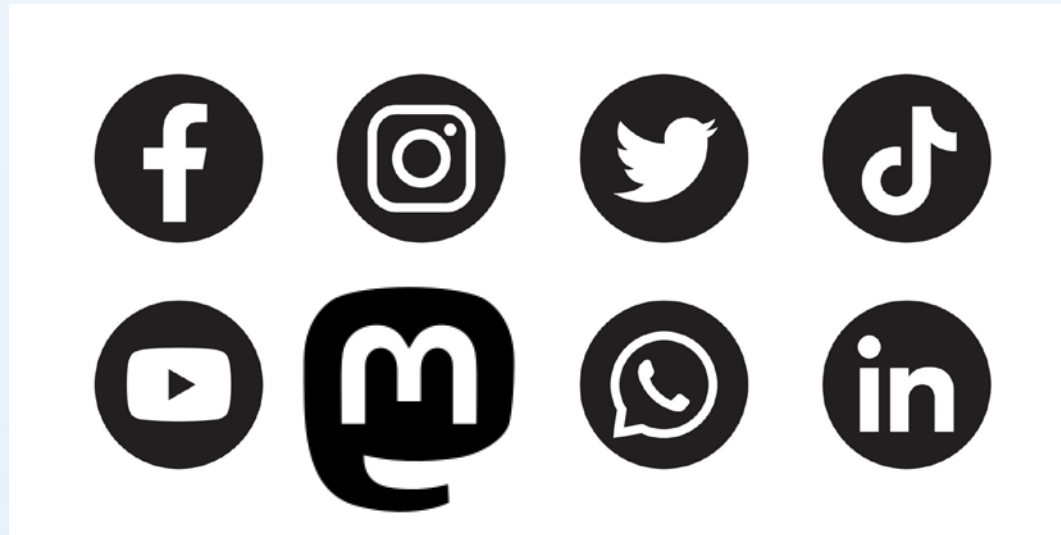




Welcome to the #ZeroPMworkshop



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036756.



Achieving Zero Pollution of Persistent and Mobile substances

Sarah Hale, Norwegian Geotechnical Institute, sarah.hale@ngi.no

Hans Peter Arp, Norwegian Geotechnical Institute,
hans.peter.arp@ngi.no



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036756.

In the media

Miljøgifter re

– Det er absolutt bekymri
Miljødirektoratet.



EVIGHETSKJEMIKALIER: Det finnes ingen
har funnet det i regnet over hele verden.

FOTO: GEIR OLSEN / NTB

DAGENS NYHETER.

Nyheter Sverige Världen Ekonomi Kultur Sport

SVERIGE

Forskare har upptäckt ett att förstöra PFAS

PUBLICERAD 2022-08-28



Grafik: Johan Andersson Foto: Anette Nantell, Janerik Henriksson, Henrik Isaksson, Kjell-Arne Larsson, Jens Kalaene, Maj
Wiklund, Fredrik Sandberg/TT, Alamy

Det har liknats vid vår tids DDT-skandal, men PFAS i

Concern over toxic chemicals in tap water

19 March 2022



PA MEDIA

By Leana Hosea and Rachel Salvidge
BBC News

Scientists are concerned that the allowable levels of toxic PFAS - known as
"forever chemicals" - in drinking water are too high.

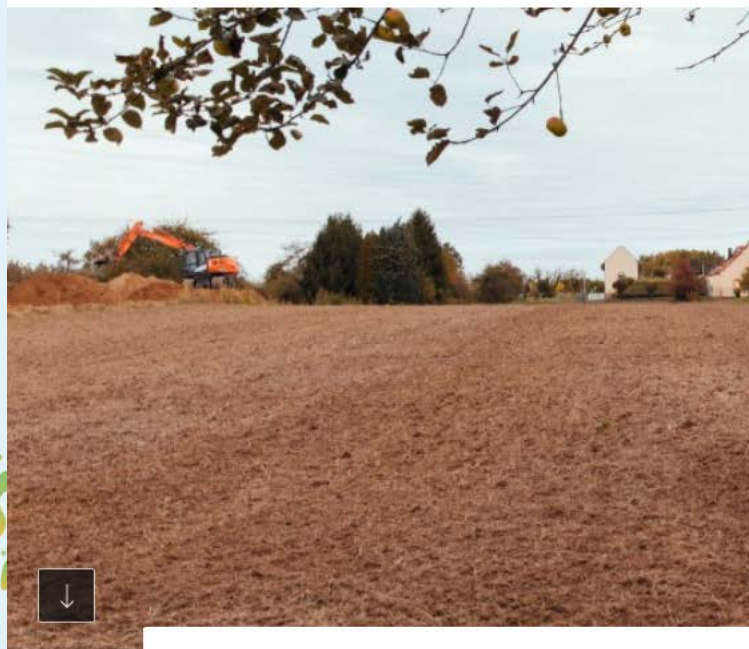
A BBC study found PFAS levels exceeded European safety levels in almost half
of the samples taken. However, none exceeded the current safety level in
England and Wales.

In the media

RÜCKSTÄNDE UND CHEMIKALIEN

Boden vergiftet, Sanier

VON RÜDIGER SOLDT - AKTUALISIERT AM 14.04.2022 - 05



Vor zwanzig Jahren gelangte giftiges PFC aus „Ewigkeitschemikalie“, Sanierung ausgeschl sind bis heute mit den Schäden beschäftigt.

deVolkskrant

ANALYSE

Snel maatregelen om hoeveelheid pfas in Nederlands drinkwater te verminderen

De hoeveelheid pfas in het drinkwater moet omla adviseert het RIVM in een nieuw [rapport](#). Minister Harbers (Infrastructuur en Waterstaat) gaat vergunningen per direct aanpassen om het aantal lozingen van pfas te verminderen. Wat is er precies de hand?

Tonie Mudde 19 oktober 2022, 18:42



AP

U.S. News World News Politics Sports Entertainment Business Technology Health Science Oddities Lifestyle

California sues over 'forever chemicals' that taint water

November 11, 2022



Click to copy

SAN FRANCISCO (AP) — A lawsuit filed Thursday by the state of California accuses 3M, Dupont and 16 smaller companies of covering up the harm caused to the environment and the public from chemicals manufactured by the firms that have over decades found their way into waterways and human bloodstreams.

Do you know where they are found?



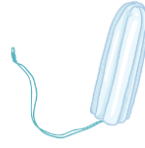
VITAMIN
SUPPLEMENT



TOOTHPASTE



PLASTIC TOYS



PERIOD
PRODUCTS



SKI/SNOWBOARD
WAX



MOP



HOUSEHOLD
CLEANER



RECYCLED
PLASTICS



MOBILE PHONE



METAL
CUTLERY



FLATSCREEN TV



NAPPIES



FFP2/KN95
FACE MASK



NON-STICK PAN



MAKE UP



REFRIDGERATOR



RAINFOOF
JACKET



EYE DROPS

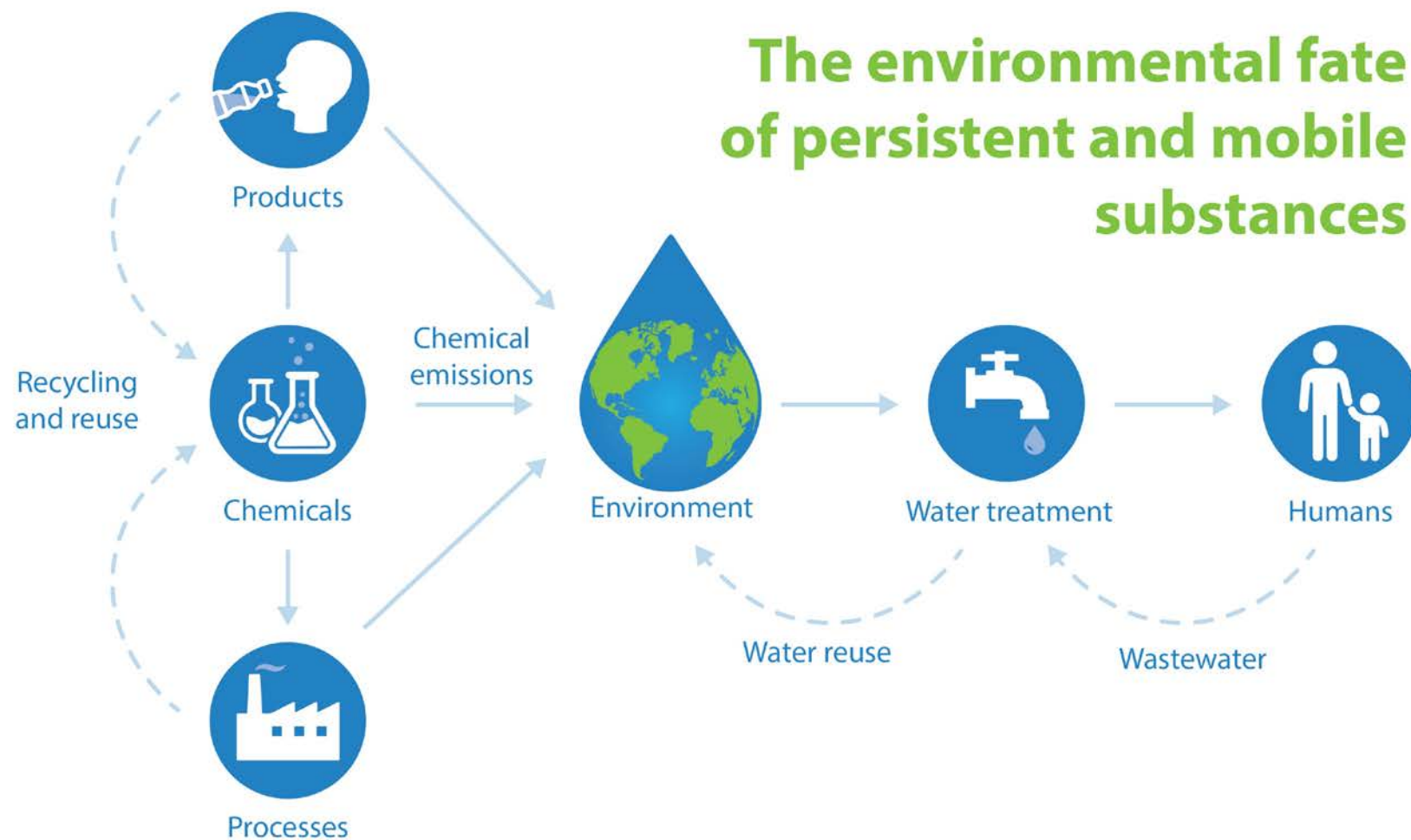


CAR
SHAMPOO



FIRE
EXTINGUISHER

Why do we have this problem



The importance of clean water

EUROPE'S WATER IN FIGURES

507 MILLION people are connected to a drinking water network across Europe*.



We consume around 33.2 billion m³ of drinking water per year

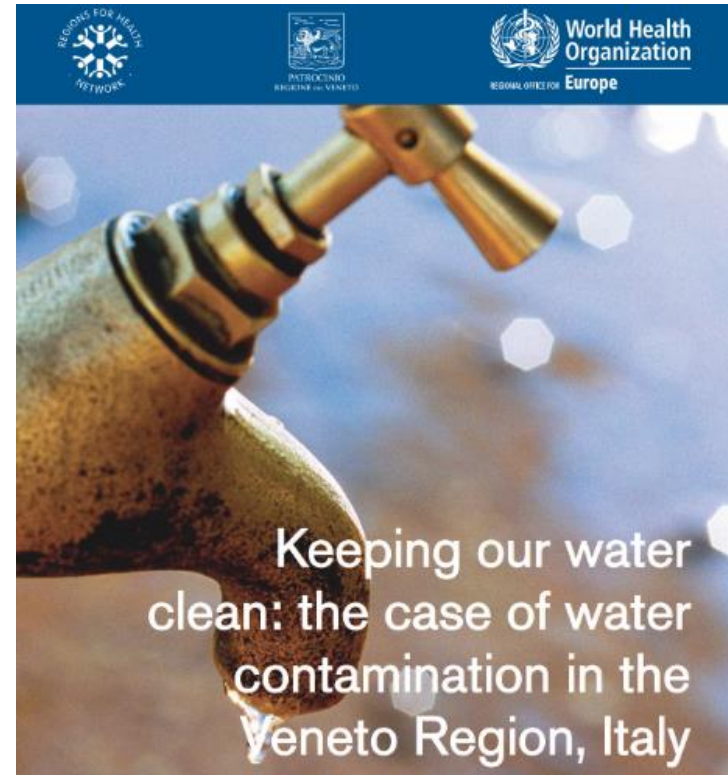


58%

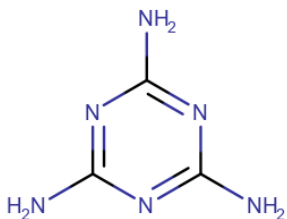
41%

Sources

Groundwater is the most important drinking water resource for EurEau members, followed by surface water. 1% of Europe's water comes from desalination.

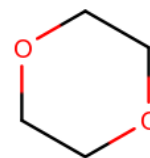


A closer look.....



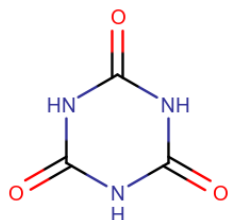
Melamine

In drinking water up to 2 µg/L
Nephrotoxic in combination, especially in combination *with cyanuric acid*



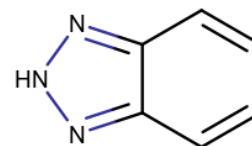
1,4-dioxane

In drinking water up to 0.8 µg/L
Carcinogenic 1b



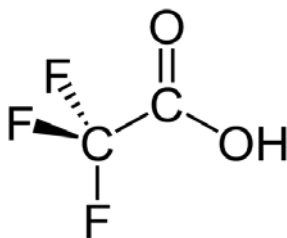
Cyanuric acid

In drinking water up to 0.12 µg/L
Co-occurs with melamine



Benzotriazole

In drinking water up to 0.2 µg/L
Danish limit 0.02 µg/L
Suspected endocrine disruptor



Trifluoroacetic acid

Tap water up to 20 µg/L
River water up to 120 µg/L

Hale et al. Environ Sci Eur 34, 22 (2022)
Duan et al. (2020) Environ Int 134:105295
Kolkman et al. (2021) ACS ES&T Water, 1(4), 928-937
Arp et al. UBA report in prep (2022)
Schriks (2010). Wat. Res. 44, 461-476
<https://www2.mst.dk/Udgiv/publications/2013/12/978-87-93026-81-0.pdf> limits

Cost of clean up

- Ca. 1 €/m³ and 1 kWh/m³ to use reverse osmosis for drinking water
- Ca. 200 billion m³/year industrial waste water in Europe (EEA)
- Ca. 38 billion m³/year drinking water in Europe (EEA)



Ca. 238 billion € /year
Ca. 38 billion € /year

Setting the agenda in research

Comment



One of five water-reuse plants in Singapore, which together supply about 40% of the nation's water for drinking and other uses.

Drink more recycled wastewater

Cecilia Tortajada and Pierre van Rensburg

Regulatory Developments



Chemicals strategy for sustainability

- ZeroPM is rooted in this document

CHEMICAL POLLUTION IN NATURAL ENVIRONMENT

The Commission will:

- propose new hazard classes and criteria in the CLP Regulation to fully address **environmental toxicity, persistency, mobility and bioaccumulation**;
- introduce **endocrine disruptors, persistent, mobile and toxic and very persistent and very mobile substances** as categories of substances of very high concern;

PFAS⁶²

The Commission will:

- ban **all PFAS** as a group in **fire-fighting foams** as well as in **other uses**, allowing their use only where they are essential for society;
- address PFAS with a **group approach**, under relevant legislation on water, sustainable products, food, industrial emissions, and waste;
- address PFAS **concerns on a global scale** through the relevant international fora⁶³ and in bilateral policy dialogues with third countries;
- establish an EU-wide approach and provide financial support under research and innovation programmes to identify and develop **innovative methodologies for remediating PFAS contamination** in the environment and in products;
- provide research and innovation funding for safe **innovations to substitute PFAS** under Horizon Europe.

- define **criteria for essential uses**⁴⁴ to ensure that the most harmful chemicals are only allowed if their use is necessary for health, safety or is critical for the functioning of society and if there are no alternatives that are acceptable from the standpoint of environment and health. These criteria will guide the application of essential uses in all relevant EU legislation for both generic and specific risk assessments;

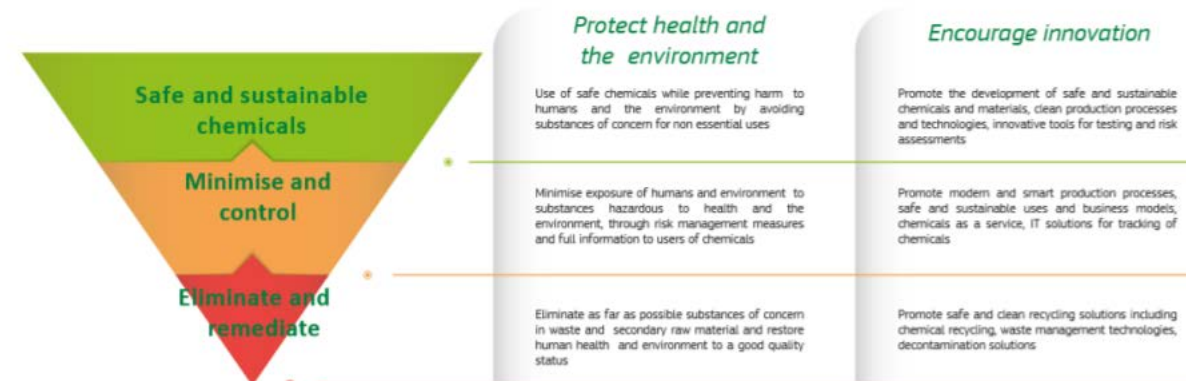
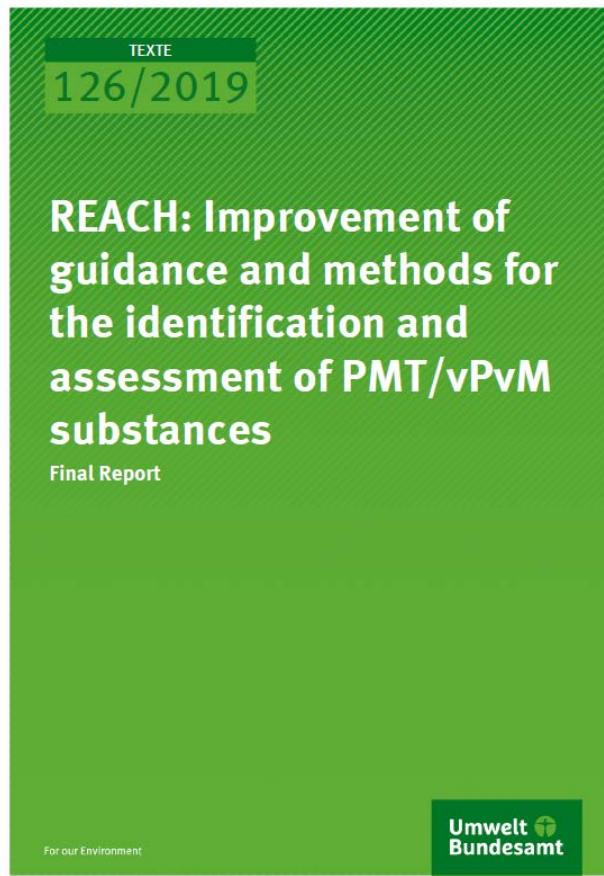


Figure: The toxic-free hierarchy – a new hierarchy in chemicals management

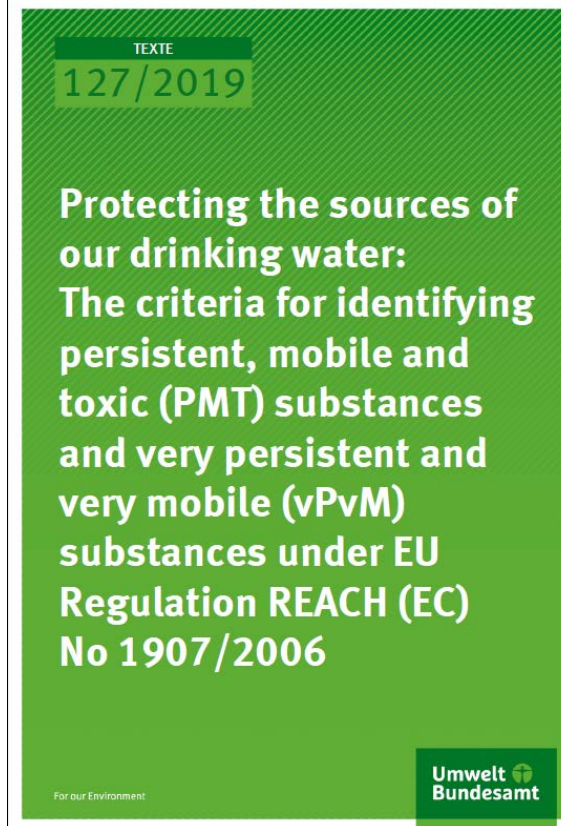
PMT/vPvM Hazard Definition & Assessment



**Scientific
Background
Arp & Hale (2019)**

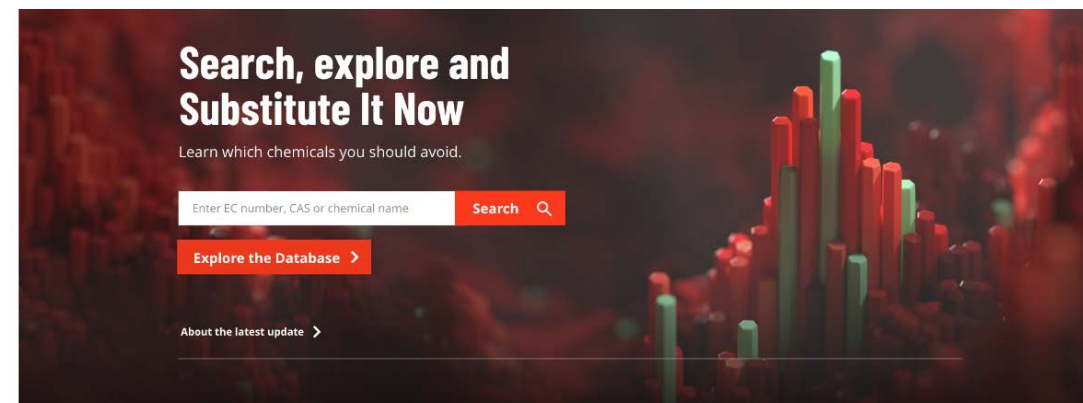
PMT:
persistent,
mobile & toxic

vPvM:
very persistent,
very mobile



**Regulatory Criteria
Neumann & Schliebner
(2019)**

And now we go from



JANUARY 25, 2023

Big PFAS update to the SIN List – sign up for the webinar



To...



EUROPEAN COMMISSION

Brussels, 19.12.2022

COM(2022) 748 final

2022/0432(COD)

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

amending Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures

..added definitions and scientific and technical criteria to enable substances and mixtures that have endocrine disrupting ('ED'), persistent, bioaccumulative and toxic ('PBT'), very persistent and very bioaccumulative ('vPvB'), *persistent, mobile and toxic ('PMT'), or very persistent and very mobile ('vPvM')* properties to be *classified into established hazard classes*.

And..



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

RIVM Committed to health and sustainability

Home Topics About RIVM Publications International Contact

Home > PFAS > PFAS restriction proposal

PFAS restriction proposal

In January 2023, a proposal for a European ban on PFAS has been [submitted to ECHA](#). A ban in this context is also referred to as a restriction. The Netherlands worked on this proposal together with Denmark, Germany, Norway and Sweden.

The ultimate aim of the restriction proposal is a ban on the use of these substances to limit the risks to people and the environment. The proposal focuses on the entire group of PFAS substances in order to avoid one PFAS being replaced by another. Preparing a proposal is a long and intensive process.

The preparation and submission of the proposal were just the first step. We would be happy to keep you informed about the progress of the restriction dossier via this website.

Broad PFAS restriction: - text released by ECHA today!!



ChemSec
4,732 followers
49m •

#Sweden (as president of the EU Council) is ready to prioritise the REACH revision as soon as the initiative is presented, and the Council remains firm in its position to have an ambitious implementation of the chemicals strategy, says the Swedish Minister of Environment, [Romina Pourmokhtari](#), during a hearing in the Parliament's **#ENVI** committee.

To us it is obvious that there are no longer any relevant reasons to postpone **#REACH**. It's time for the Commission deliver!

Fast forward to 16:32:25 and watch it yourselves (in Swedish): https://lnkd.in/e_pKxKsV



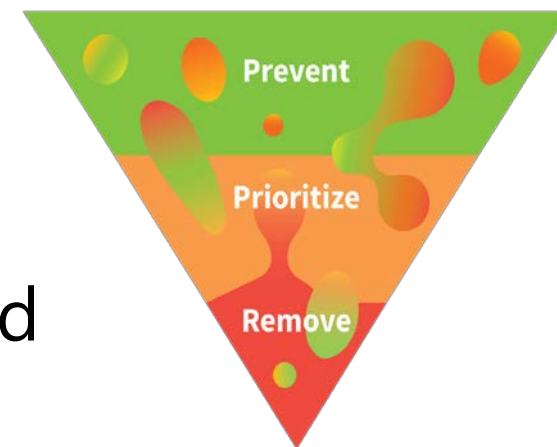
Committee on Environment, Public Health and
Food Safety | European Parliament Multimedia...

multimedia.europarl.europa.eu • 1 min read

Updating of REACH a priority by the Swedish presidency of the EU council

Zero pollution of persistent and mobile substances

- ZeroPM will interlink and synergize prevention, prioritization and removal strategies to protect the environment and human health from persistent and mobile substances
- Extensive stakeholder engagement
- ZeroPM will be the pathfinding project enabling the ambitions of the Chemical Strategy to become an on-the-ground reality, supporting the movement towards a zero pollution, toxic-free environment.



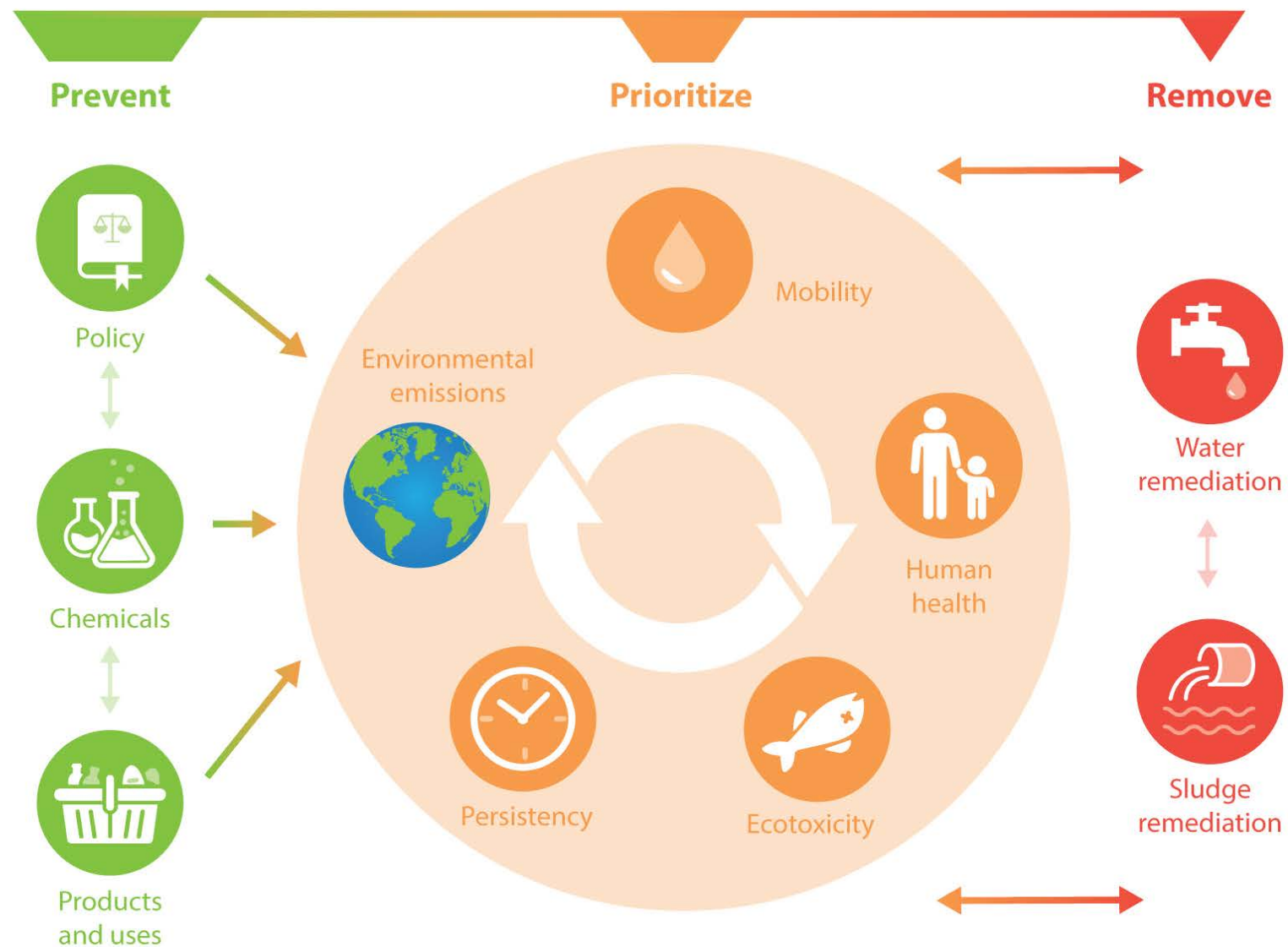
PREVENTING regrettable substitution for prioritized persistent and mobile substances by assessing hazards, sustainability and removal of potential alternatives.

ZEROPM'S WORK PACKAGES

Alternatives Assessment will provide safer alternatives to non-essential uses of PM substances.

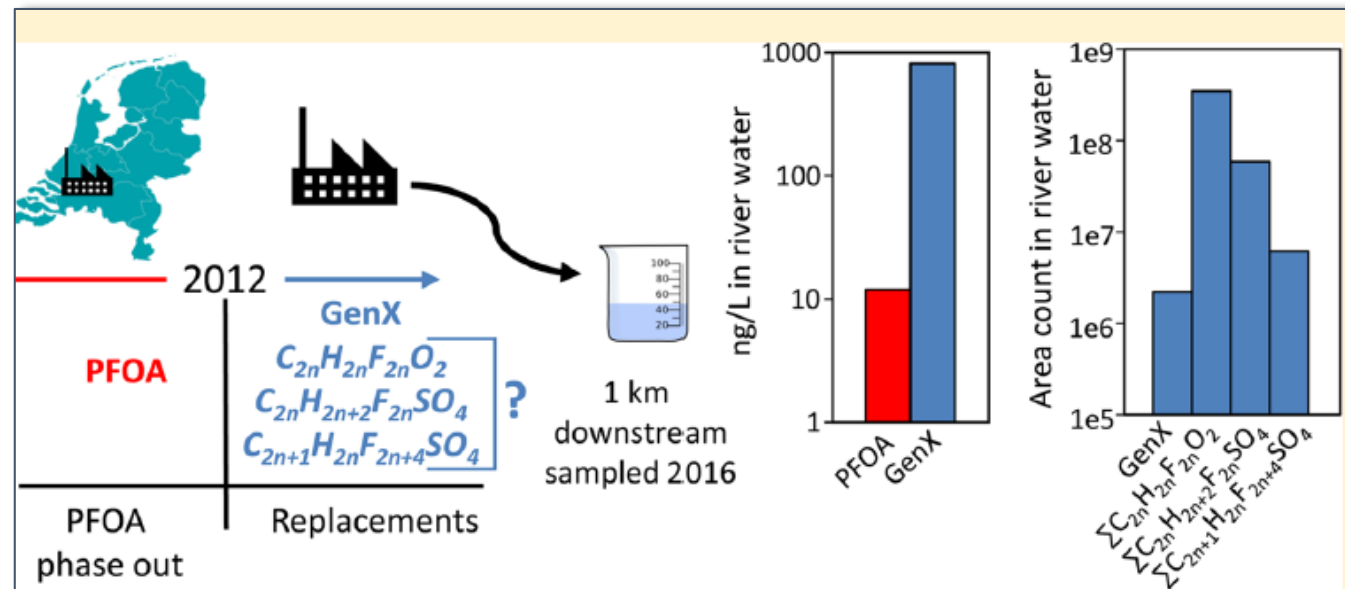
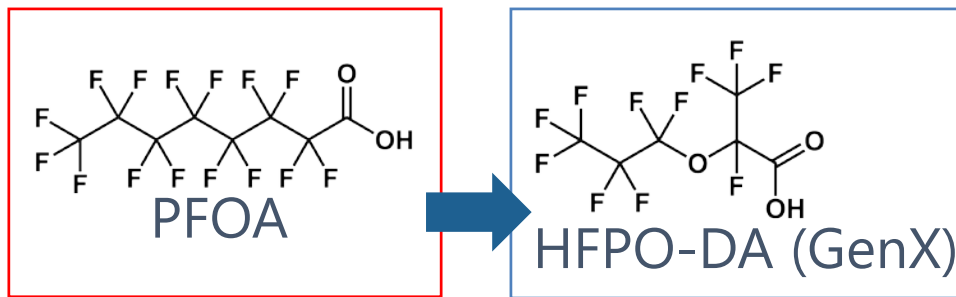
Policy will stimulate and support policy changes to more effectively tackle PM substances.

Market Transition will catalyse a shift away from harmful PM substances.



Prevention

- Scientific, policy and market tools supporting essential use and mitigation of prioritized PM substances, resulting in substitution to safe and sustainable alternatives
- Avoid regrettable substitution



Scientific tools: alternatives assessment

	P	B	M	T				T _{eco}		Transformation Products	Uncertainty
				C	Mut	R	EDC	Aqua	Terr.		
USEPA CTSA	✗	✓	✗	✓	✓	✓	✗	✓	✗	✓	✓
UNEP POP General Guidance on Alternatives	✓	✓	✗	✓	✓	✓	✓	✗	✗	✗	✗
BizNGO protocol including GreenScreen®	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	✓
NAS guideline	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
European Commission DGE	✓	✓	✗	✓	✓	✓	✗	✓	✗	✗	✓
Zheng et al. (2020,2021)	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓

Zheng et al. *Environmental science & technology* 55 (2020): 1088-1098.

Policy tools: proactive and upstream



EUROPEAN COMMISSION

Brussels, 19.12.2022

COM(2022) 748 final

2022/0432(COD)

Proposal for a

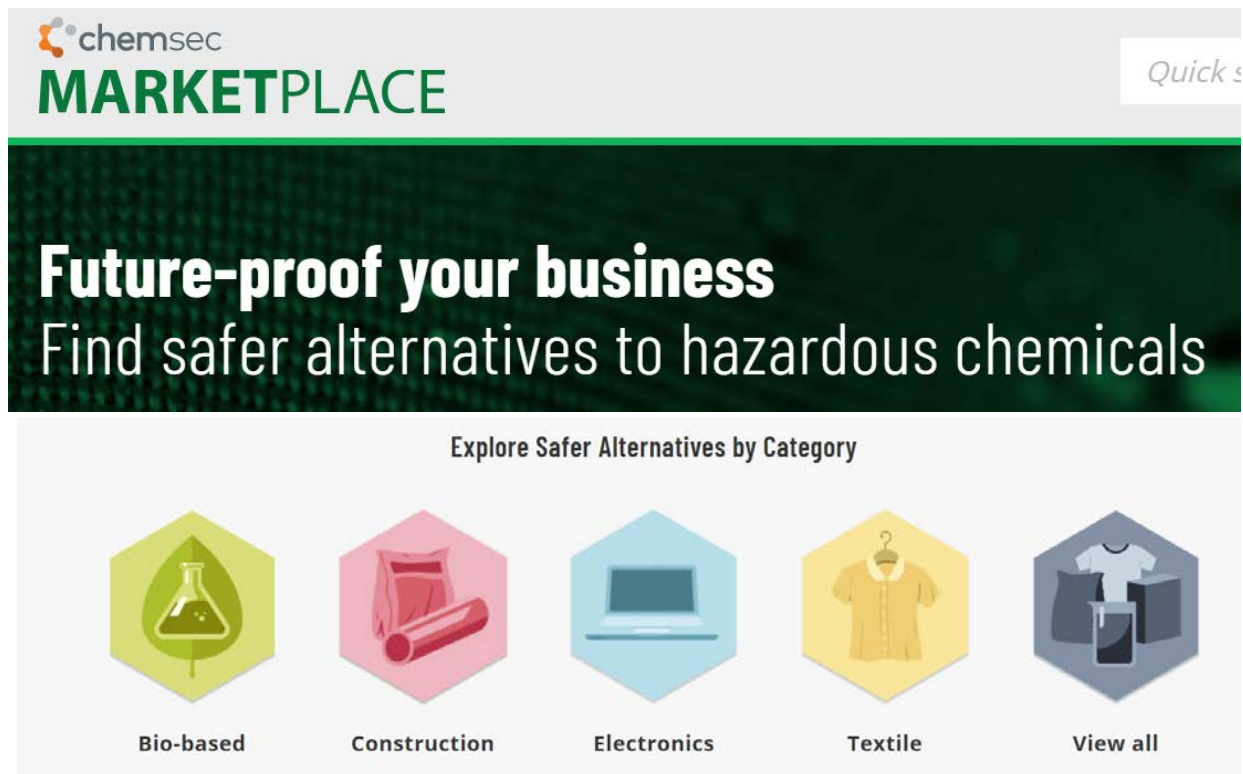
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

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Market tools: safe, non-toxic chemicals

- Expand Green chemistry
- Don't use or emit harmful persistent and mobile substances, but replace them



The screenshot shows the chemsec MARKETPLACE website. At the top left is the logo with the text "chemsec" and "MARKETPLACE" in green. At the top right is a "Quick start" button. Below the header is a dark green banner with the text "Future-proof your business" and "Find safer alternatives to hazardous chemicals". Underneath the banner is a section titled "Explore Safer Alternatives by Category" which contains five hexagonal icons with labels: "Bio-based" (flask icon), "Construction" (bags and pipe icon), "Electronics" (laptop icon), "Textile" (jacket icon), and "View all" (clothing icon).

chemsec
MARKETPLACE

Quick start

Future-proof your business
Find safer alternatives to hazardous chemicals

Explore Safer Alternatives by Category

Bio-based Construction Electronics Textile View all

Market tools: stimulate change

Understand stakeholders

- Transparent supply chains
- Tailor information to bring smarter consumer choices
- Drive public opinion towards safer alternatives

Highlight the financial incentives

- Make the case that consumers want safe products

Companies want transparency regarding the chemicals in their supply chain to keep products safe and consumers happy



APRIL 20, 2022

ChemSec and seven companies: We want to know which chemicals are used in the supply chain

Goal of the #ZeroPMworkshop on Prevention

LET'S DISCUSS
Zero Pollution of Persistent and Mobile Substances through

Alternatives Assessment
Environmental Psychology
Sustainability Assessment

Policy Action

\ Chemicals Strategy for Sustainability

Regulatory Guidelines

Market Transition

Innovation

Green Chemistry

Financial Incentives

Diverse stakeholders present

Commonalities:

- preservation of freshwater ecosystems
- high quality drinking water, that is safe, cheap and abundant

Different perspectives:

- the best way to ensure safety from persistent and mobile substances, particularly through preventative solutions



Thank you and Enjoy!

- ZeroPMers for making today possible
- Press and media crew:



Tale Bryn Teigene



Jonas Laumann



Stig Hjerkin Haug



Liv Bjergene

- You for attending!

ZeroPM



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#ZeroPMworkshop



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