



Overview of Groundwater Contamination by PFAS in Catalonia.

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Agència Catalana de l'Aigua



**Agència Catalana
de l'Aigua**



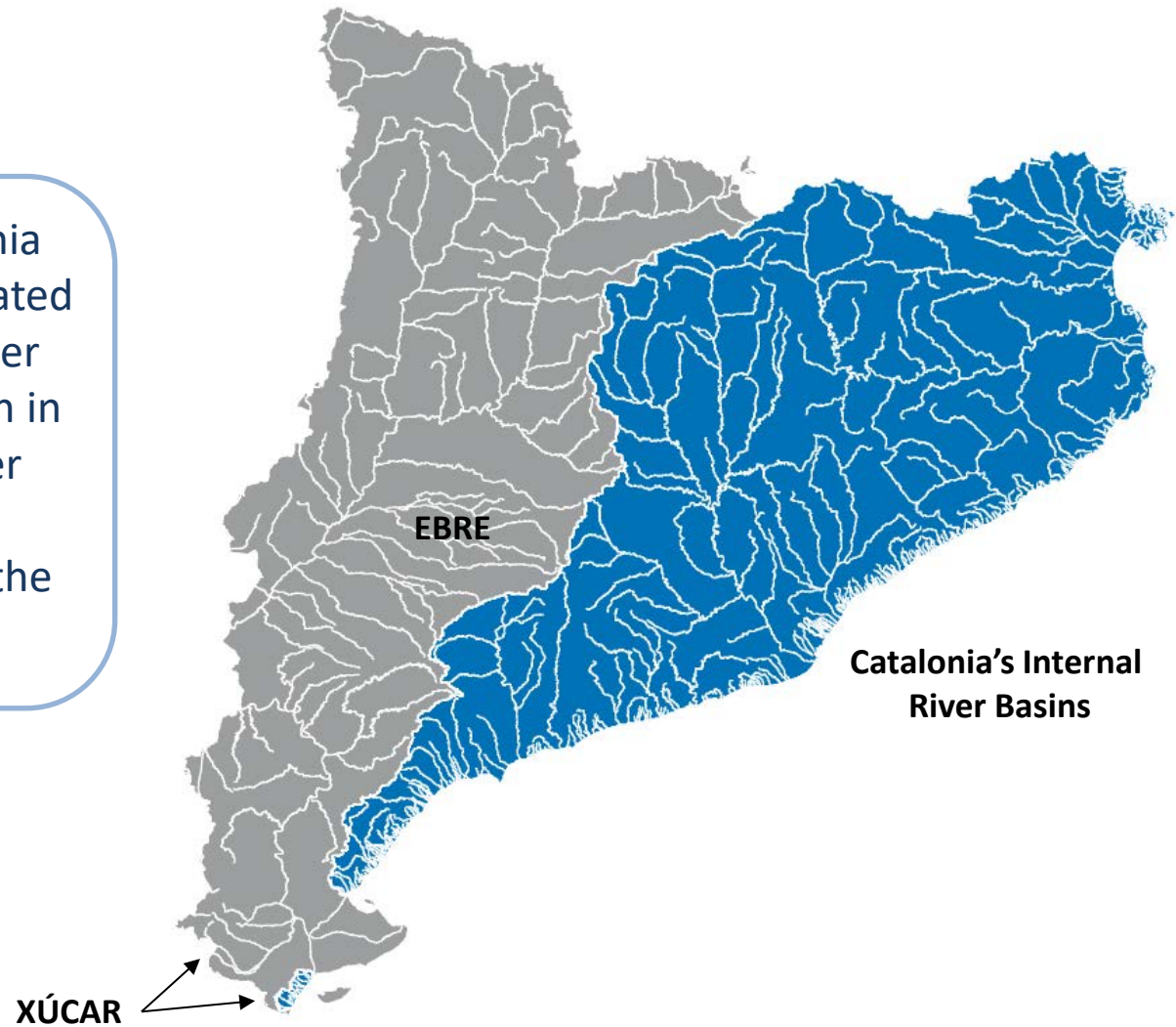
**Generalitat
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1. Agència Catalana del Agua (ACA)

Public Agency of Catalonia responsible for the integrated management of the water cycle, with full jurisdiction in Catalonia's internal river basins and shares responsibilities through the rest of Catalonia.



2.1 PFAS Management in Water Supply Wells



REGULATORY FRAMEWORK

European Union

- Directive (EU) 2020/2184

National

- R.D. 3/2023



DATA SOURCES

- Water suppliers responsible for drinking water provision.
- Local authorities.



EVALUATION CRITERIA

Applicable from January 2026:

$$\sum 20 \text{ PFAS} < 0,1 \mu\text{g/l}$$

Annex I Part B

HEALTH AUTHORITIES

Water Safety Plan (WSP)

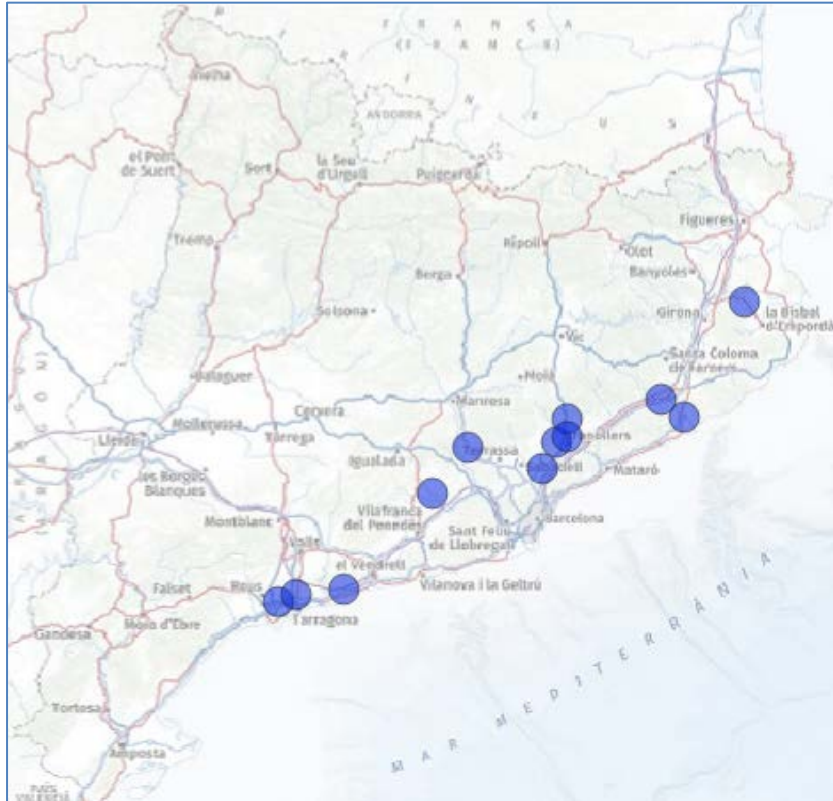


ACTIONS IMPLEMENTED

- **Agència Catalana de l'Aigua :**
 - **Compiles** information on exceedances of assessment criteria.
 - **Promotes and publishes the Guidance on PFAS Management and Treatment in Drinking Water Supplies.**



2.1 PFAS Management in Water Supply Wells



PFAS occurrence in Water Supply Wells



Coordinated by Institut Català de Recerca de l'Aigua (ICRA), with the collaboration of the: Institut de Diagnostic Ambiental (IDEA-CSIC), Aigües de Barcelona, Eurecat and other entities.

2.2 Management of PFAS in Groundwater Bodies



REGULATORY FRAMEWORK

European Union

- Directive (UE) 2026/805

National

- R.D. 1514/2009 (groundwater protection)
- Directive (EU) 2026/805 yet to be transposed

Regional

- Decree 91/2023 “Pla de Gestió 2022 – 2027”



DATA SOURCES

Studies Promoted by Public Authorities:

- ACA - ICRA (2022-2024)



EVALUATION CRITERIA

Decree 91/2023

PFAS Total <0,5µg/l in selected groundwater bodies.

Directive (UE) 2026/805

$\Sigma 4$ PFAS < 4,4 ng/l
(PFOA, PFOS, PFNA, PFHxS)

$\Sigma 20$ PFAS < 0,1 µg/l



ACTIONS IMPLEMENTED

Implementation of PFAS Monitoring with **Groundwater Monitoring Networks (starting in 2026):**

- **100 monitoring sites** located across 13 groundwater bodies.
- **Annual monitoring of $\Sigma 20$ PFAS.**

2.2 Management of PFAS in Groundwater Bodies

ACA – ICRA Study 2022 - 2024

94 samples

12 groundwater bodies

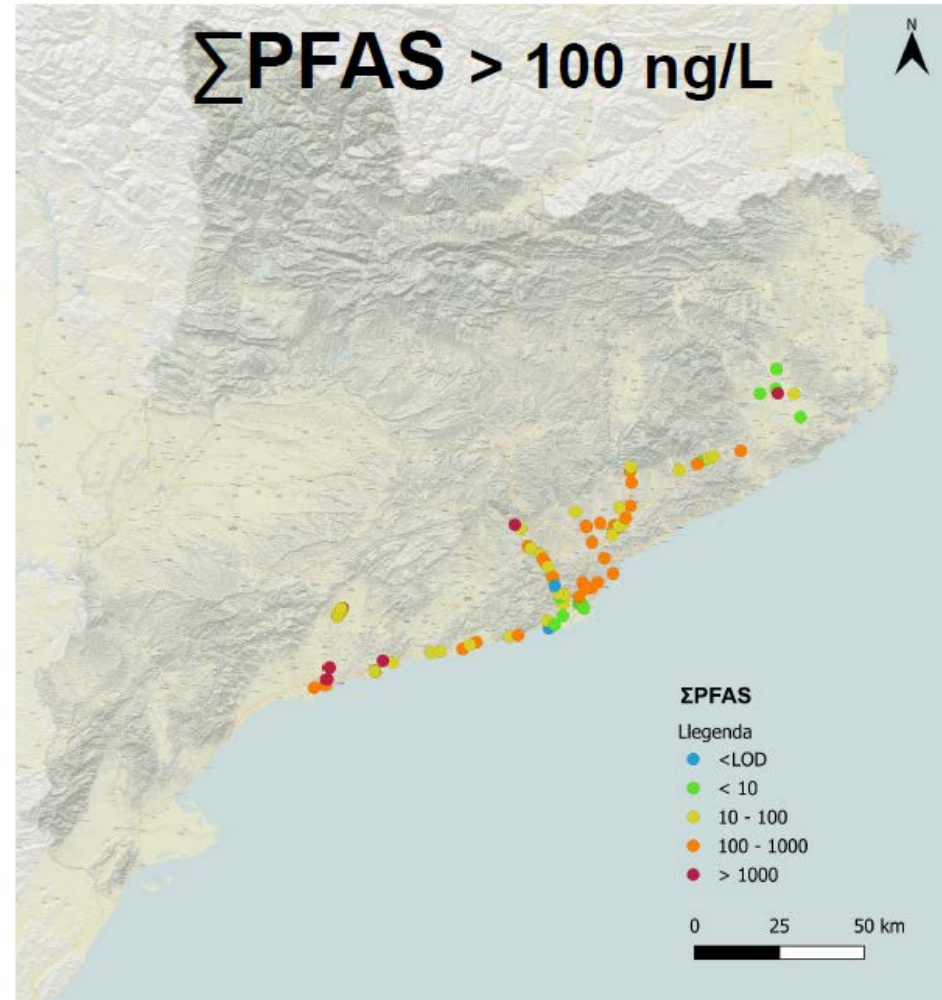
Analysis of 12 PFAS compounds:

PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA, PFUnDA, PFDoA, PFBS, PFHxS and PFOS.

37 samples showed Σ PFAS(12) concentrations above 100 ng/l

Highest Concentrations Detected in:

- Aqüífer detrític plioquaternari del baix Francolí-Torredembarra
- Aqüífer detrític plioquaternari del camp de Tarragona-Alt Camp
- Aqüífer al·luvial del Francolí
- Aqüífer al·luvial de la cubeta d'Abrera
- Aqüífer al·luvial de l'Onyar



2.3 Management of Potential Industrial PFAS Sources Affecting Soil and Groundwater



REGULATORY FRAMEWORK

European Union

- Directive 2010/75/EU (DEI)
- Directive (EU) 2026/805 (PFAS in Groundwater)

National

- Law 5/2013 transposing DEI
- RD 1/2016
- RD 665/2023

Regional

- Law 20/2009 on Environmental Prevention and Control
- Decree 91/2023 Pla de Gestió 2022-2027



DATA SOURCES

Baseline Report required for industrial installations covered by Annex I.1 of Law 5/2013

Identification and reporting of relevant hazardous substances used, **produced and emitted by the installation.**



EVALUATION CRITERIA

RD 665/2023 - Decree 91/2023

VGNR, Generic No-Risk Value
VGI, Generic Intervention Value

At present, no Generic No-Risk Values or Generic Intervention Values are available for PFAS.



ACTIONS IMPLEMENTED

Since 2023, the **early review of Integrated Environmental Authorisations (AAI)** has included **PFAS reporting requirements.**



Establishment of Monitoring and Control Programmes (PSC)

PFAS are considered **relevant hazardous substances**

2.3 Management of Potential Industrial PFAS Sources Affecting Soil and Groundwater

AVAILABLE DATA ON ANNEX I.1 ACTIVITIES



21 Annex I.1 companies have submitted PFAS groundwater monitoring data:

Assessment

For **17 of these companies**, PFAS analyses have been incorporated into their **Monitoring and Control Programmes (PSC)**

Since 2014, of total of 550 industries activities have been assessed in Catalonia under the AAI framework, with **390 operating monitoring networks**.

2.3 Management of Potential Industrial PFAS Sources Affecting Soil and Groundwater

AVAILABLE DATA ON ANNEX I.1 ACTIVITIES



Sites

21



Groundwater Samples Analysed

>130

Parameter	No. of Companies	No. of Samples
Σ 20 PFAS	9	57
Σ 4 PFAS	4	35
PFOS Sum	12	116
4:2 FTS	6	47
6:2 FTS	11	117
8:2 FTS	10	91
10:2 FTS	8	64
TFA	0	0

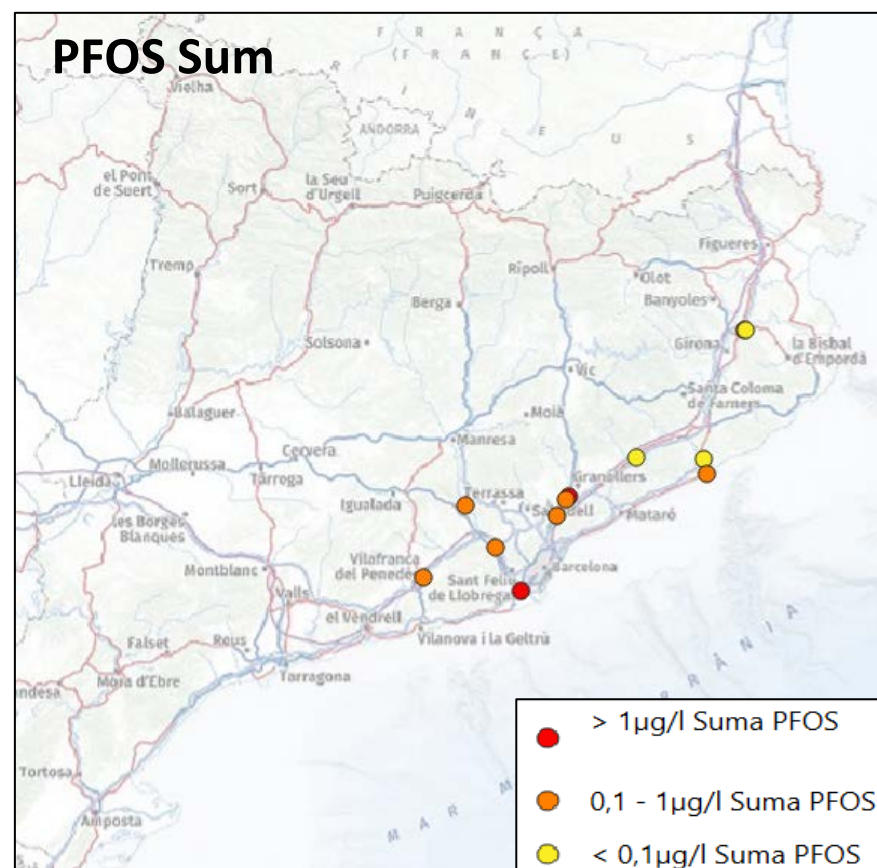
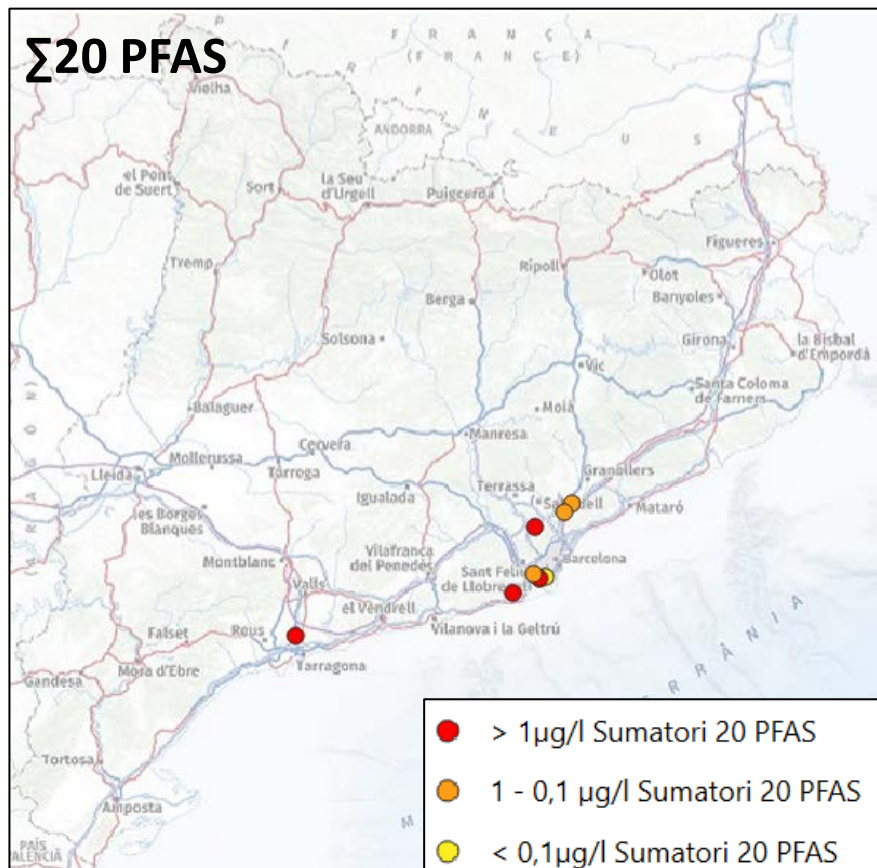


WHAT DO WE OBSERVE?

- Analytical suites are heterogeneous, and not all results can be evaluated against existing regulatory thresholds.
- Non-regulated PFAS compounds, such as 6:2 FTS and 8:2 FTS, were also detected.

2.3 Management of Potential Industrial PFAS Sources Affecting Soil and Groundwater

AVAILABLE DATA ON ANNEX I.1 ACTIVITIES



94 % of the samples analysed for $\Sigma 20$ PFAS exceeded 0,1µg/l

3. Next Steps in the Management of Potential PFAS Contamination Sources

- Continue the **implementation of Monitoring and Control Programmes (PSC)** in connection with the early review of **Integrated Environmental Authorisations (AAI)**.
- Assess the feasibility of **defining standard PFAS analytical suites** for inclusion in **AAI Monitoring and Control Programmes**, ensuring that they:
 - Meet current regulatory requirements;
 - Include PFAS relevant to the industrial activities carried out at the site, as well as their precursors.
- From the perspective of managing point-source contamination events, as required under Royal Decree 665/2023, it will be necessary to **derive Generic No-Risk Values (VGNR) and Generic Intervention Values (VGI) for groundwater**.

CONCLUSIONS

- The information currently available **has enabled ACA to develop a preliminary overview of PFAS contamination in groundwater in Catalonia**. However, additional data on wastewater discharges and environmental releases are necessary to improve source identification and support a more comprehensive assessment.
- A thorough **evaluation of groundwater contamination** requires the determination of both **target PFAS and PFAS precursor compounds**, given the potential of precursor substances to degrade into persistent PFAS and contribute to long-term environmental contamination.
- **The highest PFAS concentrations identified** in this study appear to be linked to **specific industrial activities and sites associated with firefighting training and firefighting operations**, highlighting these sectors as key contributors to groundwater contamination by PFAS.



Foto: Roberto Espínola

Gràcies per la vostra atenció

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