

PFAS in the Netherlands: Policy, Regulation, and Lessons Learned

Dr. Koen Zuurbier

PWN Drinking Water Supply, The Netherlands

Europe decided in 2000…

Art. 7.3 – Water Framework Directive

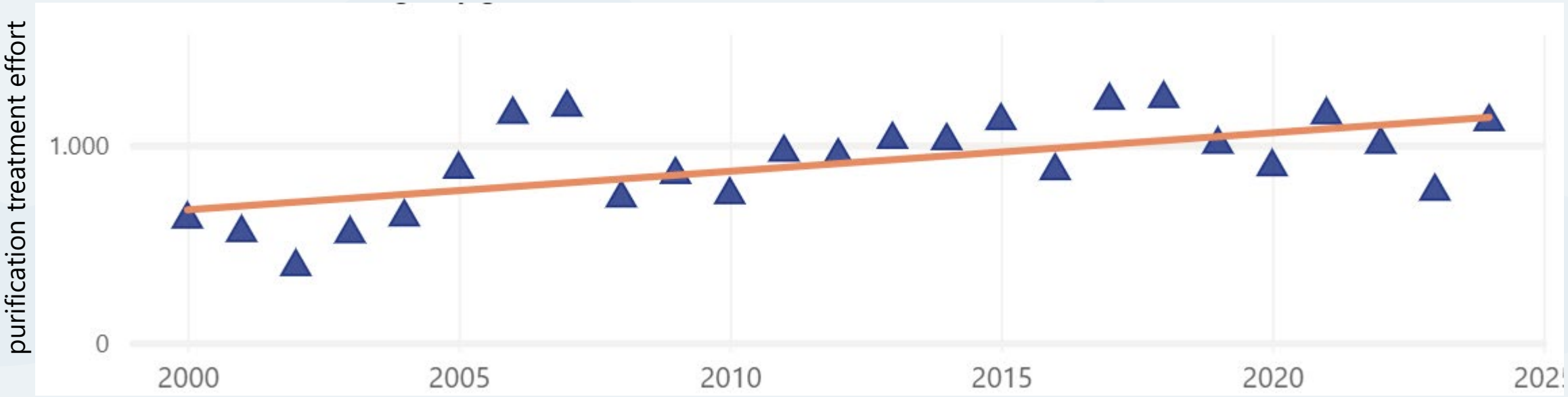
*'Member States shall ensure the necessary protection for the bodies of water identified with the aim of **avoiding deterioration** in their quality in order **to reduce the level of purification** treatment required in the production of drinking water.' **

**Natural treatment should be sufficient.*

Example: River Rhine (treatment effort)

Lobith (RIWA dashboard)





www.riwa-rijn.org/data-dashboard/
Pronk et al, 2021

PFAS: a European problem

KWR 2023.055| December 2023

PFAS in Rhine and Meuse branches used for Dutch drinking water supply

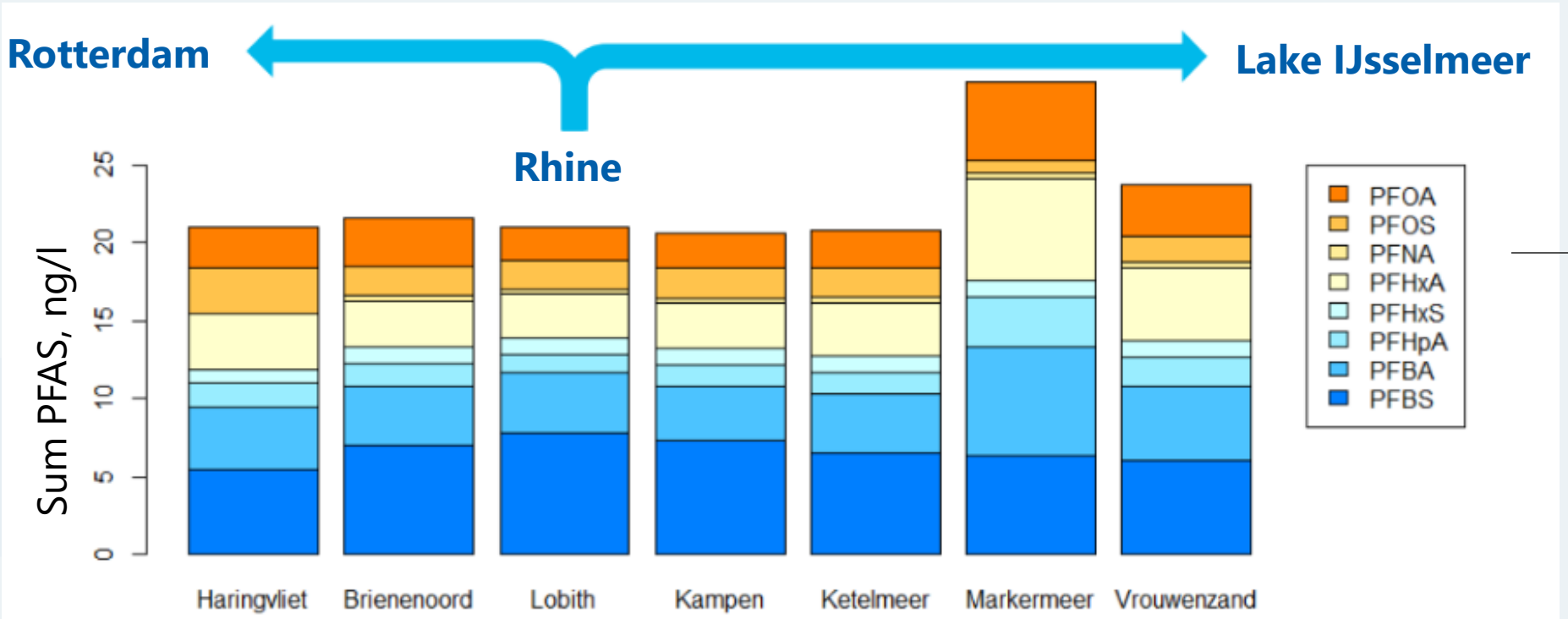
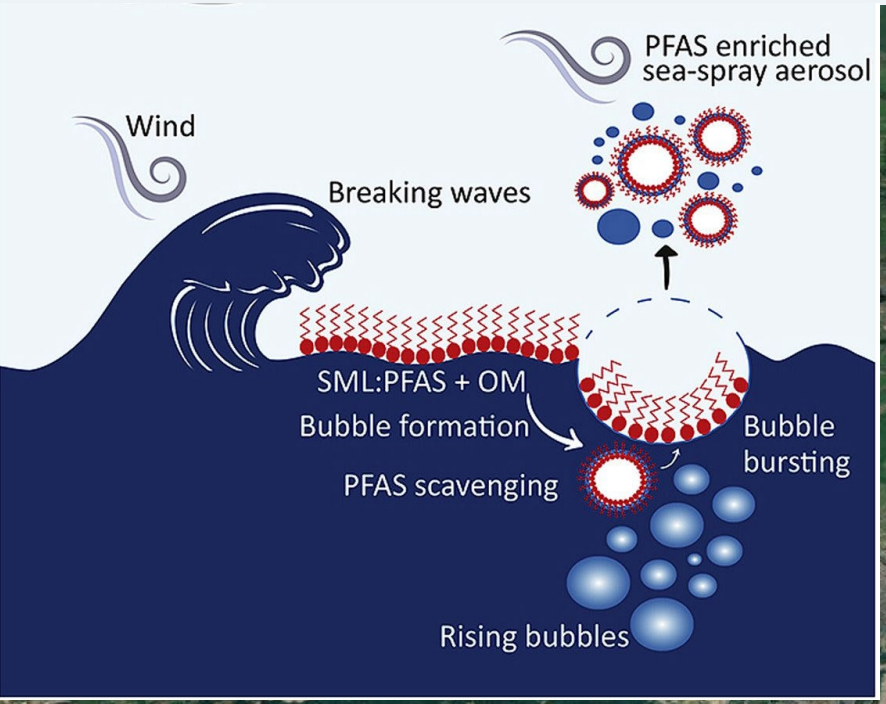


Figure 5. Median concentrations (ng/l) over 2019-2020 per location for PFAS that are reported in all these locations in the Rhine. Data under RL was set to zero. At location Haringvliet, the median of data on PFNA was <RL. Blue arrows indicate the direction of the flow from Lobith.

→ **0,00000002 g/l**

PFAS: a global problem…



Rhine

Managed aquifer recharge sites

Amsterdam

Ocean spray emits more PFAS than industrial polluters, study finds

Research into release of 'forever chemicals' raises concerns about contamination and human exposure along world's coastlines

Rhine
Meuse
North Sea

Drinking water complies with legislation, yet public concern is increasing

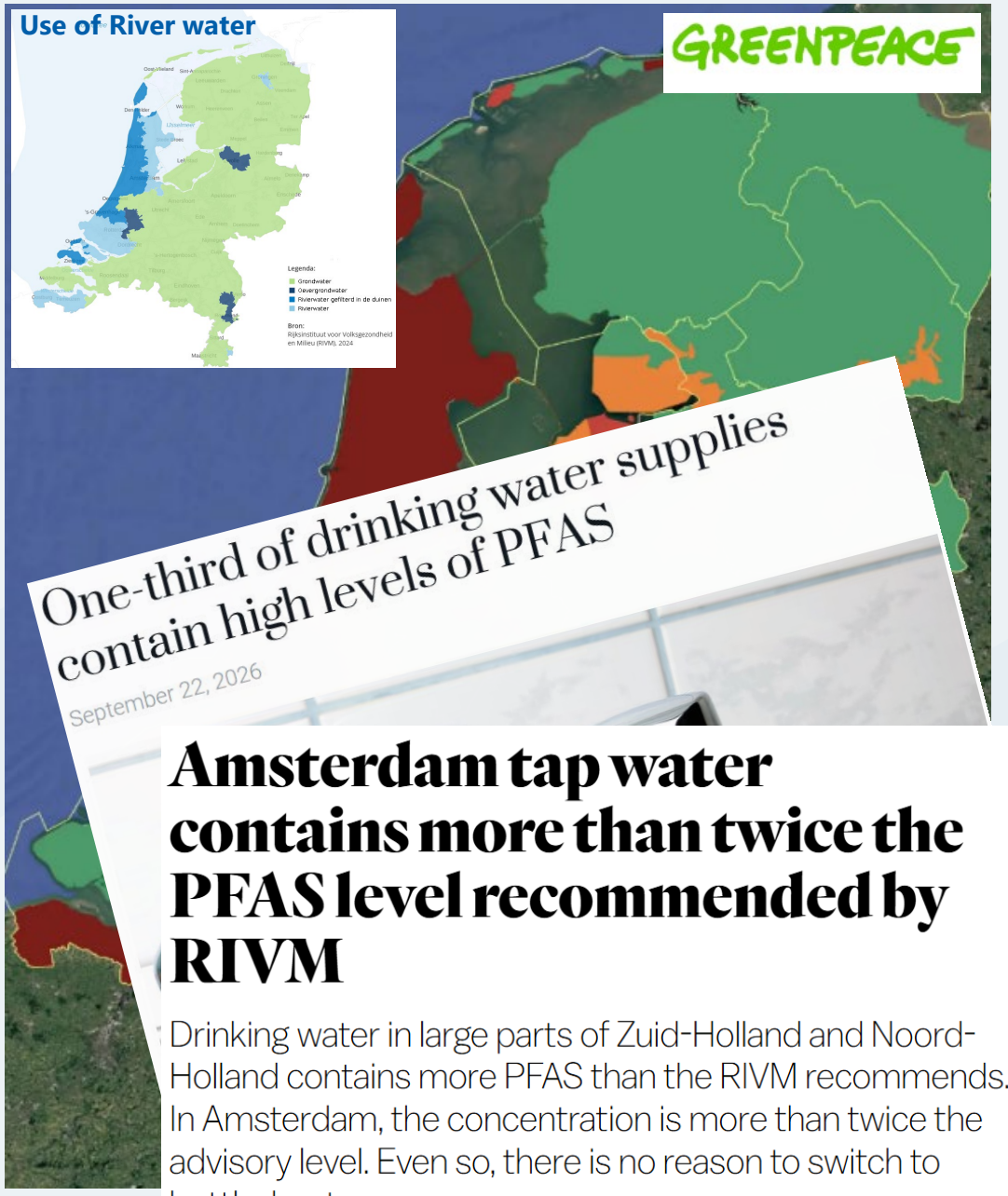
- All drinking water in NL < European water quality limit of 100 ng/l (Sum PFAS, 2020)

- Advice RIVM, 2021: **max. 4,4 ng/l** (in PFOA-equivalents)
  - 20% EFSA (2020) ADI via drinking water
  - No legal status

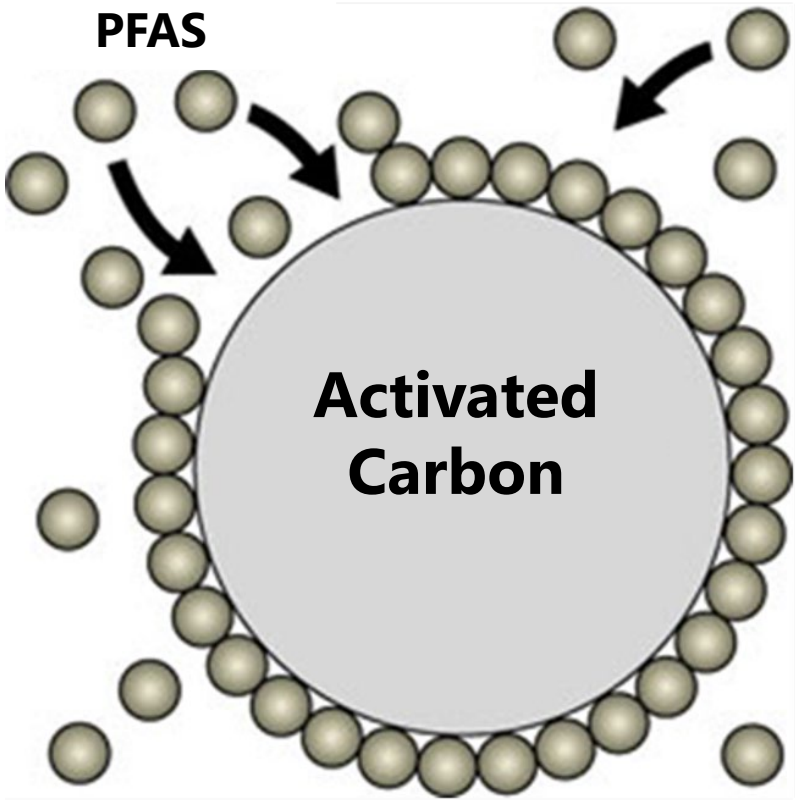
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- Data PFAS in drinking water = publically available
  - Transparancy as demanded in EU-DW-guideline

- **Can we maintain public trust?**



What now?



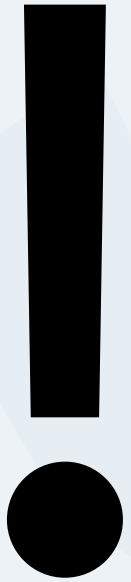


Reverse osmosis (RO), PWN, Heemskerk

Feasibility, desirability of intensive treatment?

Removing PFAS end-of-pipe

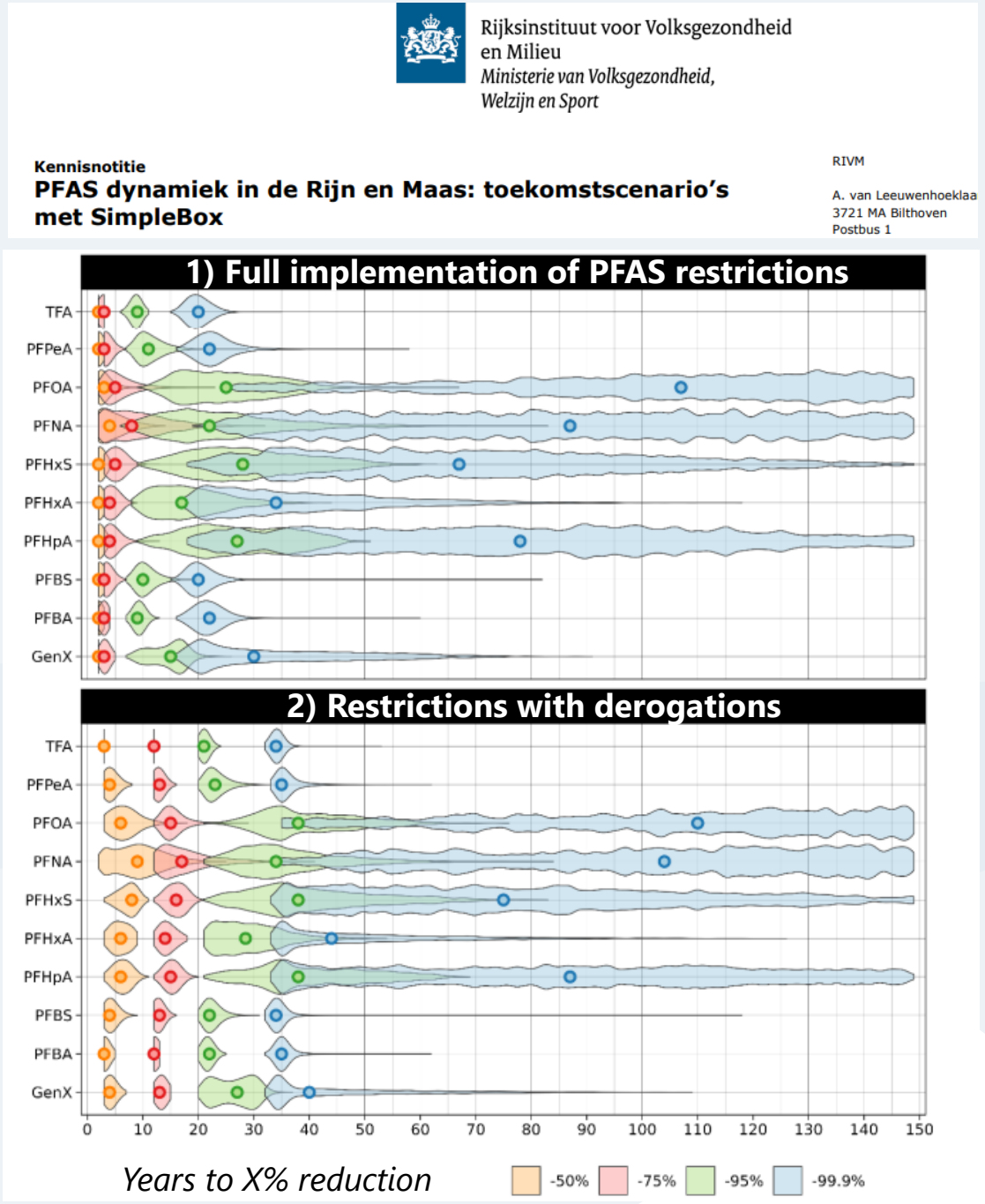
- Only the most intensive treatment is sufficient
  - Currently not in place, even in NL
- Extreme investments in complex, energy-intensive infrastructure
  - NL: multipe billions €
  - Drinking water consumers pay this bill…
  - Loss of resilience
  - Takes decades to implement…
- Life cycle analysis shows a very large environmental footprint
  - Energy (4x), materials, chemicals, waste streams, water loss (20%), …
- **Protects drinking water consumers, but not our food and nature…**



Restrictions work!

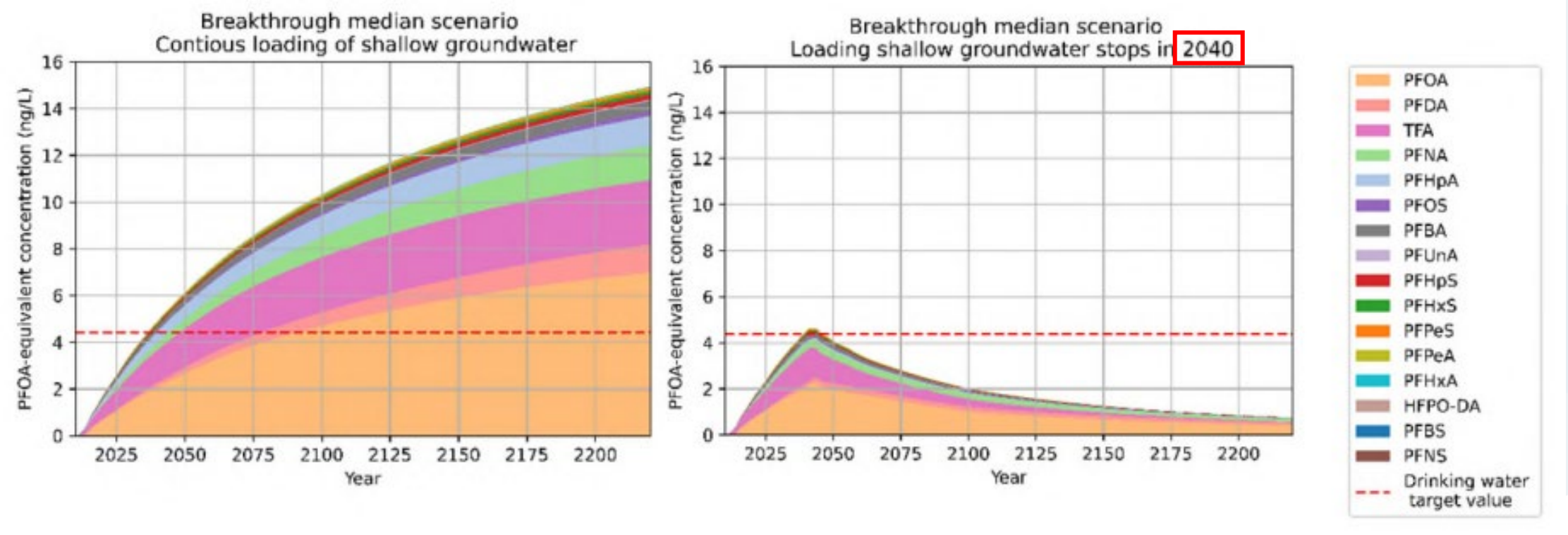
The Rhine proves it

- Control at source, a real succes story
  - Rhine: open sewage?
  - Heavy metals, phosphates, persistent pesticides
  - PFOS…
- PFAS in Rhine
  - 95% reduction within decades
  - <<4,4 ng/l PEQ/l (RIVM)
  - Short-chain vs. long-chain PFAS



Impact on groundwater

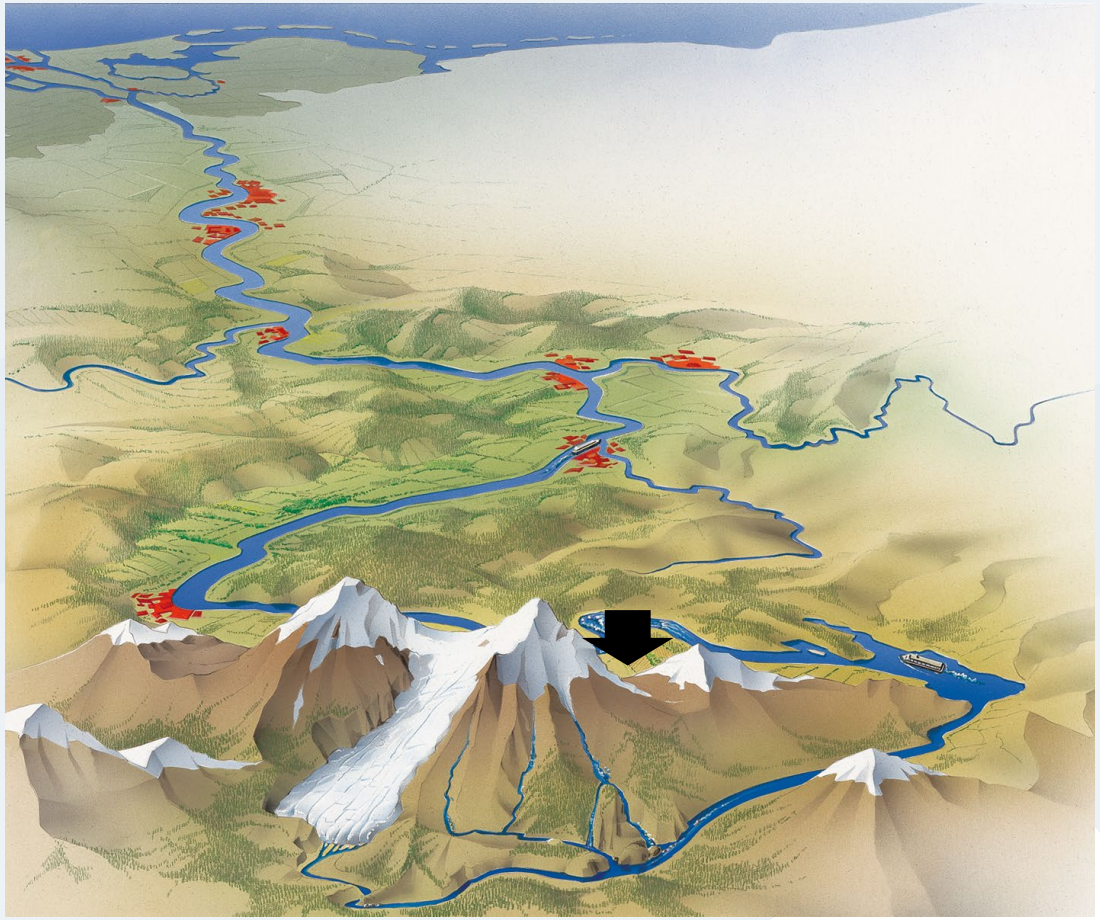
Emission reduction is crucial…



KWR, 2024, BTO 2024.064 - Quick Scan impact of diffuse PFAS contamination on groundwater extraction sites

Why European regulation is logical & necessary

- Rivers cross borders
- Industry operates across borders
- A level playing field needs common rules



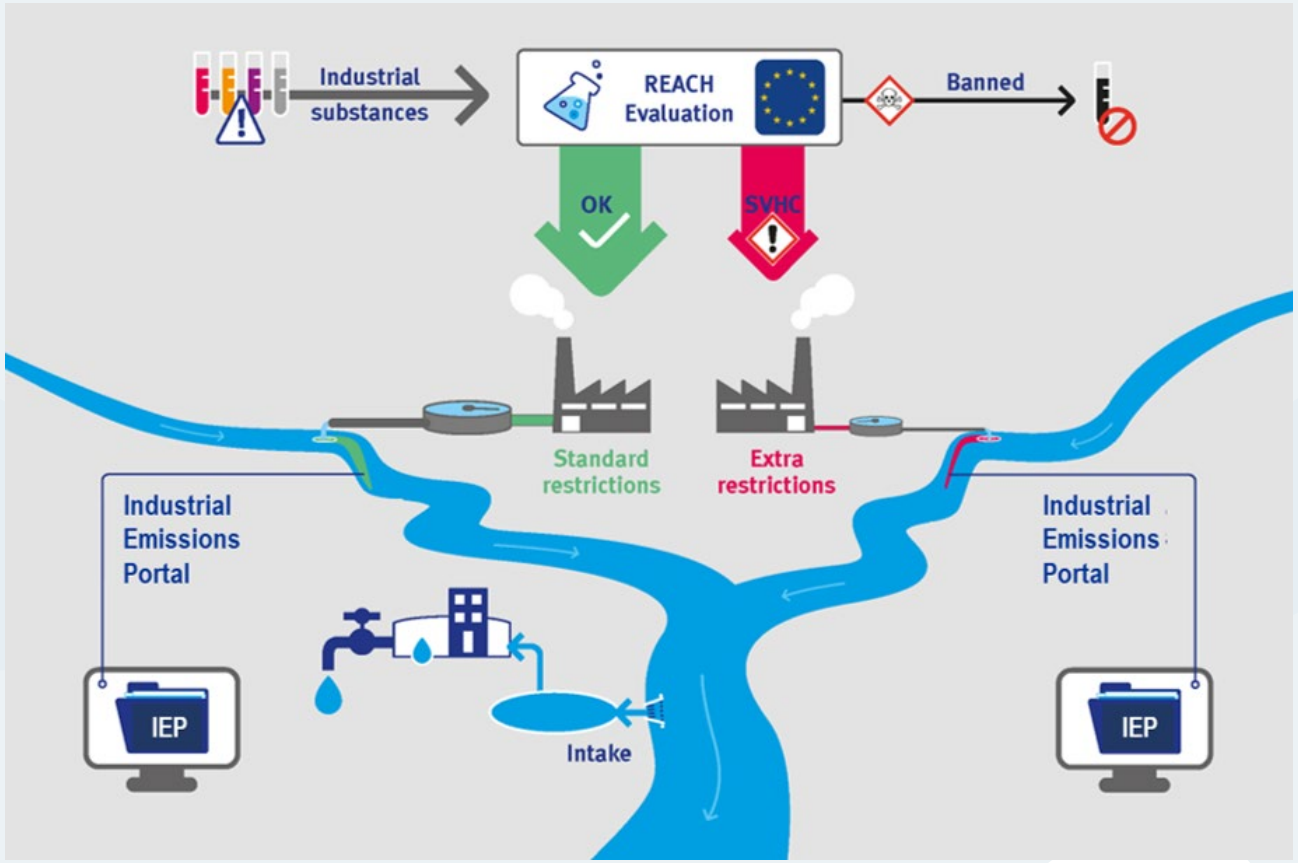
A European PFAS-ban

The Netherlands, Germany, Denmark, Sweden, Norway

Current REACH process

- Significantly **reduce emissions** into the environment
- Necessity of **rapidly** introducing effective measures to achieve this
- Lobby from the industry

- Next step: non-paper by a coalition of members states
- **Without an ambitious restriction, future generations will pay for treatment instead of prevention**



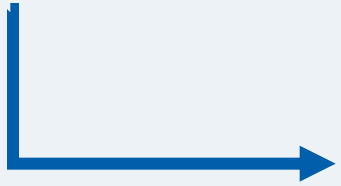
Central lessons from The Netherlands

- Preventing emissions is far more effective and affordable than removing contaminants after they enter the water cycle.
    - ***'Target the kilograms before they are ng/l'***
- Europe should not solve persistent chemicals with ever more treatment, but by preventing emissions before contamination becomes widespread.
    - ***'Europe First. But don't wait.'***
- Only by tackling pollution at its source can Europe ensure resilient and sustainable drinking water supplies, safe food, and nature for future generations.
    - ***'Protect the water source to protect everything downstream.'***

Europe decided in 2000…

Art. 7.3 – Water Framework Directive

'Member States shall ensure the necessary protection for the bodies of water identified with the aim of ***avoiding deterioration*** *in their quality in order* ***to reduce the level of purification*** *treatment required in the production of drinking water.'*



Ambitious PFAS restriction…

…and prevent the next widespread contaminant

Thank you for your attention



Hoofdkantoor
Rijksweg 501, 1991 AS Velserbroek
T 0900 406 07 00

Postadres
Postbus 2113, 1990 AC Velserbroek
www.pwn.nl