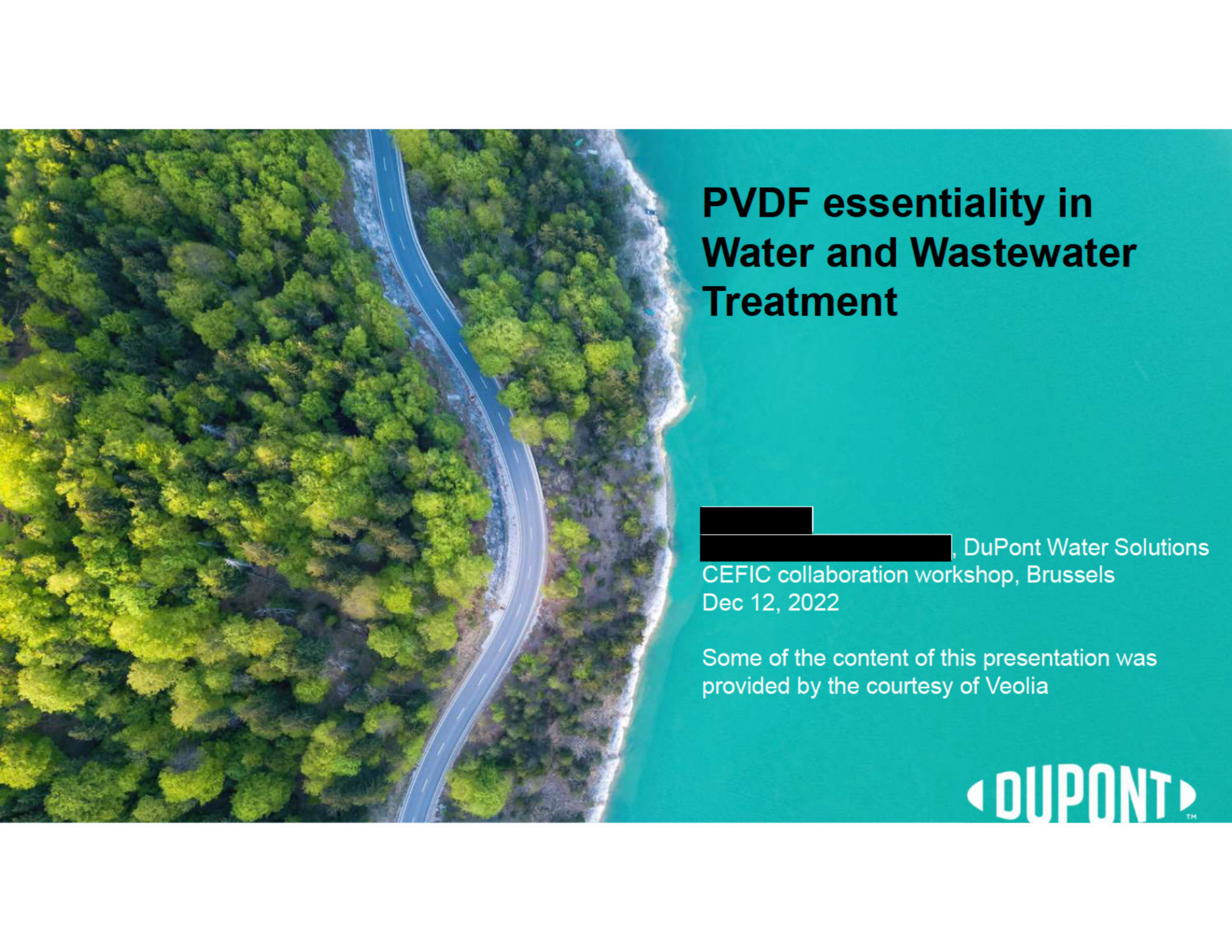




PVDF essentiality in Water and Wastewater Treatment

[REDACTED]
[REDACTED], DuPont Water Solutions
CEFIC collaboration workshop, Brussels
Dec 12, 2022

Some of the content of this presentation was
provided by the courtesy of Veolia





Having an expansive innovative mindset is essential to reaching our sustainability goals.

Because water is at the heart of the world's most critical needs, solving tomorrow's global water challenges unlocks the rest of the United Nations' 2030 Sustainable Development Goals.



Water Challenges Recently in the Headlines

A drought in Italy's risotto heartland is killing the rice

[Source: Washington Post](#)

The
Washington
Post

Spain Grapples With Water Shortages as Heat, Drought Continue

[Source: teleSUR HD](#)


teleSUR

Europe's water crisis is much worse than we thought

[National Geographic](#)

 NATIONAL
GEOGRAPHIC

B B C

Europe's drought the worst in 500 years - report

🕒 23 August

[Source: BBC](#)


REUTERS®

'Hitting rock bottom' - drought, heat drain Spanish reservoirs

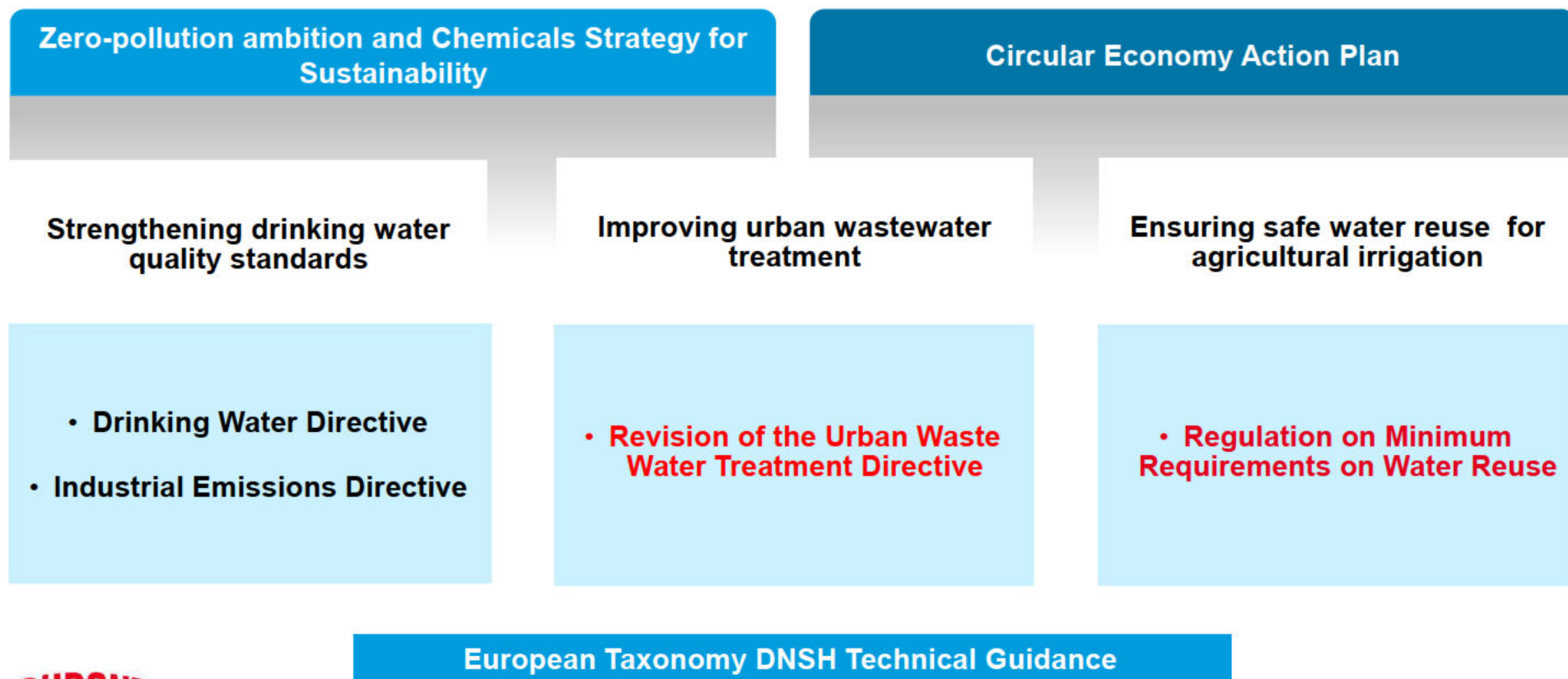
[Source: Reuters](#)



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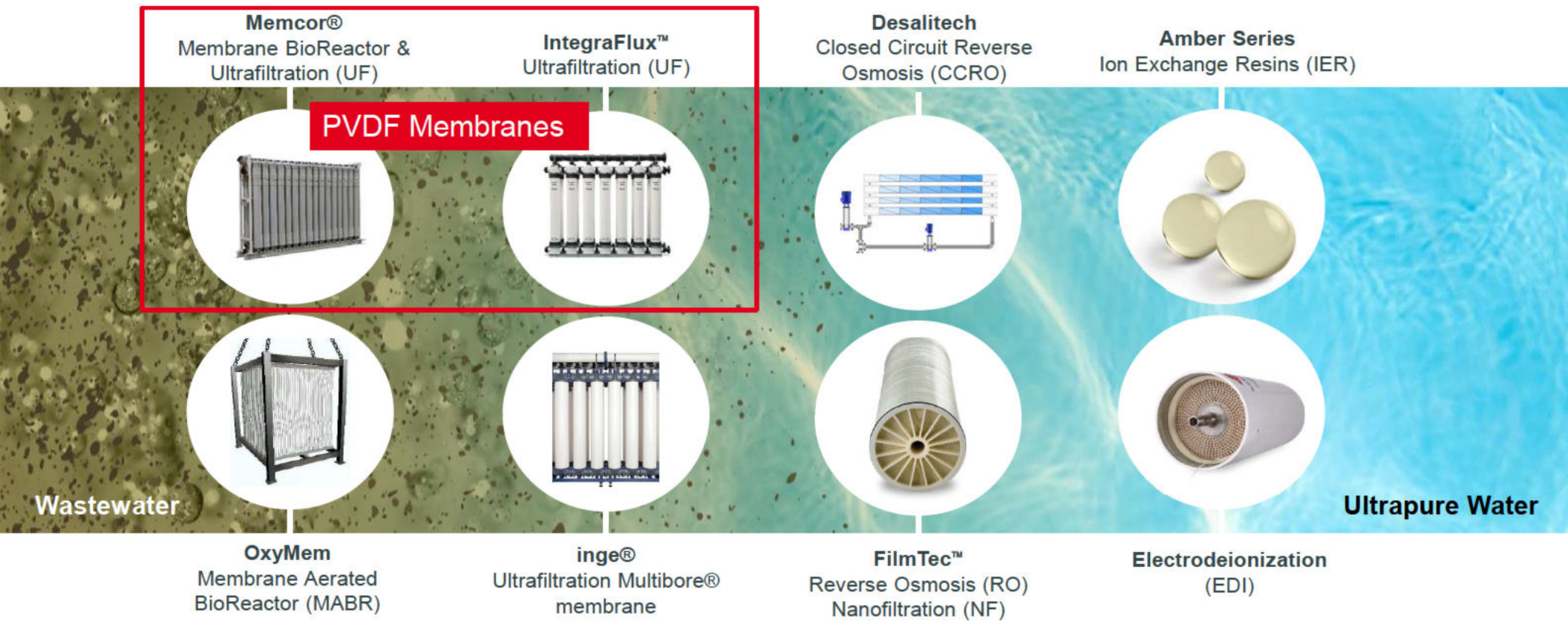
Water Solutions 

EU Policy Strategy on Water



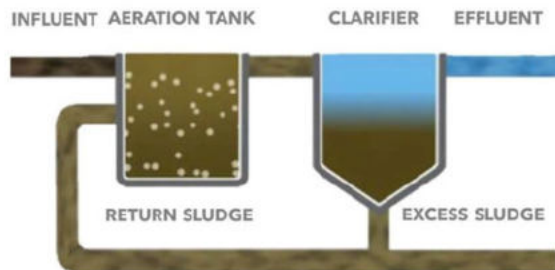
DuPont Water Solutions Portfolio

Leaders in RO, UF and IER Separation Technologies

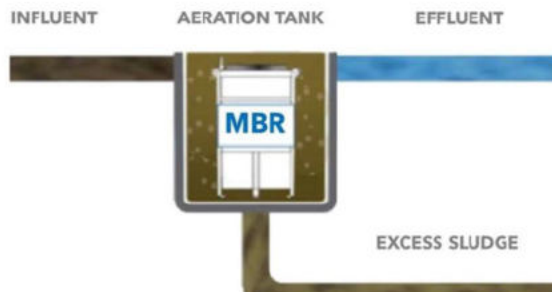


MBR Helps Turn Municipal Wastewater into Valuable Resource

FROM: Conventional secondary biological treatment



TO: Advanced Membrane Bioreactor (MBR)



MBR - Immediate benefits

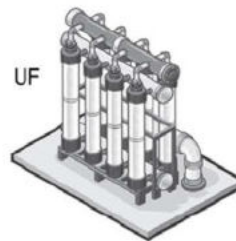
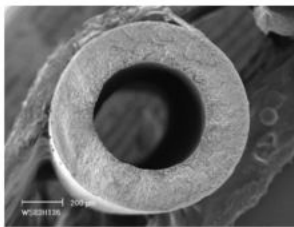
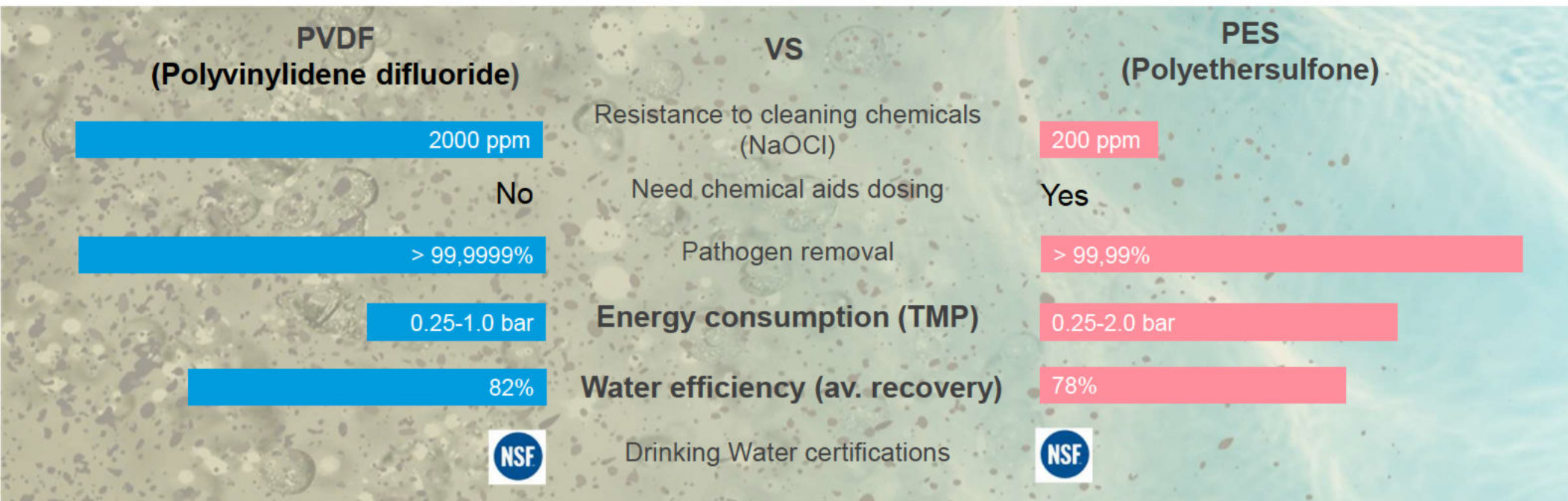
- ✓ Highly efficient C, N and P removal in small footprint
 - 25-50% reduced footprint (new systems).
 - Retrofit conventional systems
- ✓ Pathogen and sediment removal - Water suitable for indirect or direct reuse:
 - Agricultural irrigation or industrial cooling tower (*)
 - Only one step away to aquifer replenishment or other industrial uses (*)

PVDF MBR Enables High-effluent Quality for Water Reuse

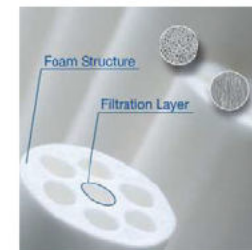
Parameter	Conventional effluents	NEW Water reuse standards	MBR Achieves	
Nitrogen	10 - 30 mg/L	< 6 mg/L	✓	MBR biological value
Phosphorus	1 - 30 mg/L	0.1 – 0.5 mg/L	✓	
BOD	25 - 50 mg/L	< 2 mg/L	✓	
TSS	25 - 50 mg/L	< 2 mg/L	✓	MBR filtration value
Turbidity	10 - 30 NTU	< 0.2 NTU	✓	
Coliforms	10 ⁵ - 10 ⁷ cfu/100 mL	< 2.2 #/100 mL	✓	
Virus / Protozoa	2-2.5 log	Regional	5-6 log	



PVDF as material of choice in UF for “hard-to-treat” waters



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Impact of Restricting PVDF membranes for Water Treatment

Employing alternative wastewater sources will be challenging in the absence of PVDF membranes, as the material enables:

Lower *land footprint* and consume less *energy*



Highest treatment *quality* and *pathogen* absolute barrier



Lower *chemical use* (both coagulation and cleaning chemicals)



Operational water treatment facilities currently using PVDF membranes will need to discontinue use, with double impact:

Environment



Harder to meet Municipal WW Directive N & P limits, as well as net energy consumption requirements under *DNSH Tech. Guidance*.

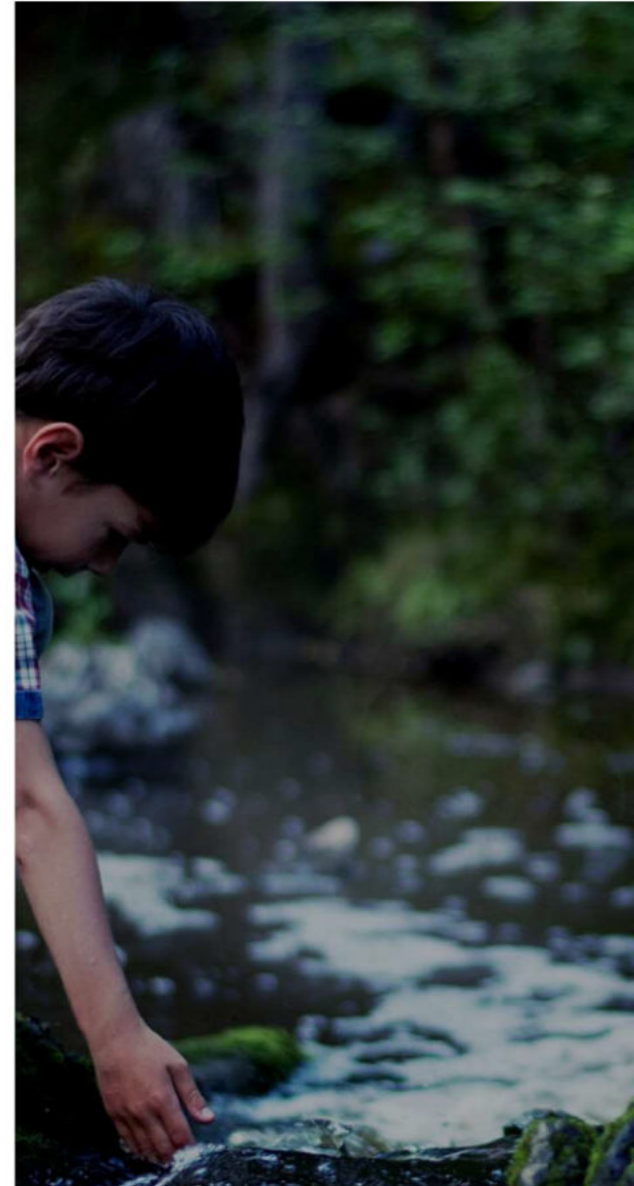
People



More than 25 million people in Europe and 140 million people in the World have their wastewater treated by MBR PVDF membranes



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