

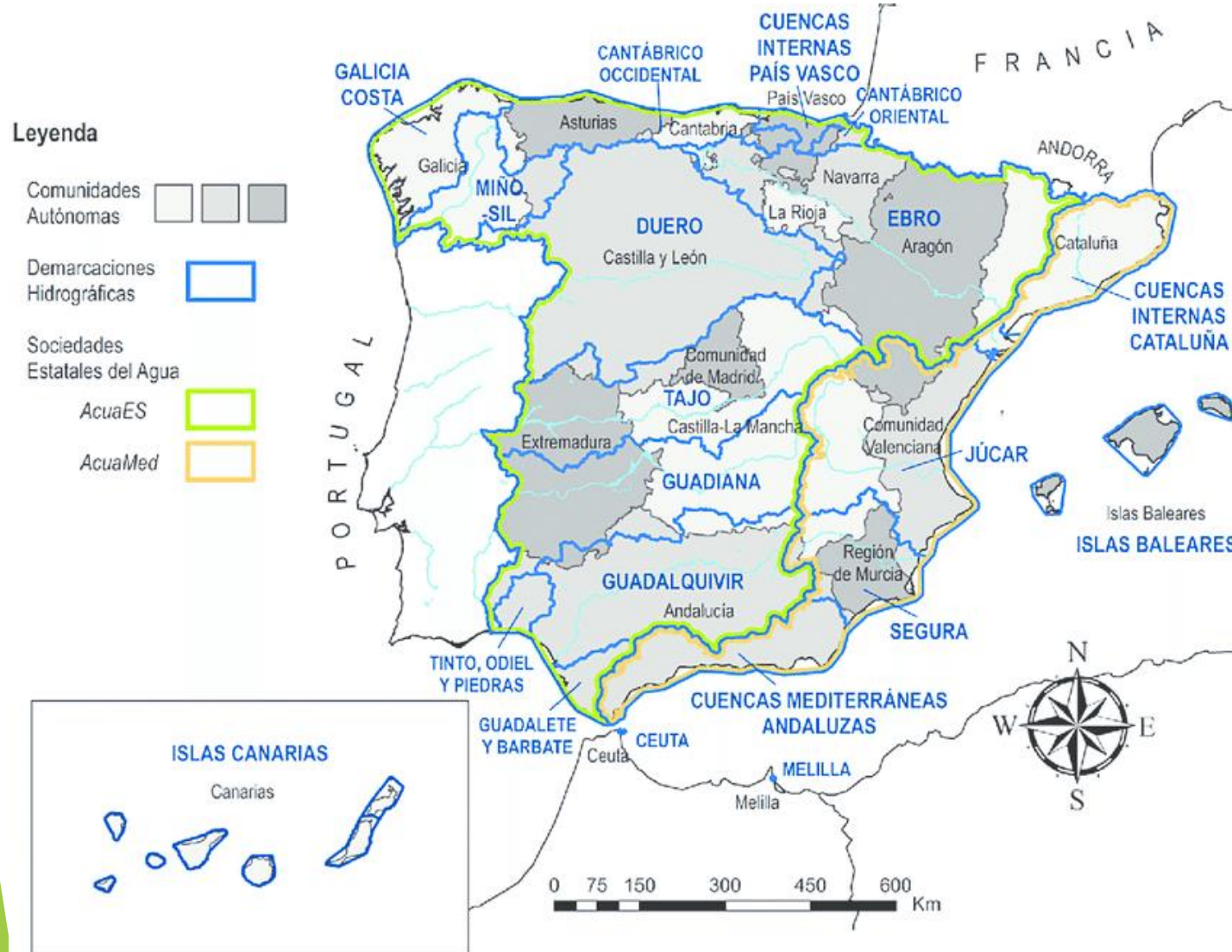
The necessity of coherence in monitoring practices

The case of agricultural contamination of surface water, groundwater and water for human consumption in Spain

Analysis of government controls in 2021 based on data provided by the Ministry of Environment, Ministry of Health and Ministry of Agriculture.



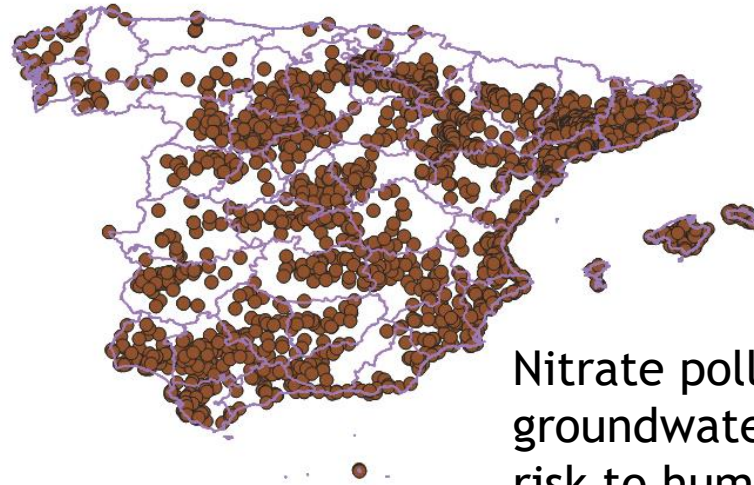
Spanish river basins



17 River Basins or 18 if the Balearic Islands are taken into account.

10 Administrations dependent on the Ministry of the Environment in the case of those with a territorial scope greater than an Autonomous Community or regulated by them in the case of intra-Community basins that do not exceed the territorial scope of an Autonomous Community (a total of 7).

Nitrate pollution of surface water and groundwater



Nitrate pollution of surface and groundwater constitutes a high risk to human and environmental health.

It seems sensible to infer that the cause of this pollution is the use of fertilisers in agriculture and manure from industrial livestock farms.



Summary table of nitrate pollution in surface waters year 2021

DEMARICATION	NO. OF ANALYSES TOTAL	NO. VALUES ≥ 25	VALUES ≥ 25
WESTERN CANTABRIAN	883	0	0,00%
EASTERN CANTABRIAN	2.188	1	0,05%
CEUTA	12	0	0,00%
ANDALUSIAN MEDITERRANEAN BASINS	1.332	22	1,65%
CATALAN INTERNAL BASINS	2.473	364	14,72%
DUERO	3.512	420	11,96%
EBRO	3.283	388	11,82%
GUADALETE AND BARBATE	615	13	2,11%
GUADALQUÍVIR	1.267	115	9,08%
GUADIANA	1.659	202	12,18%
JÚCAR	1.237	189	15,28%
MELILLA	4	3	75,00%
MIÑO-SIL	723	2	0,28%
SEGURA	754	182	24,14%
TAJO	6.257	196	3,13%
TINTO, ODIEL Y PIEDRAS	699	12	1,72%
TOTAL	26.898	2.109	7,84%

Summary table of nitrate pollution in groundwater year 2021

DEMARICATION	NO. OF ANALYSES TOTAL	NO. VALUES $\geq 37,5$	% VALUES $\geq 37,5$
BALEARIC	2.457	1.180	48,03%
WESTERN CANTABRIAN	430	3	0,70%
EASTERN CANTABRIAN	376	0	0,00%
CEUTA	2	0	0,00%
ANDALUSIAN MEDITERRANEAN BASINS	372	56	15,05%
CATALAN INTERNAL BASINS	868	359	41,36%
DUERO	217	100	46,08%
EBRO	2.257	869	38,50%
GALICIA COAST	248	23	9,27%
GUADALETE AND BARBATE	183	45	24,59%
GUADALQUÍVIR	250	100	40,00%
GUADIANA	442	226	51,13%
JÚCAR	463	159	34,34%
MELILLA	3	2	66,67%
MIÑO-SIL	126	11	8,73%
SEGURA	551	336	60,98%
TAJO	221	49	22,17%
TINTO, ODIEL Y PIEDRAS	67	14	20,90%
TOTAL	9.533	2.352	24,67%

Nitrate contamination of groundwater in the Balearic Islands



F_MUESTRE O	COD_PARA METER	PARAMETER _VALUE	UNIT	LQ
19-Oct-21	NO3	662 mg NO3/l		5
25-Nov-21	NO3	523 mg NO3/l		5
27-Oct-21	NO3	456 mg NO3/l		5
03-May-21	NO3	451 mg NO3/l		5
01-Jun-21	NO3	444 mg NO3/l		5
28-Jun-21	NO3	444 mg NO3/l		5
27-Oct-21	NO3	435 mg NO3/l		5
20-Jul-21	NO3	433 mg NO3/l		5
21-Jun-21	NO3	432 mg NO3/l		5
24-Aug-21	NO3	423 mg NO3/l		5
13-Jan-21	NO3	419 mg NO3/l		5
28-Feb-21	NO3	419 mg NO3/l		5
29-Mar-21	NO3	415 mg NO3/l		5
22-Nov-21	NO3	409 mg NO3/l		5
03-Feb-21	NO3	401 mg NO3/l		5
02-Aug-21	NO3	400 mg NO3/l		5

In 2021, the regional authorities, according to data from the Ministry of the Environment, carried out 2,457 nitrate analyses.

1,180 of these failed to meet the environmental quality value of 37.5 mg/l (48.03%).

307 values were equal to or higher than 100 mg/l, 16 of them were equal to or higher than 400 mg/l.

The highest value reported in Spain in 2021 was detected in the Balearic Islands with 662 mg/l.



Nitrate contamination in drinking water

Year	Number of controls	Values higher than the parametric
2021	100.875	1,24%
2020	92.417	1,67%
2019	81.559	1,7%
2018	61.179	2,1%
2017	55.861	1,6%
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2008	24.310	2,39%

Livestock classes	Number of livestock
Bovine	73.525
Sheep and goats	464.994
Pigs	650.243
Poultry	4.546.935
Total	5.735.697

Type of affected populations by number of inhabitants	No. of affected populations
< 100 inhabitants	39
>100 and <500 inhabitants	51
>500 and <1,000 inhabitants	24
>1,000 and <5,000 inhabitants	36
>5,000 inhabitants	47

What the data hides:

- 1) Nitrates were monitored in 62.8% of the supply areas.
- 2) 197 towns and cities affected by nitrate contamination of their drinking water.
- 3) 1,016,359 inhabitants affected, but the actual affected population is unknown as many of these towns have a larger population in the summer months.
- 4) There are 5,735,697 head of livestock registered in the 197 affected villages.

Pesticide contamination of surface waters

Basin	Pesticides authorised	Pesticides unauthorised	Total Pesticides	Number of analysis	Number of detections	Percentage detections	Number of exceedances	Percentage overruns
Western Cantabrian	14	65	79	8.434	256	3,04%	2	0,02%
Eastern Cantabrian	11	57	68	4.991	79	1,58%	1	0,02%
Ceuta	12	47	59	899	3	0,33%	0	0,00%
Catalan Internal Basins	13	65	78	22.540	832	3,69%	110	0,49%
Andalusian Mediterranean Basins	5	25	30	1.171	83	7,09%	4	0,34%
Duero	23	53	76	23.303	8.795	37,74%	3.000	12,87%
Ebro	13	50	63	109.760	4.451	4,06%	956	0,87%
Galicia Coast	13	56	69	5.552	60	1,08%	2	0,04%
Guadalete-Barbate	1	4	5	73	19	26,03%	4	5,48%
Guadalquivir	13	51	64	62.531	6.144	9,83%	1.221	1,95%
Guadiana	16	69	85	40.708	967	2,38%	407	1,00%
Júcar	15	71	86	67.818	1.842	2,72%	392	0,58%
Melilla	12	49	61	312	1	0,32%	0	0,00%
Minho-Sil	22	93	115	50.908	436	0,86%	76	0,15%
Segura	14	70	84	23.637	442	1,87%	152	0,64%
Tagus	10	47	57	35.519	1.398	3,94%	572	1,61%
Tinto, Odiel y Piedras	4	14	18	538	34	6,32%	15	2,79%
TOTAL				458.694	25.694	5,63%	6.914	1,51%

Pesticide contamination of groundwater

DEMARICATION	Total pesticides	Authorised	Unauthorised	Total analytical	Total analytics with detection	Total number of analytical tests passed
Balearic Islands	0	0	0	0	0	0
Western Cantabrian	29	3	26	2.754	4	0
Eastern Cantabrian	66	14	52	2.757	11	1
Ceuta	56	12	44	112	0	0
Andalusian Mediterranean Basins	23	4	19	509	60	37
Catalan Internal Basins	77	19	58	4.840	62	2
Duero	69	9	60	8.428	4	0
Ebro	95	25	70	9.635	396	210
Galicia Coast	53	17	36	722	0	0
Guadalete-Barbate	1	1	0	38	3	2
Guadalquivir	56	12	44	12.207	179	4
Guadina	41	3	38	17.914	21	6
Júcar	65	16	49	15.728	357	34
Melilla	57	12	45	170	2	0
Minho-Sil	100	24	76	6.400	234	58
Segura	63	11	52	17.399	247	12
Tagus	46	7	39	5.310	24	17
Tinto, Odiel and Piedras	24	5	19	142	2	2
TOTAL				105.065	1.606	385

Pesticides in aquatic ecosystems: an inadequate analytical effort

- 1) Lack of uniformity among basins: in the total number of analyses and in the pesticides assessed.
- 2) The analytical effort is focussed on the control of unauthorised pesticides, while in comparison the authorised pesticides analysed are scarce and apparently unrepresentative of the data from the pesticide marketing surveys of the Ministry of Agriculture.
- 3) Under-monitoring of groundwater compared to surface water. This should be improved, for many reasons, including the fact that a high percentage of drinking water supply areas are groundwater.

4) In groundwater, the EU-wide average of unauthorised pesticide analysis was 75%. The Balearic Islands did not analyse any pesticides in groundwater. Only one pesticide was assessed in the Guadalete-Barbate demarcation, 69 in the Duero basin and 95 in the Ebro basin.

5) In surface waters the percentage of unauthorised pesticides controlled was 81%.

Only 5 pesticides were analysed in the Guadalete-Barbate basin, 63 in the Ebro basin and 115 in the Segura basin.

Pesticide contamination in drinking water

	No se ha controlado	Total de controles	% de incumplimientos
Total de plaguicidas	44,1 % de las zonas de abastacimento	36.650	0,02%
	89,6 % de la infraestructuras		
	90,4 de los puntos de muestreo		
	37,7 % de los depósitos		
Plaguicidas individuales	37,8 % de las zonas de abastacimento	1.287.044	0,01%
	90 % de la infraestructuras		
	91,1 % de los puntos de muestreo		
	42,5 % de los depósitos		

	Número de plaguicidas	Porcentaje en kilos comercializados
Porcentaje de plaguicidas comercializados en 2021 no analizados en agua de consumo humano	34,28%	56,59%

In 44.1% of the supply areas no pesticides were analysed.

In 2021, 325 pesticides were analysed for a total of 281,961 individual analyses of these pollutants by all competent authorities (municipalities, supply zone operators).

Approximately 20% correspond to pesticides marketed in Spain for which information is available in that year.

Of the 105 pesticides placed on the market in Spain in 2021 for which we have information, 36 were not monitored.

Glyphosate, the second most marketed pesticide in Spain in 2021, was analysed on 1,904 occasions throughout Spain.

1,3-dichloropropene (unauthorised pesticide), the third most sold pesticide in Spain in 2021, was analysed only 89 times.

DDT (unauthorised pesticide and priority substance) was evaluated 16,763 times, while lindane (unauthorised pesticide and priority substance) was monitored 6,107 times.

Lack of uniformity of controls of pesticides underlines the lack of criteria

Comunidad Autónoma	Nº de analíticas	Nº de municipios	Nº de plaguicidas	Valores iguales o superiores a los paramétricos
Andalucía	42.253	647	229	151
Aragón	24.466	411	214	5
Asturias	6.484	35	85	31
Baleares	7.343	55	136	3
Canarias	18.089	77	112	24
Cantabria	3.686	44	86	0
Castilla y León	13.589	491	121	5
Castilla-La Mancha	24.938	437	178	0
Cataluña	27.502	568	174	3
Comunidad Valenciana	71.923	394	155	20
Extremadura	6.864	169	54	24
Galicia	13.610	203	98	8
Madrid	1.966	154	94	0
Murcia	12.533	45	157	0
Navarra	875	19	120	0
País Vasco	3.759	114	40	0
La Rioja	1.849	33	118	0
Ceuta	232	1	29	0

The Priority Substances Directive, a tool for control or for confusion? the case of Les Garrigues (I)

Water contamination episode for human consumption in the region of Les Garrigues in 2022, affecting 25 towns and villages.

The episode began on 5 May and ended on 8 August.

Two herbicides were detected: metolachlor (unauthorised pesticide) and terbuthylazine.

- 1) The catchment regularly shows concentrations of the herbicides metolachlor (unauthorised pesticide) and terbuthylazine with values above the limit of 0.1 microgram/litre established by the Royal Decree on drinking water.
- 2) Around 20 June it appears that the drinking water treatment plant (DWTP) began to provide drinking water with values for these two pesticides that complied with the standard, despite the fact that the water at the catchment point continued to show concentrations above those permitted by the legal standard. According to the documentation provided by the Mancomunidad, action was taken to improve the performance of the active carbon filter.
- 3) Despite this corrective action, the reservoir of some populations still had metholachlor values above those permitted in the Royal Decree on drinking water, but by 22 June it appears that the legal values had been reached.
- (4) Pesticide concentrations at the collection point remained above the quality standard until 8 August.
- 5) The actions at the level of the DWTP have been paid for with public funds, which is contrary to the polluter pays principle of environmental law.
- 6) Since it was a question of diffuse pollution, the Public Prosecutor's Office was not able to establish liability, nor was it possible to prove that water legislation was inefficient, since there is no environmental quality standard for metolachlor and terbuthylazine.

The Priority Substances Directive, a tool for control or for confusion: the case of Les Garrigues (II) and conclusions

- The Priority Substances Directive in relation to pesticides focuses on the control of historical, mostly highly persistent pollutants such as DDT and lindane.
- The lack of a strong provision that clearly obliging Member States to analyse pesticides in use means, at least in Spain, that the analytical effort is focused on the pesticides listed in the Priority Substances Directive or, in other words, on contaminants that have been out of use for years.
- The lack of quality data on the marketing and use of pesticides, coupled with the unwillingness of basin organisations, means that control, without apparent pollution mitigation measures, is focused on banned or authorised pesticides that are not representative of those actually in use.
- In our opinion, the current Priority Substances Directive has the undesirable effect that what is not used is largely controlled and yet unauthorised pesticides continue to be detected.
- **Conclusions:**
- **1) Rules should be laid down in the Priority Substances Directive that clearly and unambiguously oblige basin organisations to monitor, after proper assessment of pesticide marketing and use data, those pollutants in use and include mitigation measures for this type of pollution.**
- **2) All pesticides must have their own environmental quality standard for their toxicity class.**
- **3) The different quality standards for surface water, groundwater and water for human consumption should be unified.**