

Interreg
Baltic Sea Region



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SUSTAINABLE WATERS

EMPEREST

Overview of PFAS risk assessment methodology

Riga | 25.05.23
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interreg-baltic.eu/project/emperest



How do you start your day?



Perfluorinated and polyfluorinated alkyl substances (PFAS)

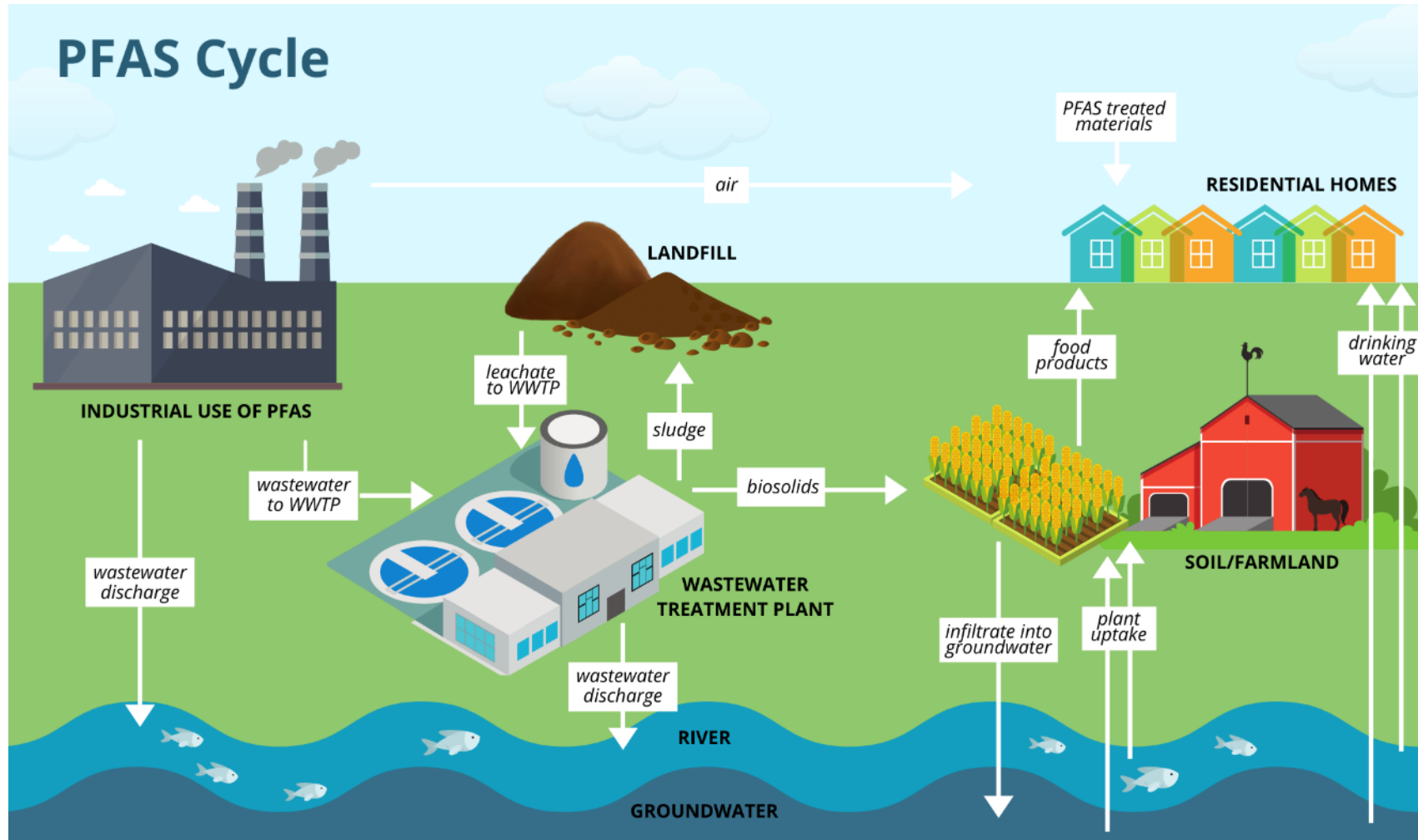
“Forever chemicals”

- Men made chemicals. Do not naturally occur in the environment.
- We swallow, inhale, rub them in our skin.
- We use them. We wash them away. We toss them.



Wastewater

“Forever chemicals”



- PFAS are not specifically regulated in the wastewater discharged directly by operators or by municipal WWTPs

PFAS in wastewaters

- **230 000** tonnes of PFAS chemicals are placed on the market annually
(Media briefing PFAS restriction proposal 2023)
- **PFAS** in large public water systems (>10,000 customers) were detected 5.6 more often than in small water systems ($\leq 10,000$ customers) (Guelfo and Adamson 2018)
- WWTPs are **ineffective**. **WWTP effluent discharge** into river basins was found to be a common point **source of PFASs**. **PFAS concentrations increase in WWTPs** due to the biodegradation of precursors in the activated sludge process (Loos et al. 2013)(Ng et al. 2023)

PFAS detected:

- Groundwater;
- Freshwater;
- Seawater;
- Rainwater;
- Soil;
- Sediment;
- Wastewater treatment plant (WWTP) sludge and effluent;
- Biota and food.

Health risks from PFAS exposure:

- Immune suppression (decreased vaccination response);
- Affect liver function;
- May cause kidney and testicular cancer;
- May cause thyroid disease;
- Associated with lower birth weight.

What can we do to evaluate the situation?

What is risk assessment?



The **result** of an effective **risk assessment** is a **clear understanding on decisions** which should be made and actions which should be done to mitigate the highest category risks.

Impact/Severity

	Negligible 1	Minor 2	Moderate 3	Significant 4	Severe 5
Almost Certain 5					
Likely 4					
Possible 3					
Unlikely 2					
Rare 1					

Insignificant
1-2

Acceptable
3-4

Tolerable
4-9

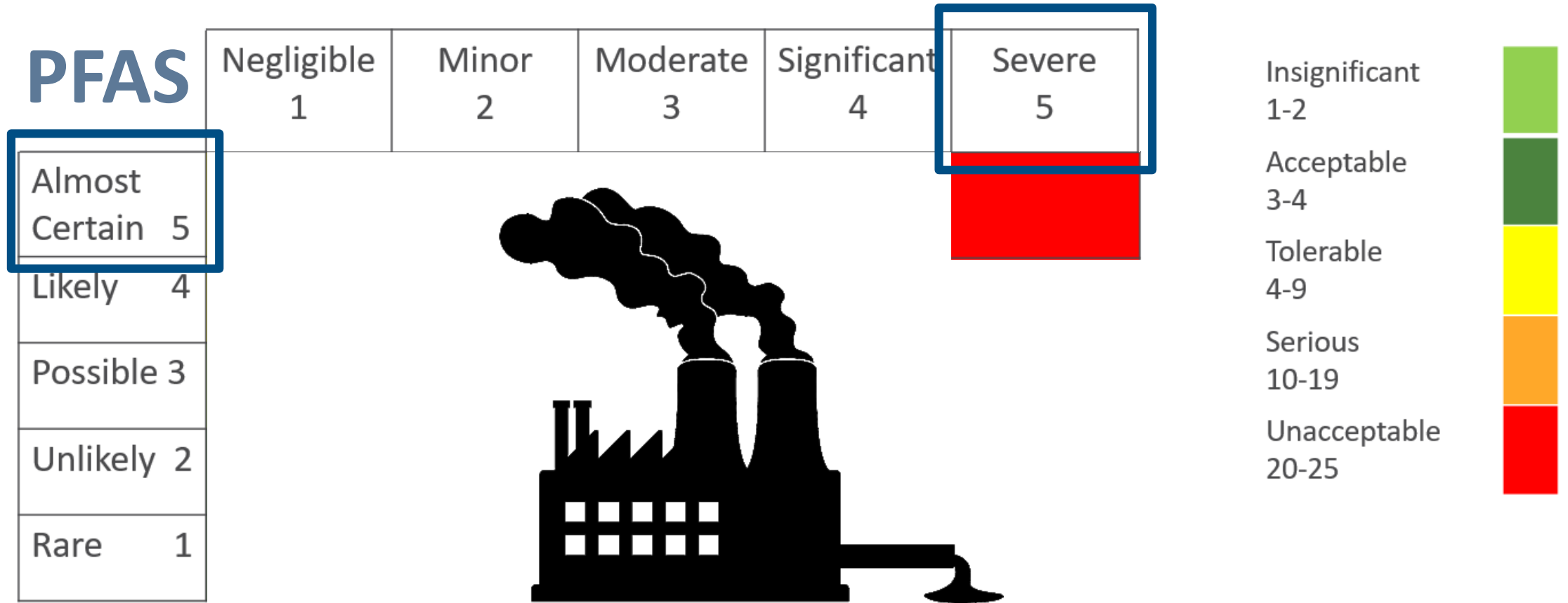
Serious
10-19

Unacceptable
20-25



Let's try!

Impact/Severity



What do we do in EMPEREST?

- Study PFAS;
- Make framework for risk analysis;
- Perform risk analysis;
- Analyze PFAS at WWTPs;
- Use pilots to remove PFAS.



Contacts

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