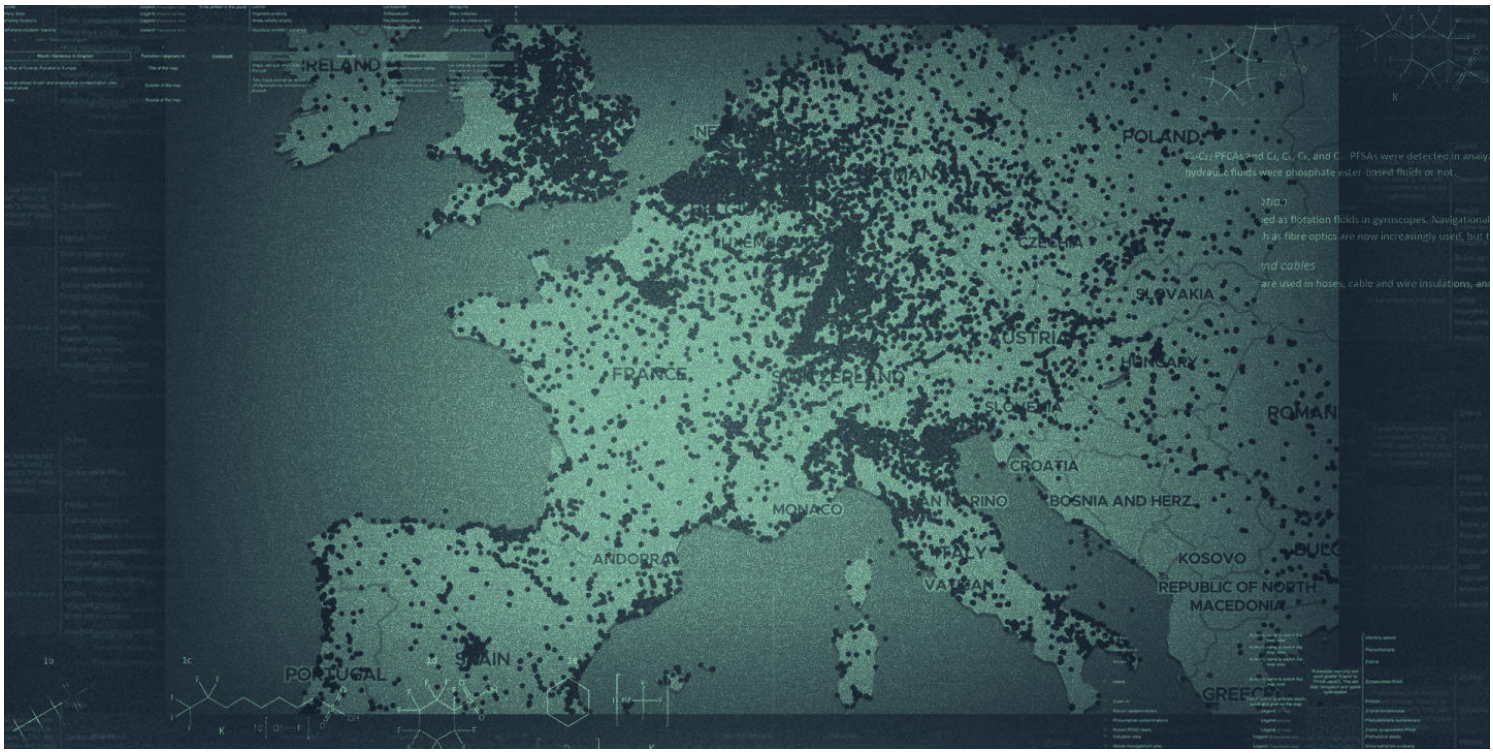


• PFAS

# 'Forever pollution': Explore the map of Europe's PFAS contamination

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2 min.

**INVESTIGATION | After our data collection on an unprecedented scale, this map is the first to illustrate the widespread contamination of Europe by these toxic and persistent substances.**

The Forever Pollution Map was created by *Le Monde* and its 17 partners from the cross-border investigation, the Forever Pollution Project. It is the first map to show the extent of Europe's contamination by per- and polyfluoroalkyl

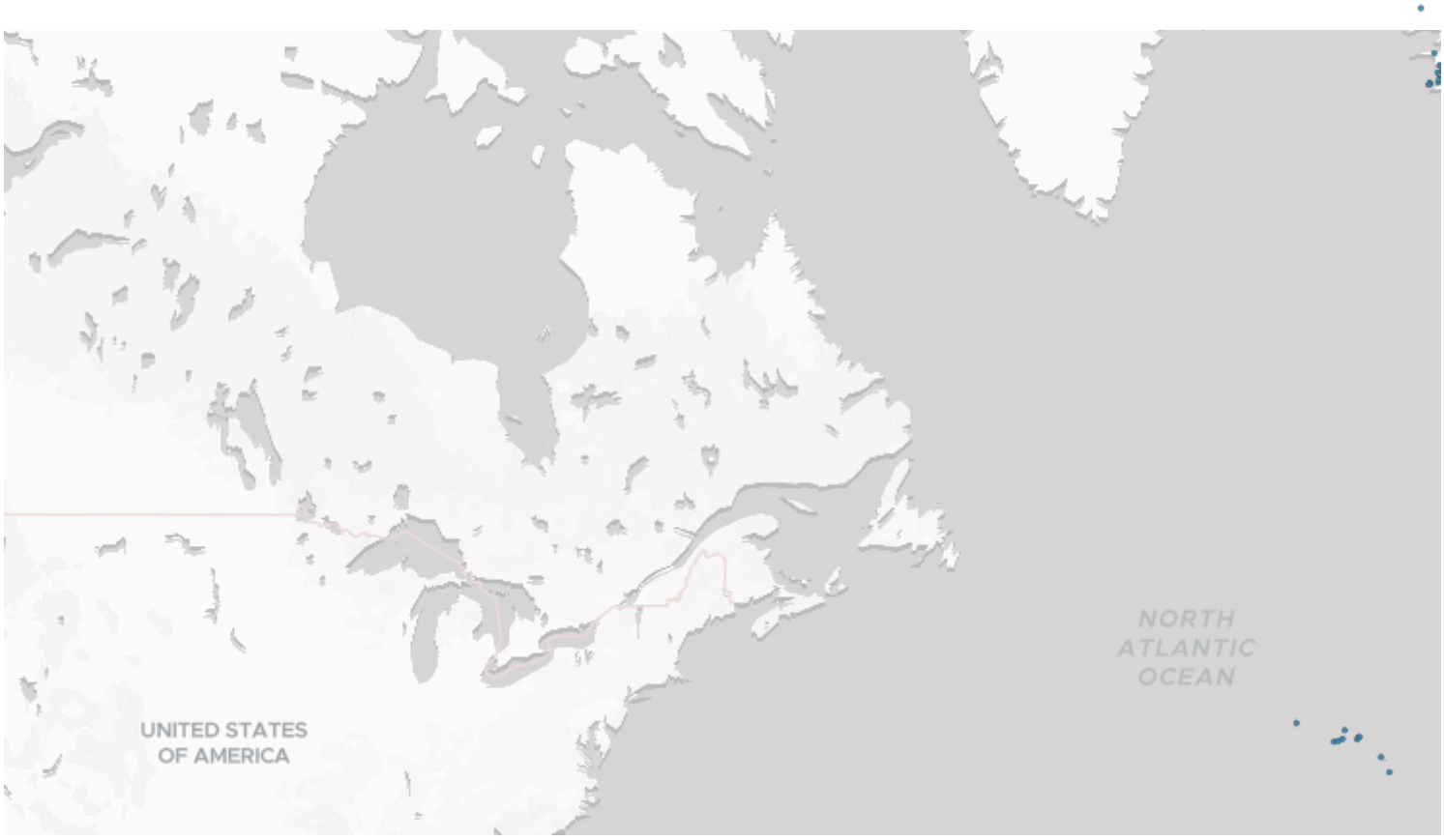
substances (PFAS), a family of ultra-toxic compounds used for a multitude of products and applications. Persistent in the environment, these "forever chemicals" will accompany humanity for hundreds of years – maybe even thousands.

## The Map of Forever Pollution in Europe

This map shows known and presumptive contamination sites across Europe.

Zoom in on the map and hover over a circle to display more information.
Ad blockers can prevent the display, please consider disabling them.

All sites | Known | Users | Presumptive | Zoom in

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Known contamination Known PFAS User Presumptive contamination ◆ PFAS manufacturing facility

Source: Forever Pollution Project

- **What the map shows**

Our map shows PFAS production facilities, some sites where PFAS are used, as well as sites where contamination has been detected and those that are likely to be contaminated.

- **20 PFAS producers**

These chemical plants synthesize PFAS, which are then used in many sectors.

- **Over 17,000 sites where PFAS contamination has been detected**:

Each of these sites has been sampled for PFAS in water, soil or living organisms by scientific teams and environmental agencies between 2003 and 2023. These measures have found PFAS at levels equal to or greater than 10 nanograms per liter (ng/L).

- **232 PFAS users**

These industrial sites use PFAS to manufacture "high-performance" plastics, paints and varnishes, pesticides, waterproof textiles, other chemicals, etc.

- **Over 21,000 presumptive contamination sites**

These are sites with current or past industrial activity documented as both using and emitting PFAS. Military bases, for example, are major users of "AFFF" firefighting foams, which contain PFAS. The manufacturing of certain plastics called fluoropolymers also requires the use of PFAS.

While contamination of these sites is likely, no environmental sampling has been conducted to confirm this.

- **Over 2,100 hotspots**

The term "hotspot" is used when the concentration of PFAS detected at a site reaches a level that experts consider hazardous for health (100 ng/L). The problem is that dozens, sometimes hundreds of samples are taken by the authorities around a location identified as the "epicenter" of contamination – this is the case, for example, at the 3M plant in Zwijndrecht (Belgium) and the Chemours plant in Dordrecht (Netherlands) – but this does not make each of these points a hotspot in itself.

In order to reduce the number of these possible "false positives" as much as possible, we grouped geographically close points into "clusters". This calculation led us to estimate the number of hotspots at more than 2,100 throughout Europe.

Forever Pollution Project - Definitions

Presumptive contamination site

Known contamination site

PFAS manufacturing facility

Hotspot

PFAS

Known PFAS user

- **An unprecedented data collection**

To build our map, we aggregated data from multiple sources of information, some of which were not public. These data allowed us to locate known contamination. To identify presumptive contamination sites, we adapted the methodology of a group of researchers who have done similar work to map contamination in the United States: the PFAS Project Lab (Boston) and the PFAS Sites and Community Resources Map. As our guides and advisors, seven experts accompanied us in this unprecedented experiment of peer-reviewed journalism to carry out this new kind of investigation.

## A peer-reviewed methodology

The purpose of the "Map of Forever Pollution" is to provide data about sites known to be contaminated or likely to be contaminated with per- and polyfluoroalkyl substances (PFAS) in Europe.

Our primary goal is to inform the public and to provide data to impacted community members, researchers and regulators, and to contribute to building knowledge on PFAS contamination for the public interest. Potentially contaminated sites could therefore be prioritized by governments to conduct sampling campaigns and tailor action plans to protect the public.

This map reflects information gathered to the best of our knowledge and journalistic resources. Due to the lack of widespread environmental testing for PFAS, the true extent of contamination is significantly underrepresented.

The number of sites identified in each country or area reflects the amount of testing conducted by the

See more

It is important to note that we have systematically adopted the most conservative approach possible. In addition, there is a lack of data and a lack of comprehensive sampling in each of the European countries. Therefore, as impressive as it is, the number of contaminated and presumptive contamination sites shown on our map is greatly underestimated.

This map would not have been possible without the major contributions of our colleagues Sarah Pilz (Germany), Catharina Felke (NDR, Germany), Nadja Tausche (*Süddeutsche Zeitung*, Germany), Gianluca Liva (*Radar Magazine*, Italy), Leana Hosea and Rachel Salvidge (Watershed Investigations, UK).

Our full methodology can be found here.

- **Open and reusable data**

The dataset we have compiled to develop the map is downloadable in two formats:

1. A simple dataset, gathering all the data shown on the map;
2. A more detailed dataset, including also the samples with values detected below 10 ng/l, for the experts who wish to explore and reuse them.



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## Our revelations on PFAS 'forever chemicals'

- Revealed: The massive contamination of Europe by PFAS 'forever chemicals'
- Map: Explore the map of Europe's PFAS contamination
- The Forever Pollution Project: How *Le Monde* traced PFAS chemicals across Europe
- What are the health effects of PFAS?
- The key public health issue of defining an 'acceptable' threshold

**See more**

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design

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