



Sveriges lantbruksuniversitet  
Swedish University of Agricultural Sciences

# Contaminants of Emerging Concern (CECs) in Lake Mälaren

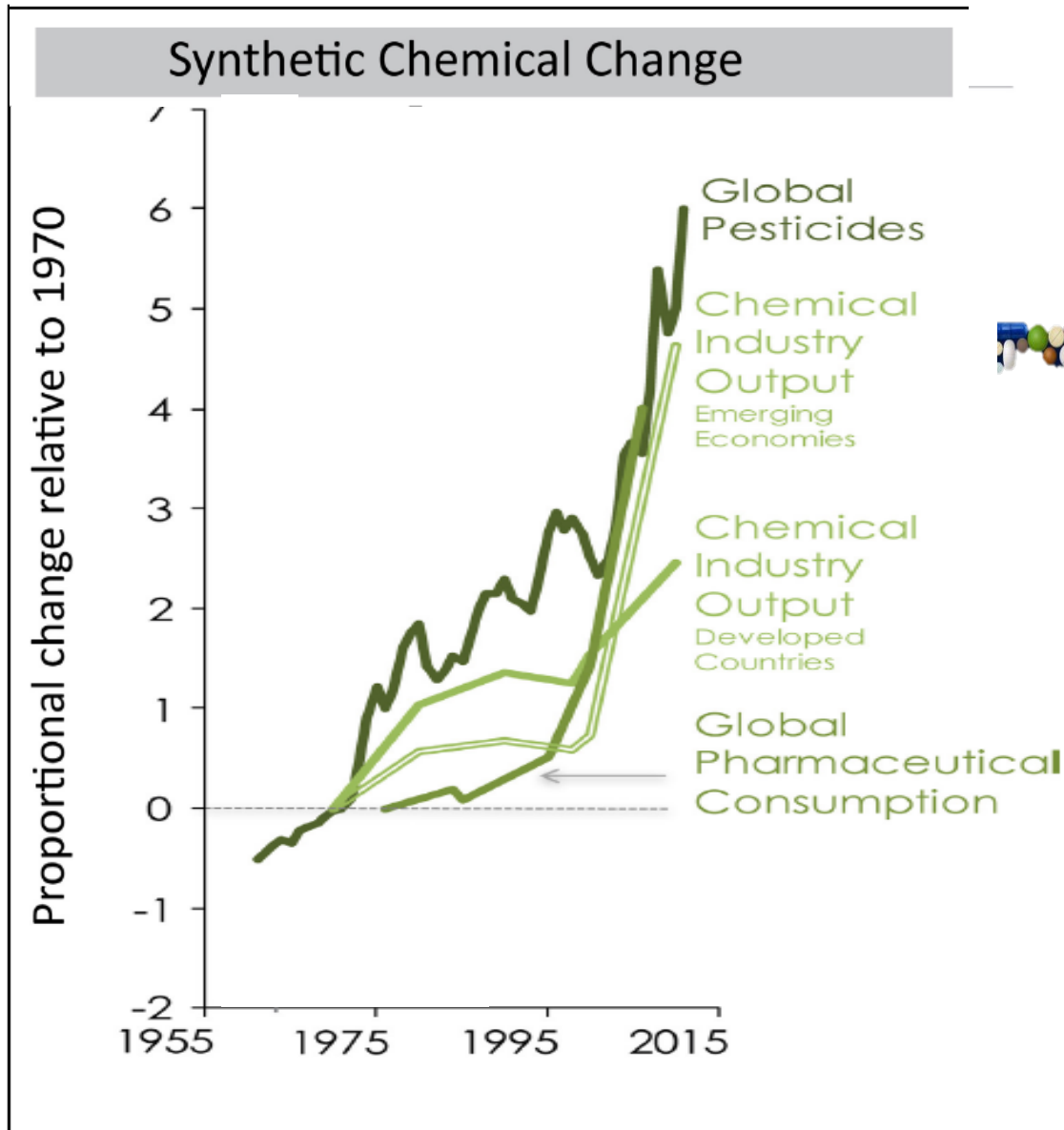
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# Contaminants of Emerging Concern (CECs)

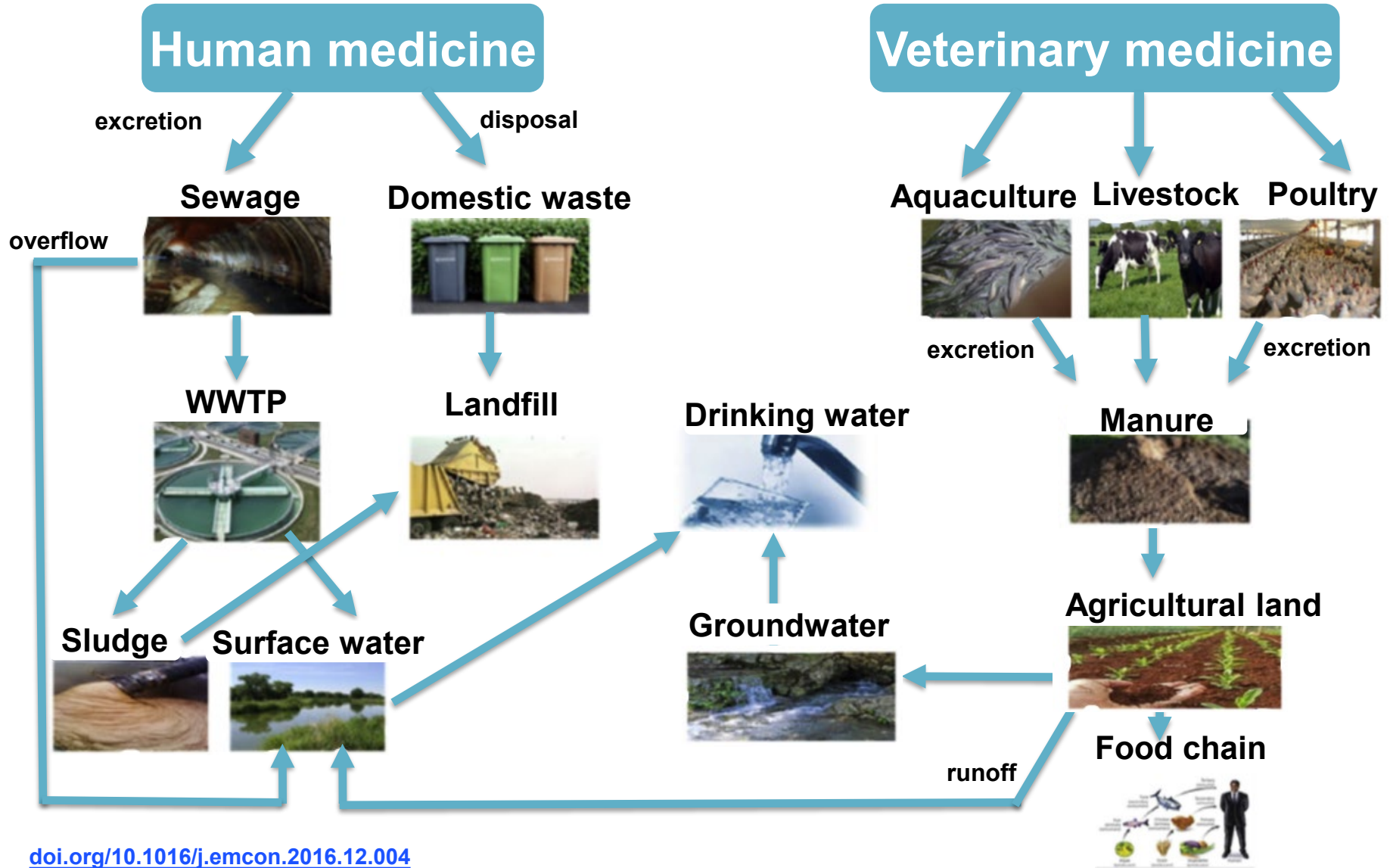


# Society and CECs

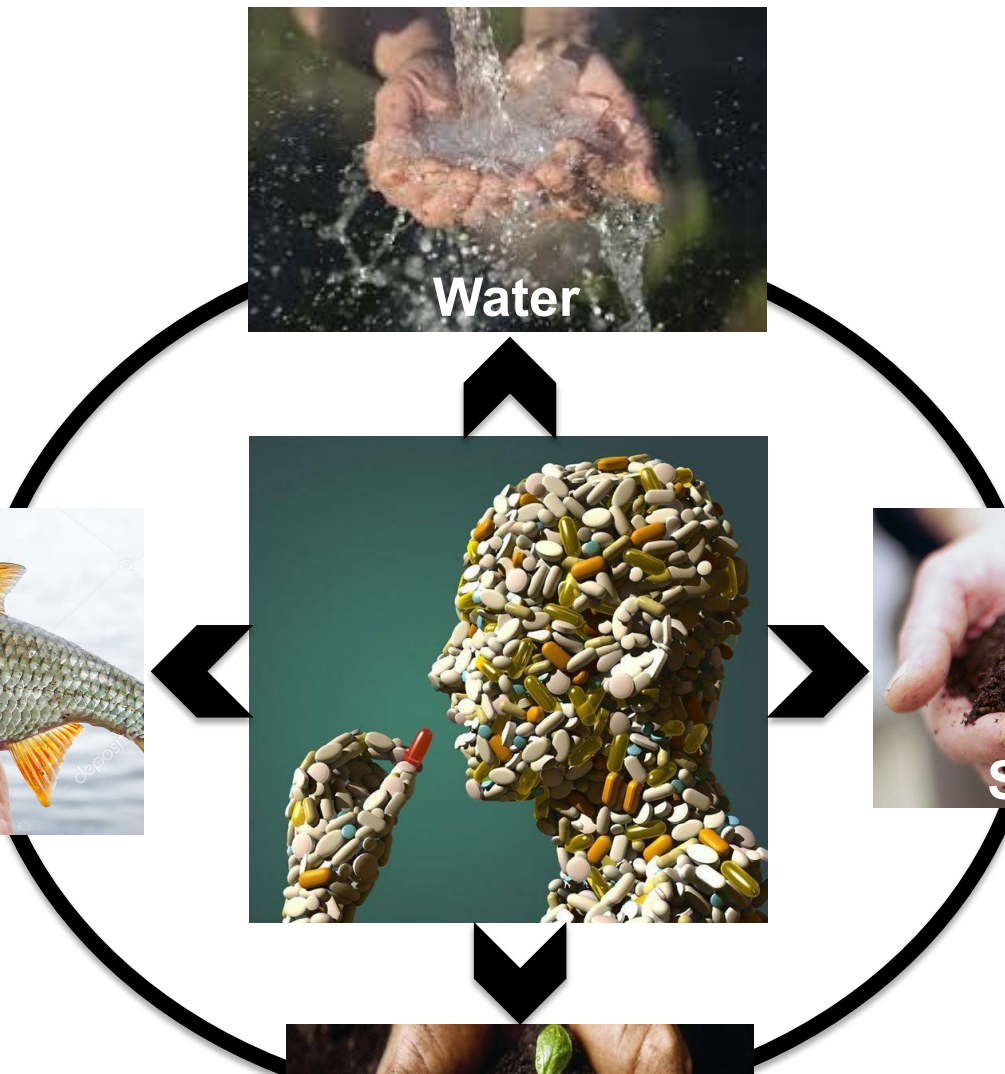
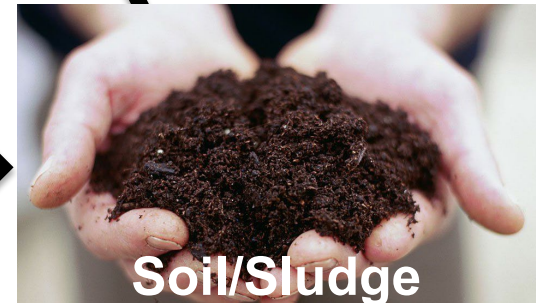


E. S. Bernhardt et al. 2017.  
<https://doi.org/10.1002/fee.1450>

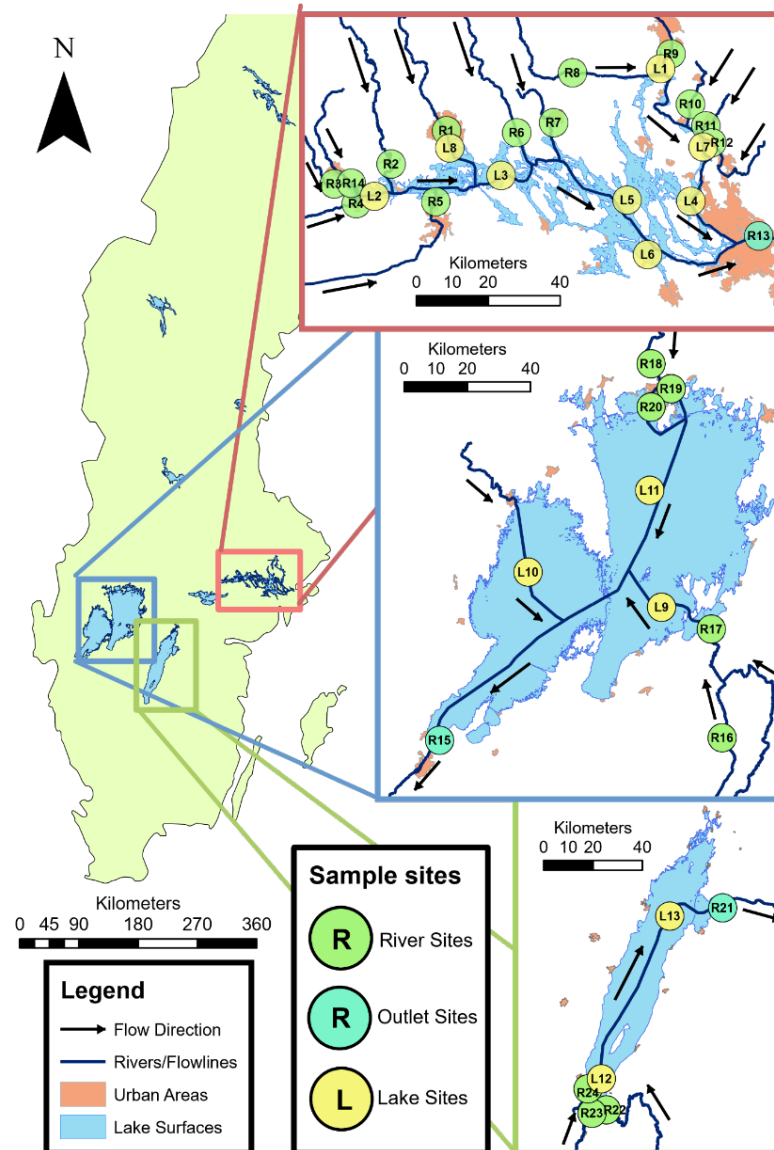
# Sources of CECs







# Occurrence of CECs in the surface water



# Occurrence of CECs in rivers

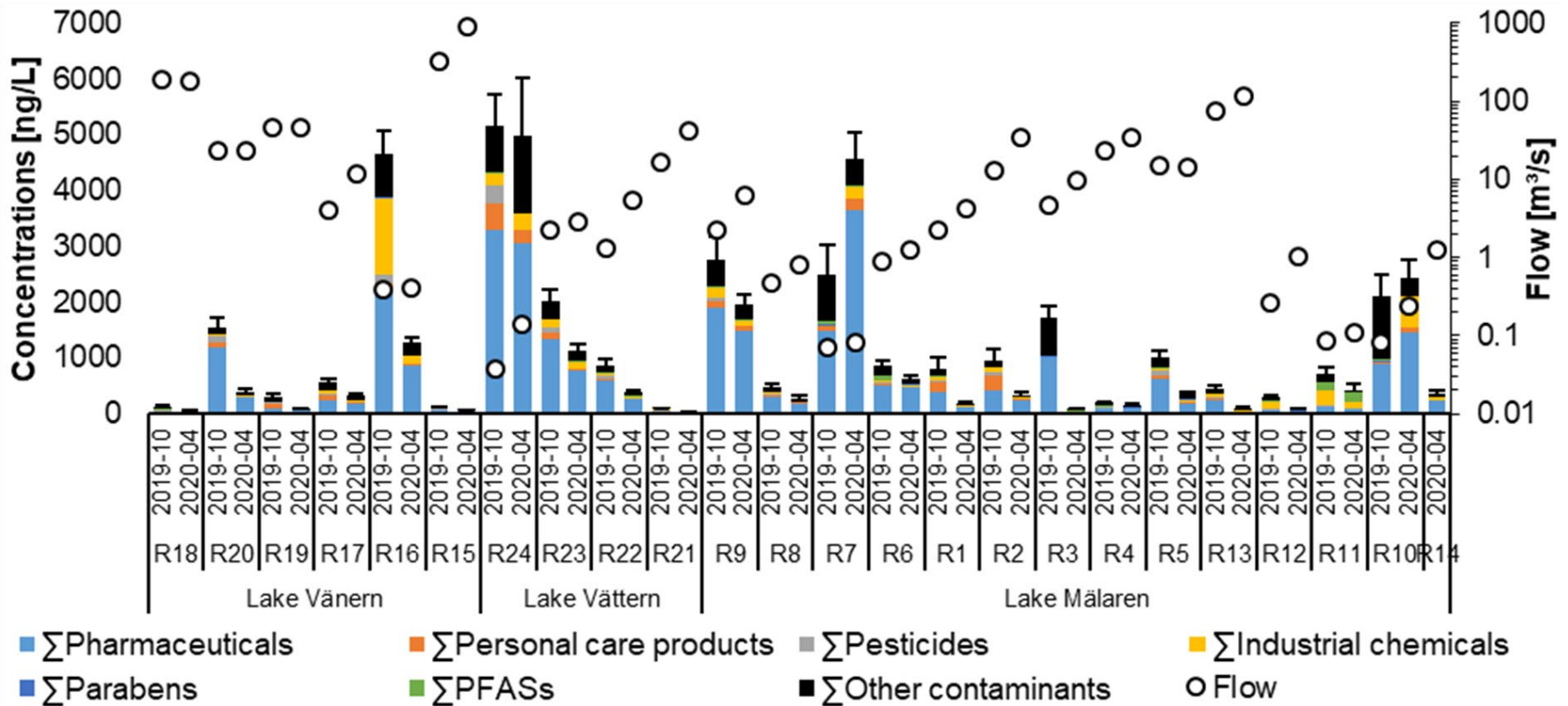


Figure 2.  $\Sigma$ CEC concentrations and river flow rate in river water samples (n=47).

# Occurrence of CECs in Lakes

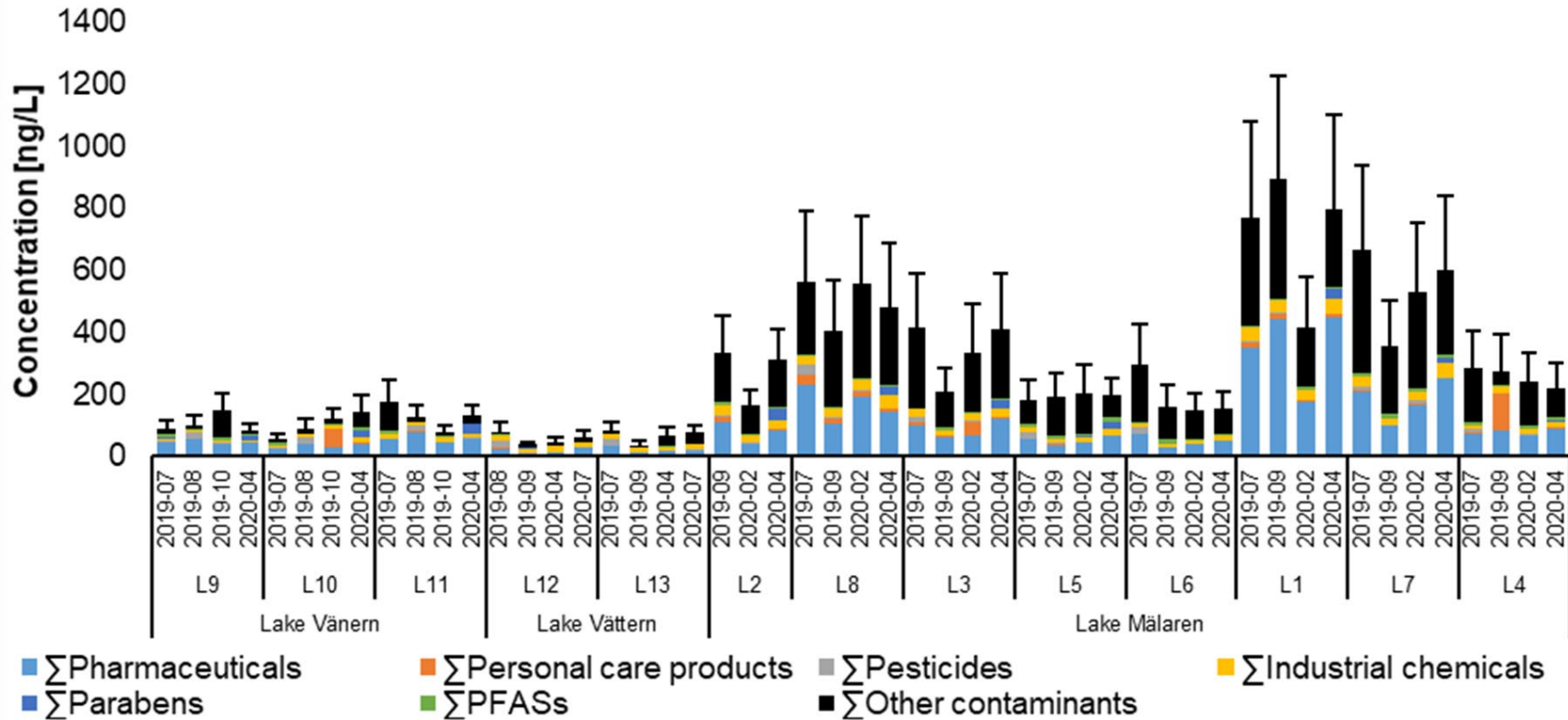


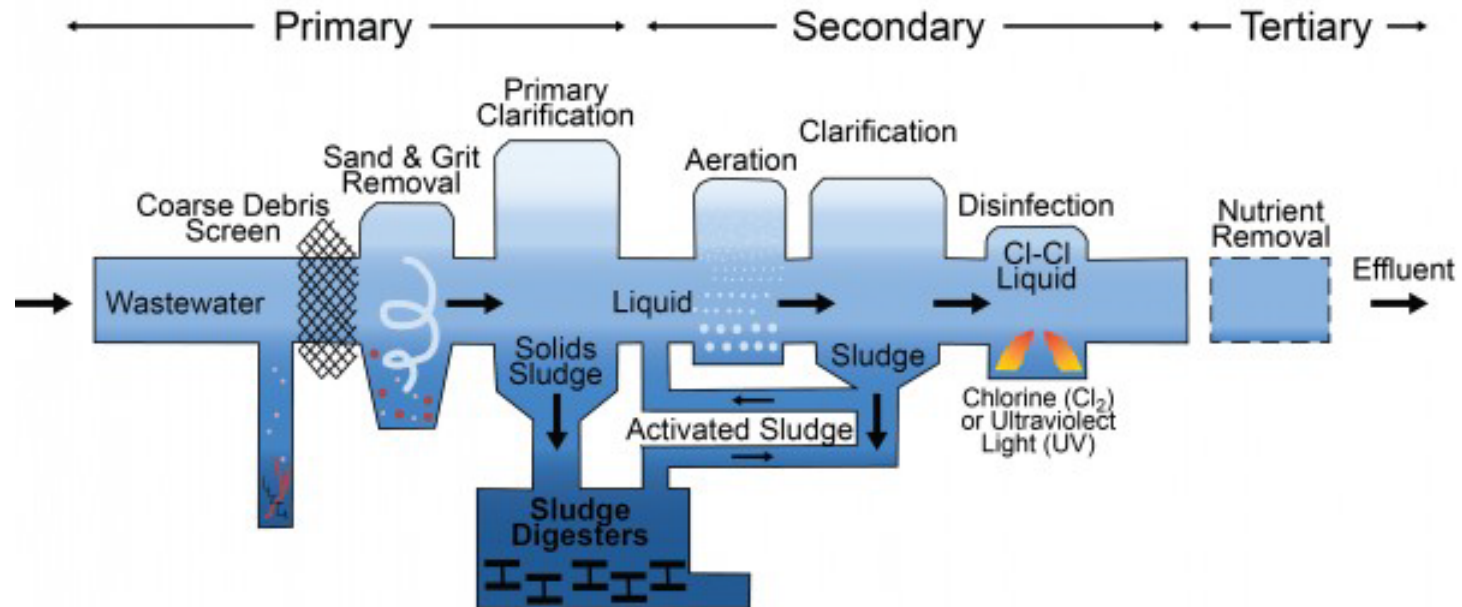
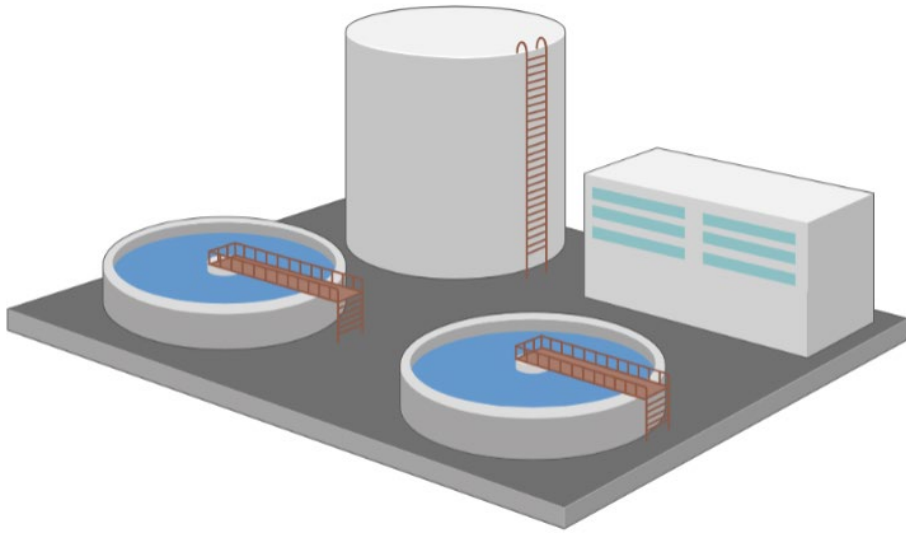
Figure 3.  $\Sigma$ CEC concentrations in lake water samples (n=51).

L1-L8 from Lake Mälaren, samples L9-L11 from Lake Vänern, and samples L12-L13 from Lake Vättern.

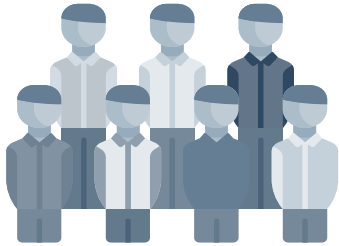




# Waste Water Treatment Plant (WWTP)

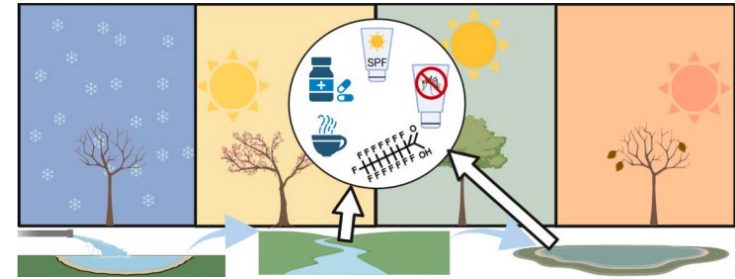


# Occurrence of CECs may depend upon:



societal factors:

- - production
- - consumption
- - excretion



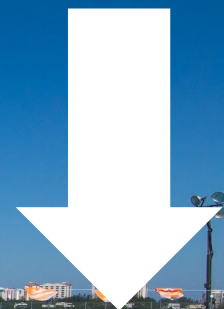
environmental factors:

- - solar irradiance
- - precipitation
- - temperature



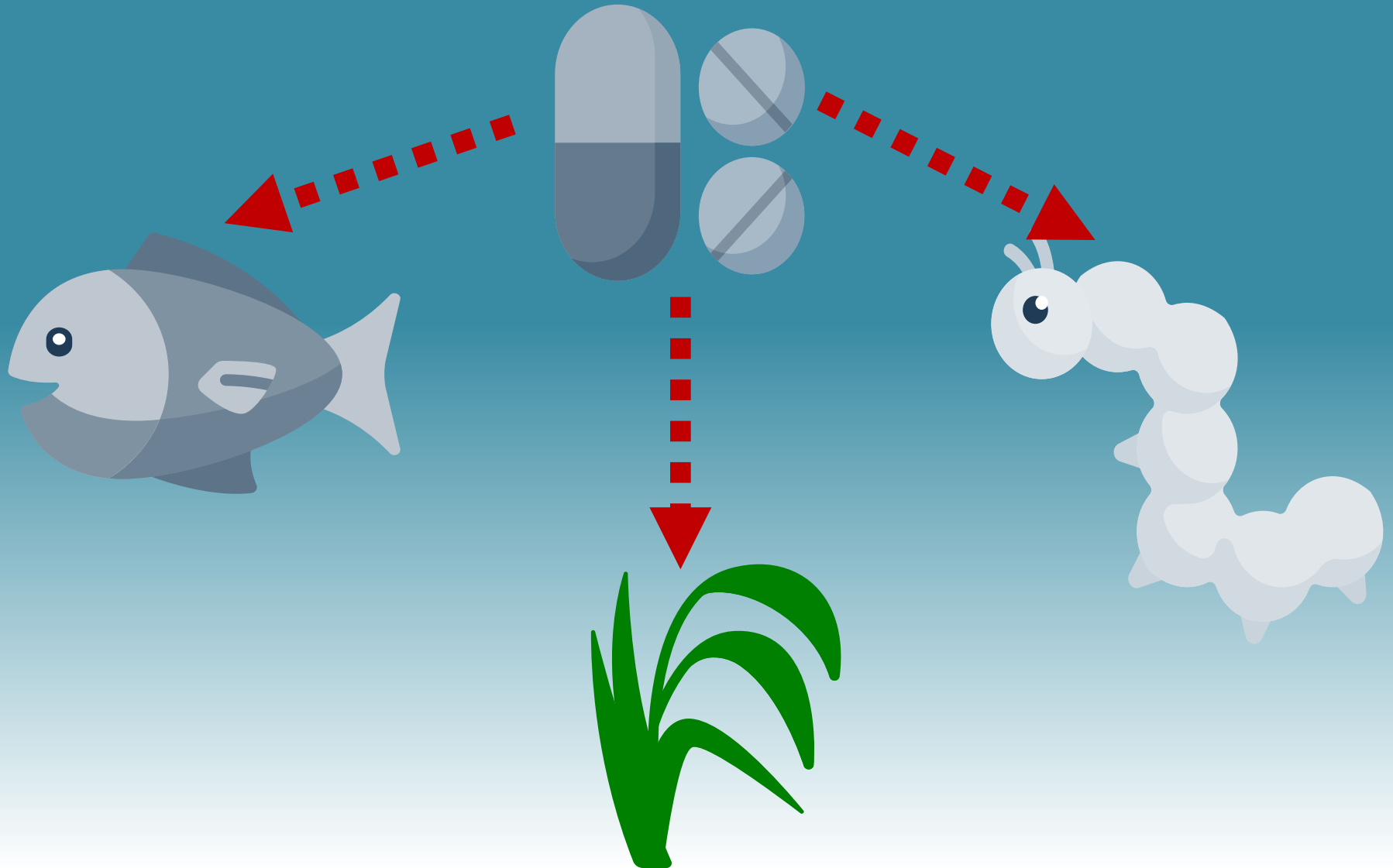
# Occurrence of CECs in the aquatic environment

**Concentration of CECs  
in surface water = ng/L**





# Effects of CECs on organisms



# The European Water Framework Directive

## Specific WFD Objectives

To protect water-based ecosystems and water-dependent land-based ecosystems, with wetlands being particularly important

To promote sustainable water use and its long-term protection (for drinking water, industry and agriculture)

To reduce or stop the discharge of pollutants to water

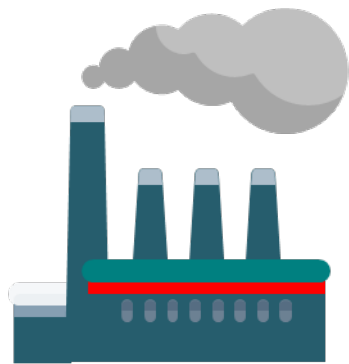
To help mitigate the effects of floods and droughts

TEXTE

126/2019

**REACH: Improvement of guidance and methods for the identification and assessment of PMT/vPvM substances**

# Future prospective



the source(s)

important to identify  
the source(s)



map

spatial and temporal  
patterns



monitoring data

lack monitoring data  
and risk assessments

# Take home message



more studies are needed to effectively regulate and evaluate the number of CECs found in environmental matrices

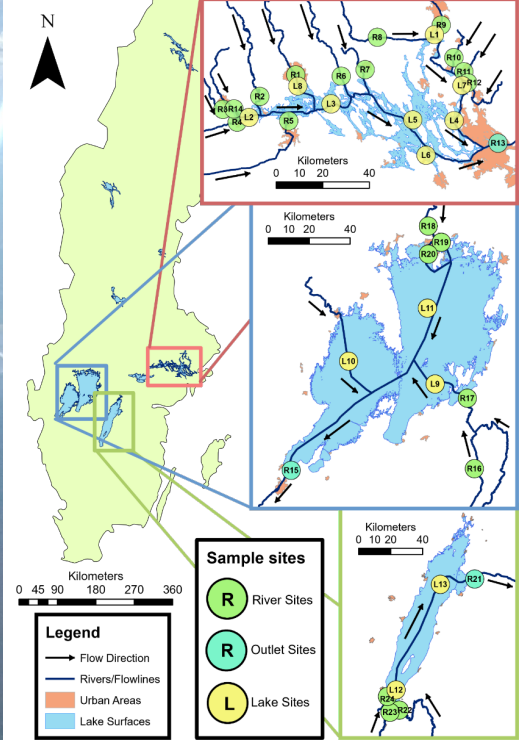


support for programs aiming to reduce CECs emissions to aquatic environments



monitoring work - new CECs are continually being introduced on the market





Thank you for attention