

# Influence of pH on the formation of organic colloids and the associated release of various elements from surface sludge deposits of vertical flow constructed wetlands.

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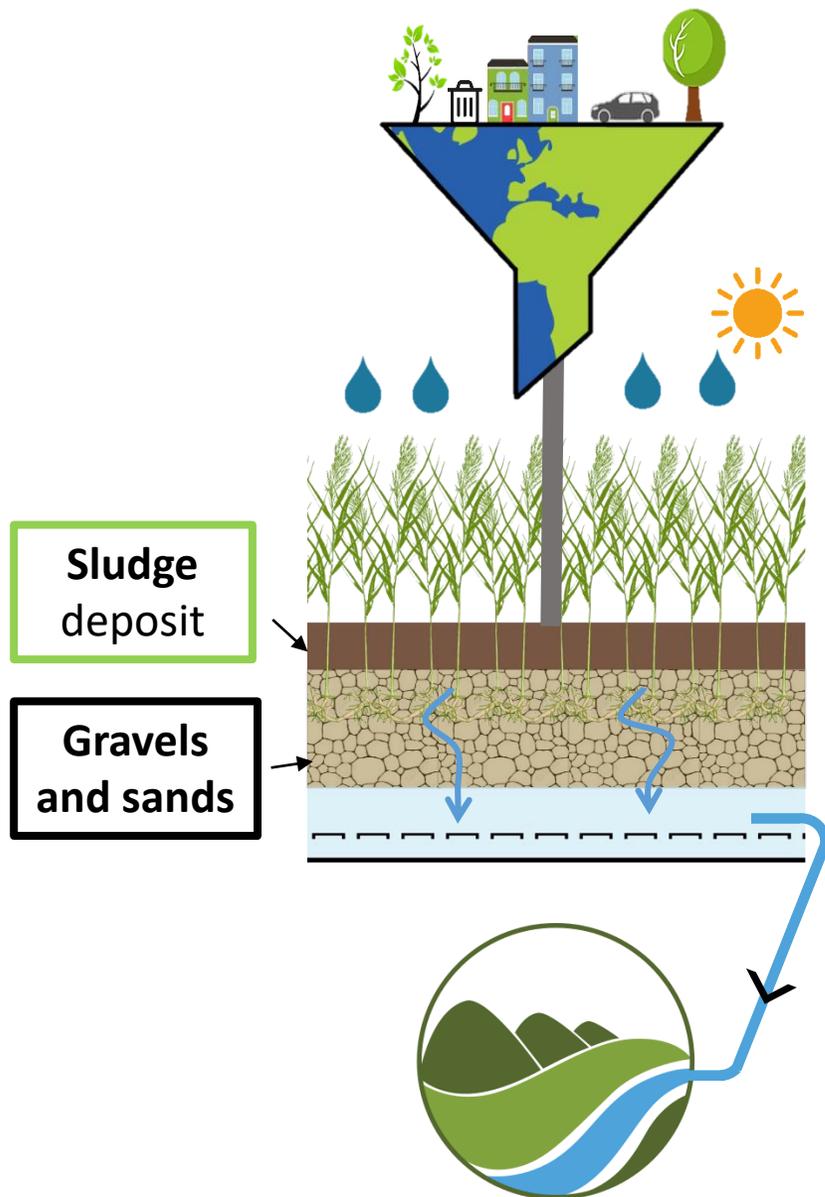
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# Context and objectives

Human activity  
Wastewaters

Constructed wetlands  
Buffer area

Natural systems  
Surface and ground-waters

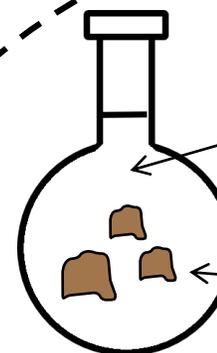


Sludge deposit



- \* Pollutant release?
- \* Pollutant transport?
- \* Pollutant bioavailability?

## Methodology



Aqueous solution of various pH from pH 2 to 12

Sludge deposit samples

(Ultra)filtration of the leached solutions with **0.45, 0.22  $\mu\text{m}$**  and **30, 10, 3 kDa**.

+  
OC content measurement, UV-Vis analysis and ICP-MS

# To go home results

## 1. Three main molecular size ranges are emitted from sludge deposit :

- Large organic colloids (30 kDa – 0.45  $\mu\text{m}$ )
- Small organic colloids (3 kDa – 10 kDa)
- « Truly » dissolved organic compounds (< 3 kDa)

## 2. Major and trace elements speciation were sensible to pH conditions and released carrier phases :

- Elements located in the truly dissolved fraction : **As, Sb, P, S, Rb, V**
- Elements principally associated with large colloids : **Li, Mg, Ca, Sr, Ba, Mn, Cr**
- Elements associated to all size fractions : **Co, Ni, Zn, Cu, Cd**