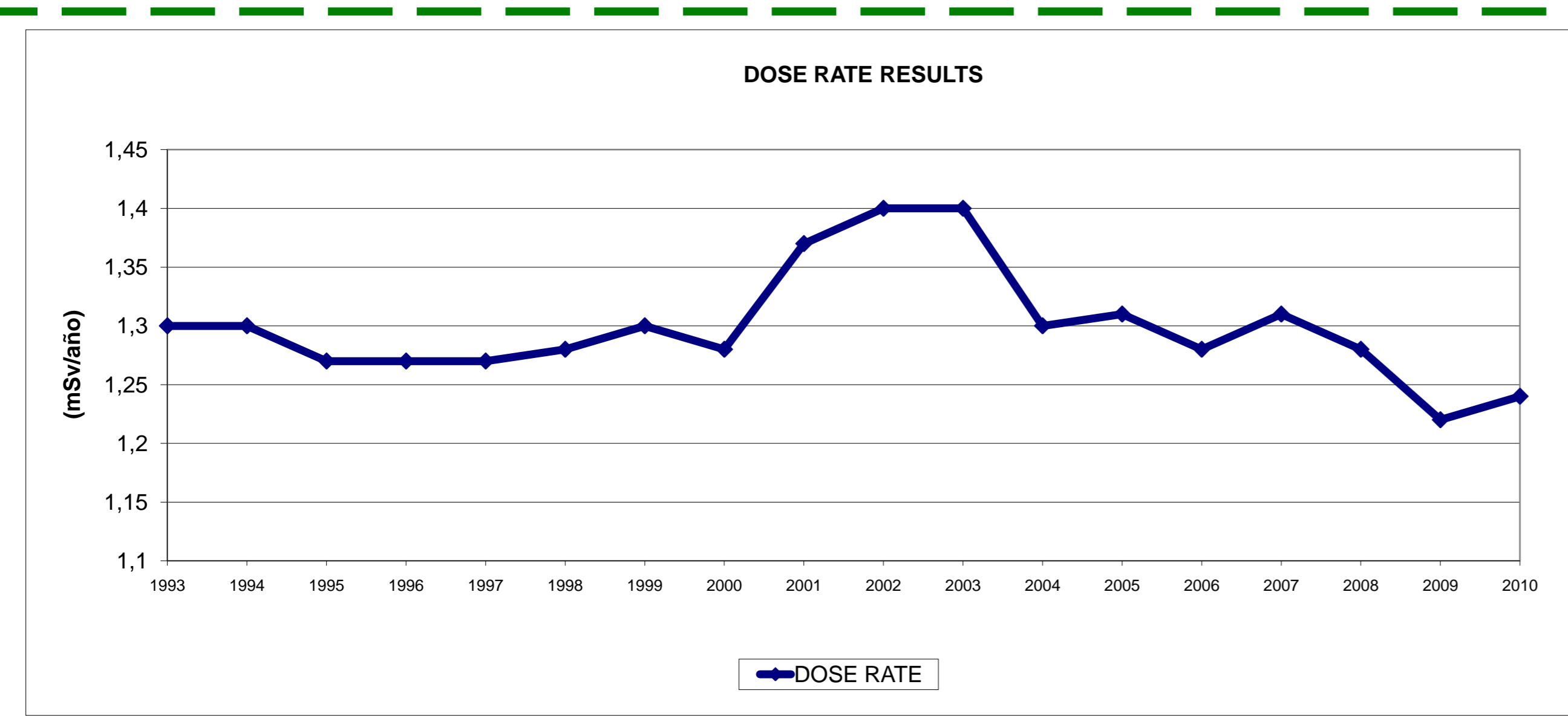
EXPOSURE PATHWAYS	SAMPLES
Gamma Radiation Level (A)	Quarterly Dosimetry
Air (B)	Particles // Tritium // Carbon
Water (C)	Surface water // Groundwater // Runoff water
Foodstuffs (D)	Sheep // Honey // Game // Fishing
Indicator Organism	Vegetation
Sediments & Soils (C)	Bottom Sediments // Border Sediments // Soils

Dose Rate
H3, C14, GS, GB, SR-90
H-3, C14, Sr-90, GB, BR, I-129, Tc-99, GS
GS, SR-90
H3, C14, GS, SR-90
GB, GS, SR-90

GB= GROSS BETA
GS= GAMMA SPECTROMETRY



Analysis Results



	Measurement	Unit	Guideline values	Reference	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AIR	Dose Rate	mSv/year	1	1,34	1,3	1,3	1,27	1,27	1,27	1,28	1,3	1,28	1,37	1,4	1,4	1,3	1,31	1,28	1,31	1,28	1,22	1,24
	GB	mBq/m3	3805	0,65	0,51	0,44	0,39	0,35	0,42	0,55	0,55	0,55	0,54	0,52	0,51	0,65	0,75	0,71	0,81	0,68	0,797	0,719
SURFACE WATER	Sr-90	Bq/l	49	0,015	0,02	0,02	0,02	0,02	0,02	0,03	0,02	0,02	0,02	0,02	0,015	0,019	0,02	0,022	0,021	0,021	0,023	0,02
	GB	Bq/l	1	0,14	0,14	0,16	0,21	0,08	0,08	0,13	0,15	0,13	0,1	0,14	0,12	0,13	0,175	0,183	0,191	0,206	0,184	0,115
RUNOFF WATER	Sr-90	Bq/l	49	0,015																0,024	0,029	< 0,014
	GB	Bq/l	1	0,14																0,238	0,232	0,251
SEDIMENTS	Cs-137	Bq/kg	Not regulated	6,9	11	15,3	20	9,5	4,3	3,7	3,2	3,5	4,4	3,6	2,3	5,84	2,52	2,96	2,31	2,84	4,65	2,73
	Natural K-40	Bq/kg	Not regulated	706	842	949	1020	746	681	736	742	737	667	654	606	722	803	667	621	618	763	574
	GB	Bq/kg	Not regulated	1666	1386	1456	1718	1079	1060	911	918	879	1086	1169	1124	1357	1416	1425	1301	1893	1160	938
GROUNDWATER	Sr-90	Bq/l	49	0,03	0,04	0,04	0,03	0,03	0,02	0,03	0,02	0,03	0,026	0,026	0,03	0,03	0,03	0,03	0,026	0,03	0,041	0,035
	GB	Bq/l	1	0,28	0,27	0,23	0,21	0,17	0,17	0,2	0,21	0,21	0,2	0,25	0,28	0,32	0,29	0,29	0,294	0,314	0,306	0,293
FOODSTUFFS	Cs-137	Bq/kg	1250	< 0,11	< 0,31	0,374	< 0,34	< 0,55	< 0,38	< 0,18	< 0,24	< 0,38	< 0,38	< 0,65	< 0,17	< 0,31	< 0,25	< 0,23	< 0,20	< 0,20	< 0,175	< 0,11
	Natural K-40	Bq/kg	Not regulated	31	81	57	77	58	45	66	71	65	55	72	78,6	87,4	85,1	75,34	77,4	77	80,6	78
VEGETATION	Cs-137	Bq/kg	Not regulated	< 0,59	< 0,51	1	0,56	0,16	< 0,65	< 0,3	0,08	0,53	< 0,1	< 0,11	0,085	0,077	0,18	0,09	< 0,17	0,067	0,165	< 0,04
	Natural K-40	Bq/kg	Not regulated	142	134	138	170	134	177	134	179	92	126	198	181	157	210	212	212	153	193	149
SOILS	Sr-90	Bq/kg	Not regulated	3,35	2,6	3,21	2,92	8,7	8,17	4,87	5,4	5,12	5,1	2	1,55	1,32	1,27	1,23	3,13	3,14	2,65	2,48
	Cs-137	Bq/kg	Not regulated	10	17,6	13,6	19	11,5	9,6	12	12	10,4	6,1	6,33	6,54	8,37	6,94	7,12	5,96	9,37	10,2	5,5
	Natural K-40	Bq/kg	Not regulated	677	763	771	787	895	862	922	1011	882	718	784	754	956	937	904	819	837	964	806

3- Conclusion

Generally speaking, the results obtained as part of the Environmental Radioactivity Surveillance Programme for El Cabril storage facility during the period between 1993 and 2010 indicate no effect on the environment to the facility.

Spanish Regulatory Authorities



Inform & Keeper file

