A Sustainable Approach For DNAPLs Contaminated Groundwater Remediation: Raw Polyhydroxyalkanoates (PHA) From Organic Waste As Electron Donor for Biological Reductive Dechlorination Coupled With Adsorption On Biochar

SAPIENZA
UNIVERSITÀ DI ROMA

BATTELLE
2023 Bioremediation Symposium

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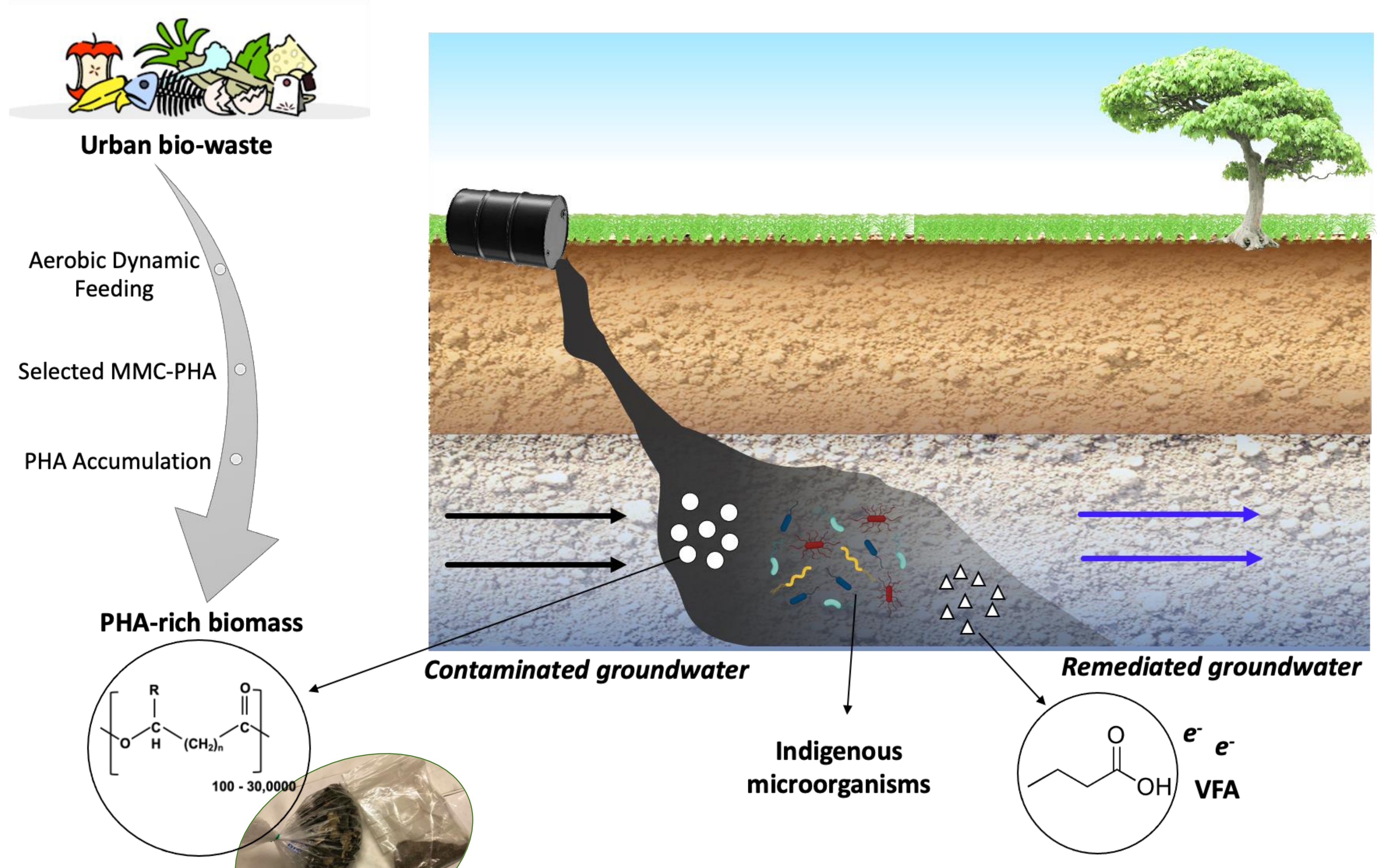
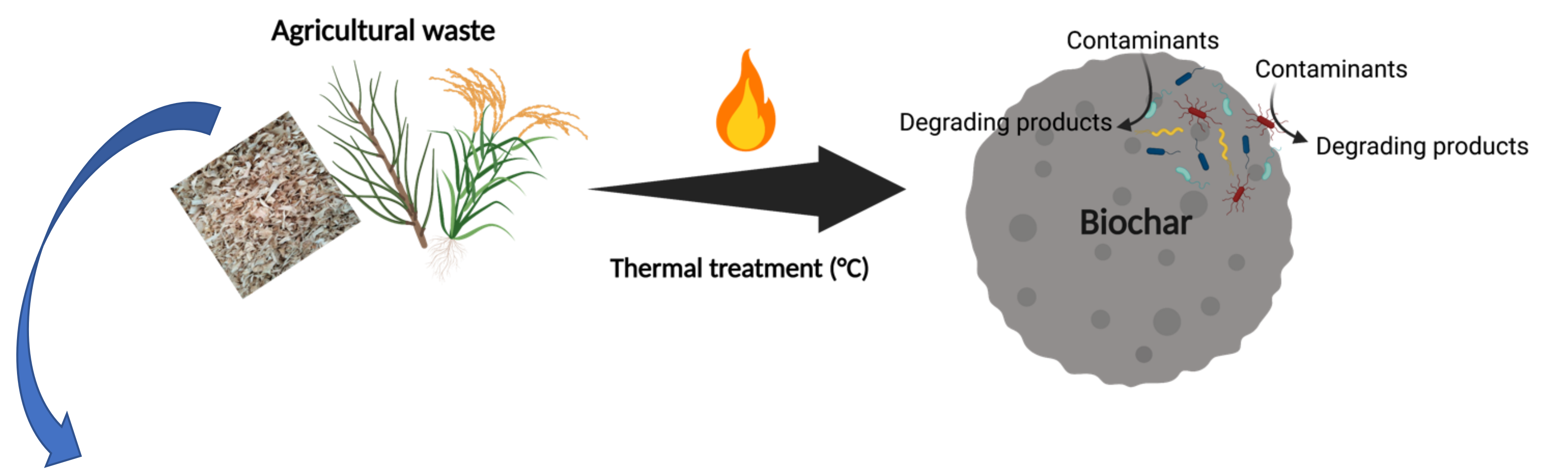
STARTING FROM A CIRCULARITY CONCEPT FOR BIOREMEDIATION



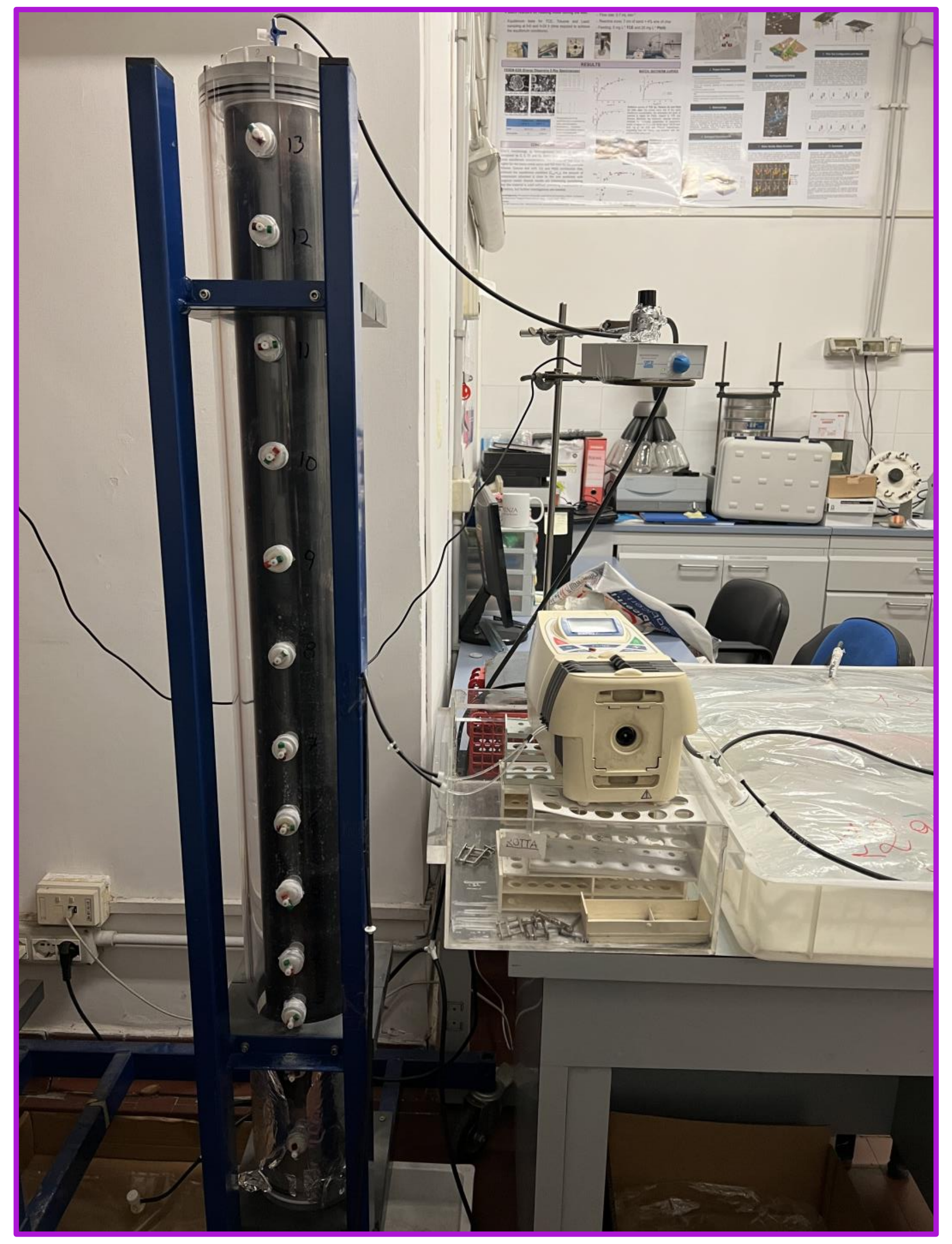
Sustaining the BRD

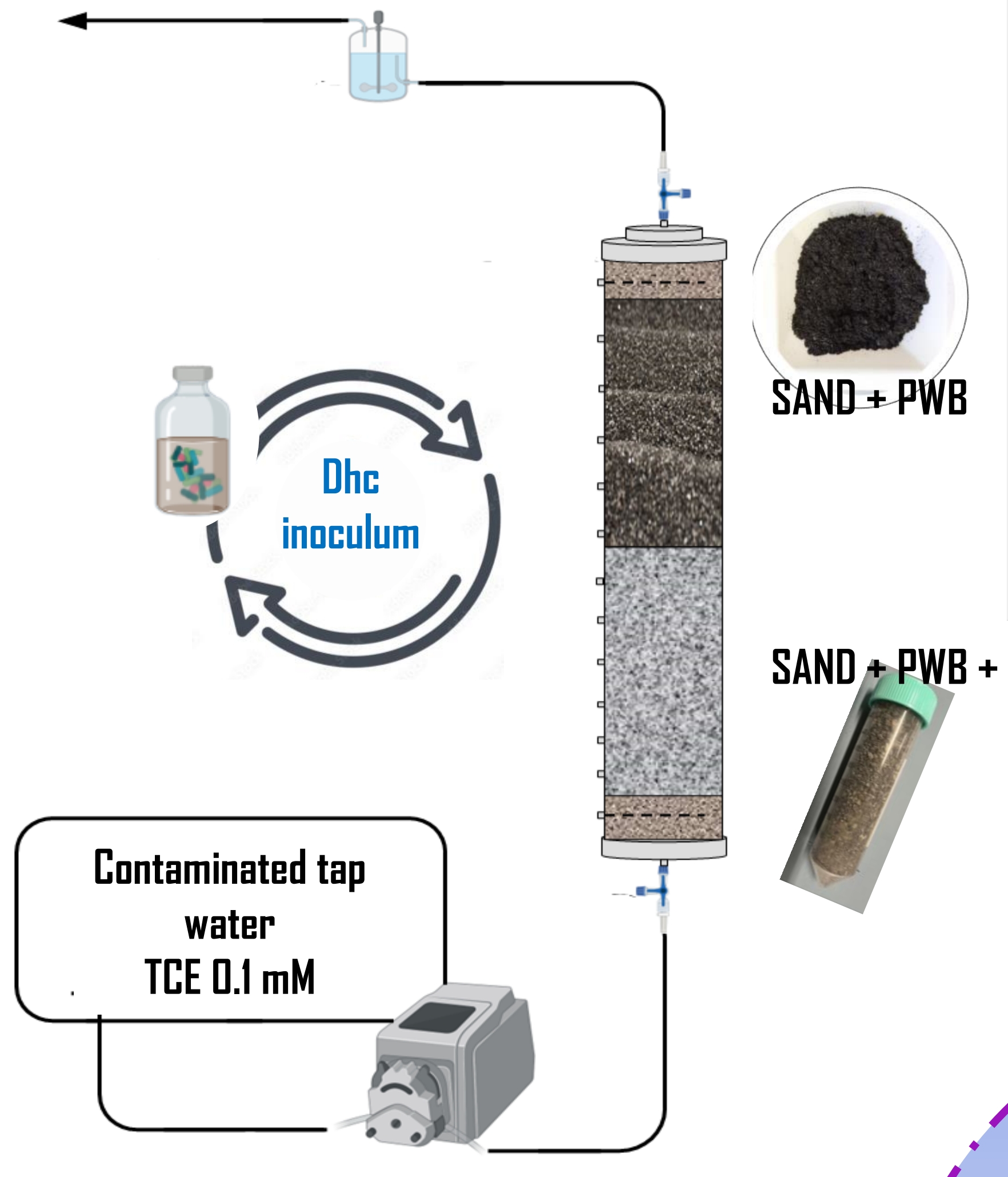
Pine wood Biochar (PWB)



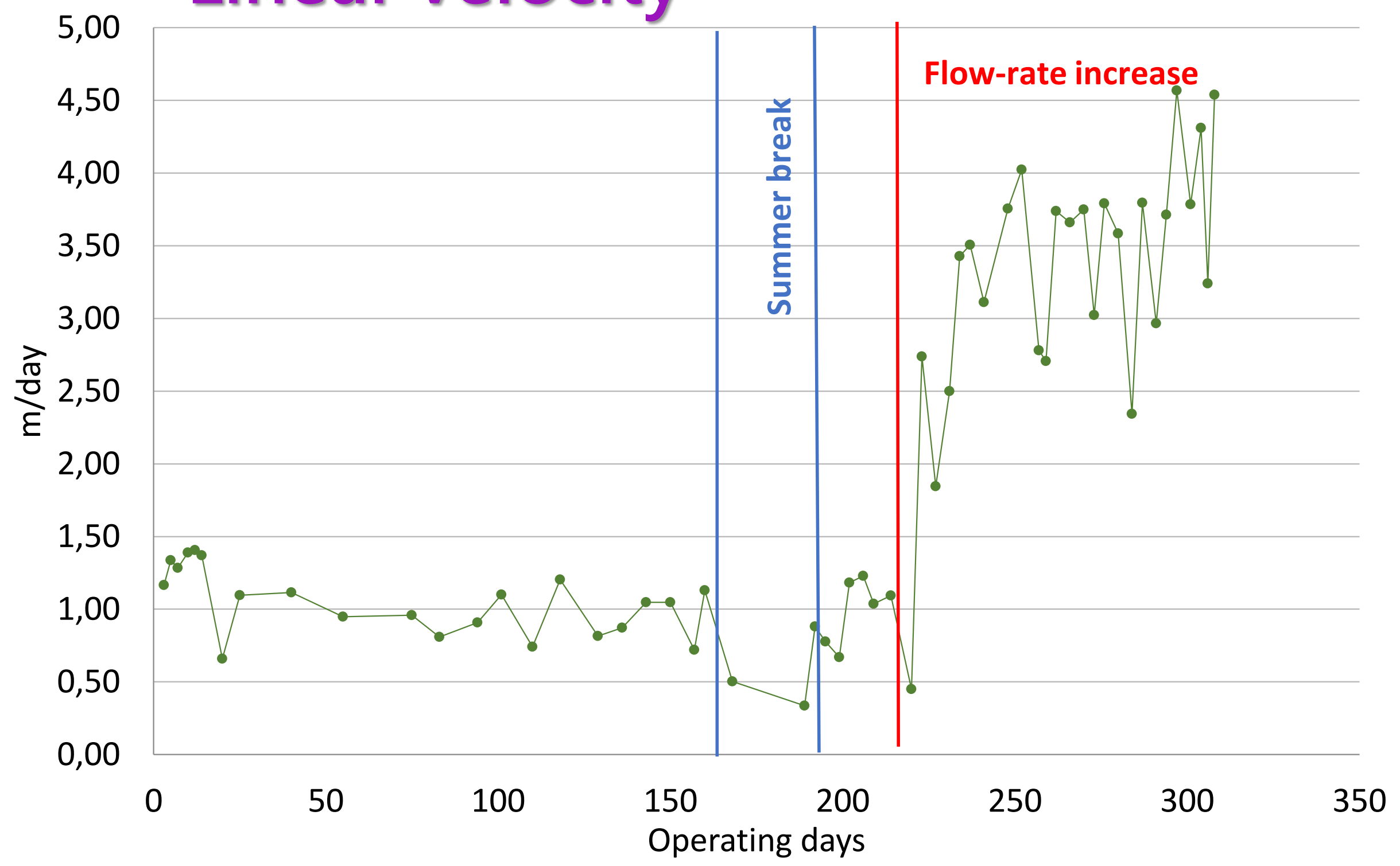
Increasing contaminants retention time

MINI-PILOT TEST SET UP





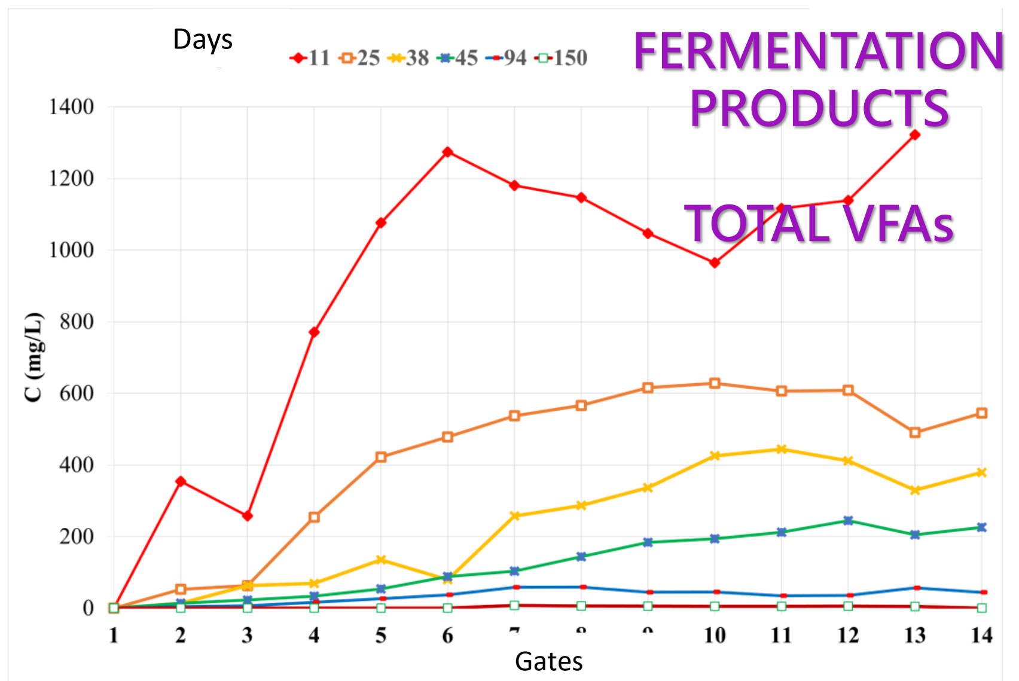
Linear velocity

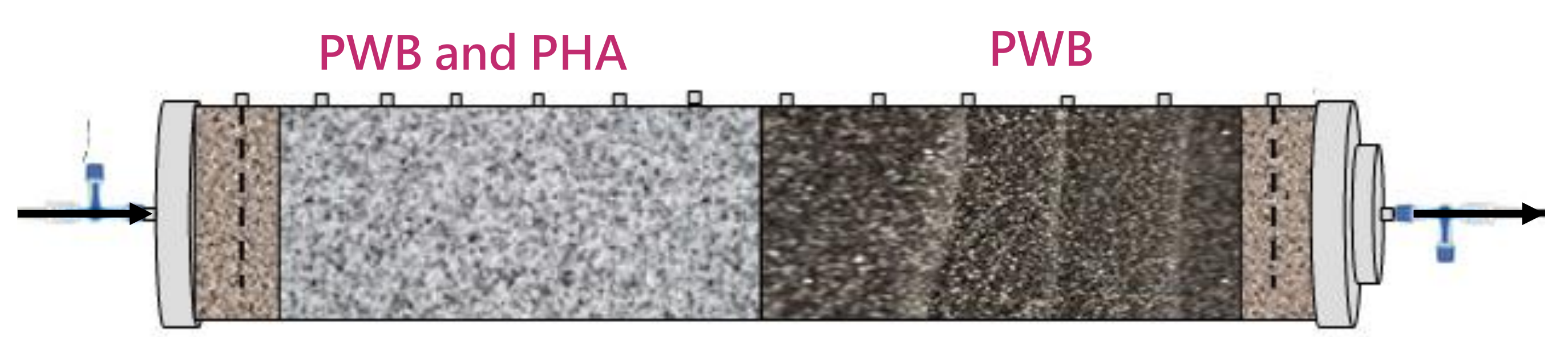


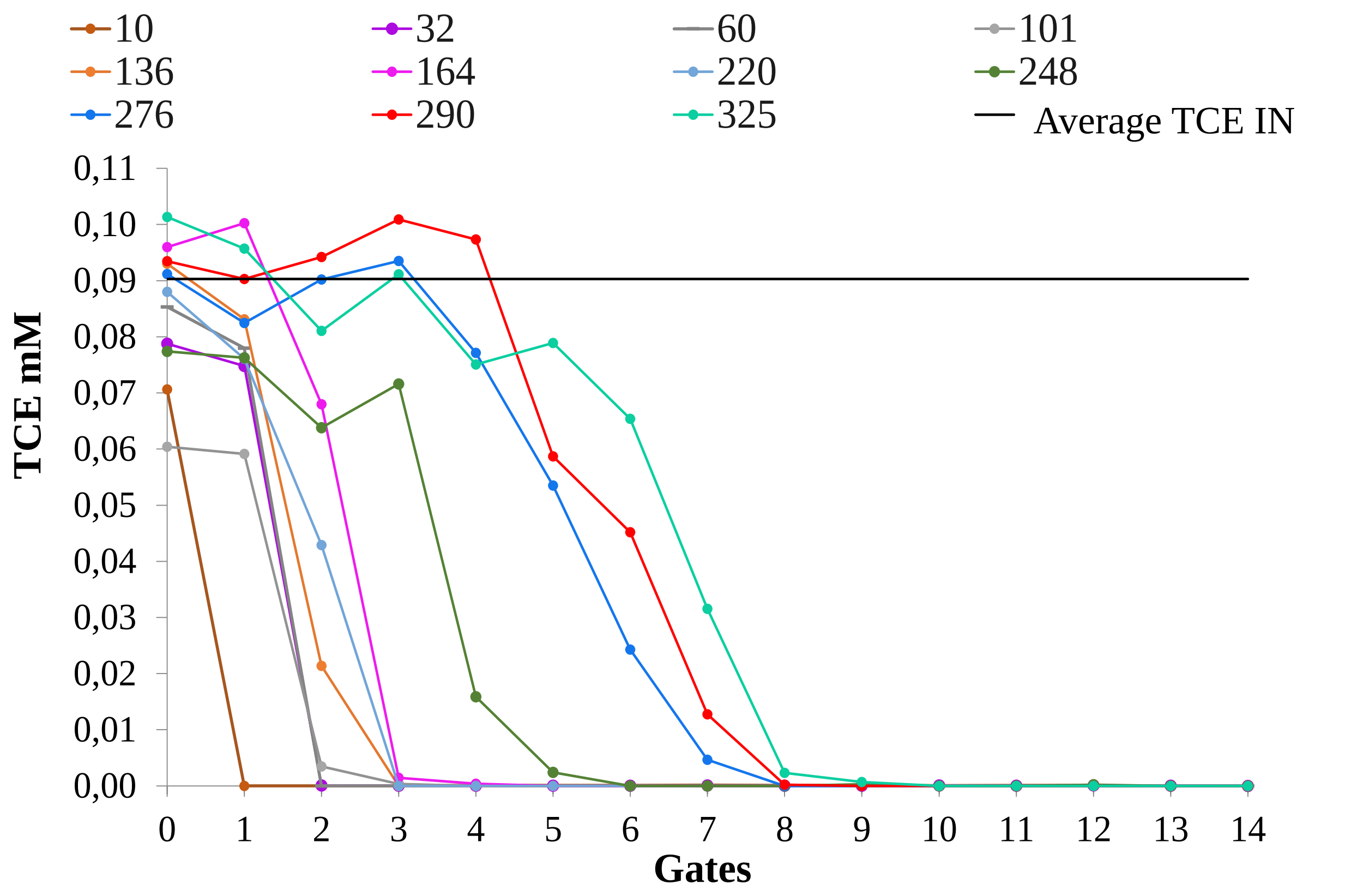
PHA-PWB Reactor Characteristics	
PWB (wt %)	4
PHA powder (g)	250
Height (cm)	144
Diameter (cm)	10
Geometric volume (cm³)	11304

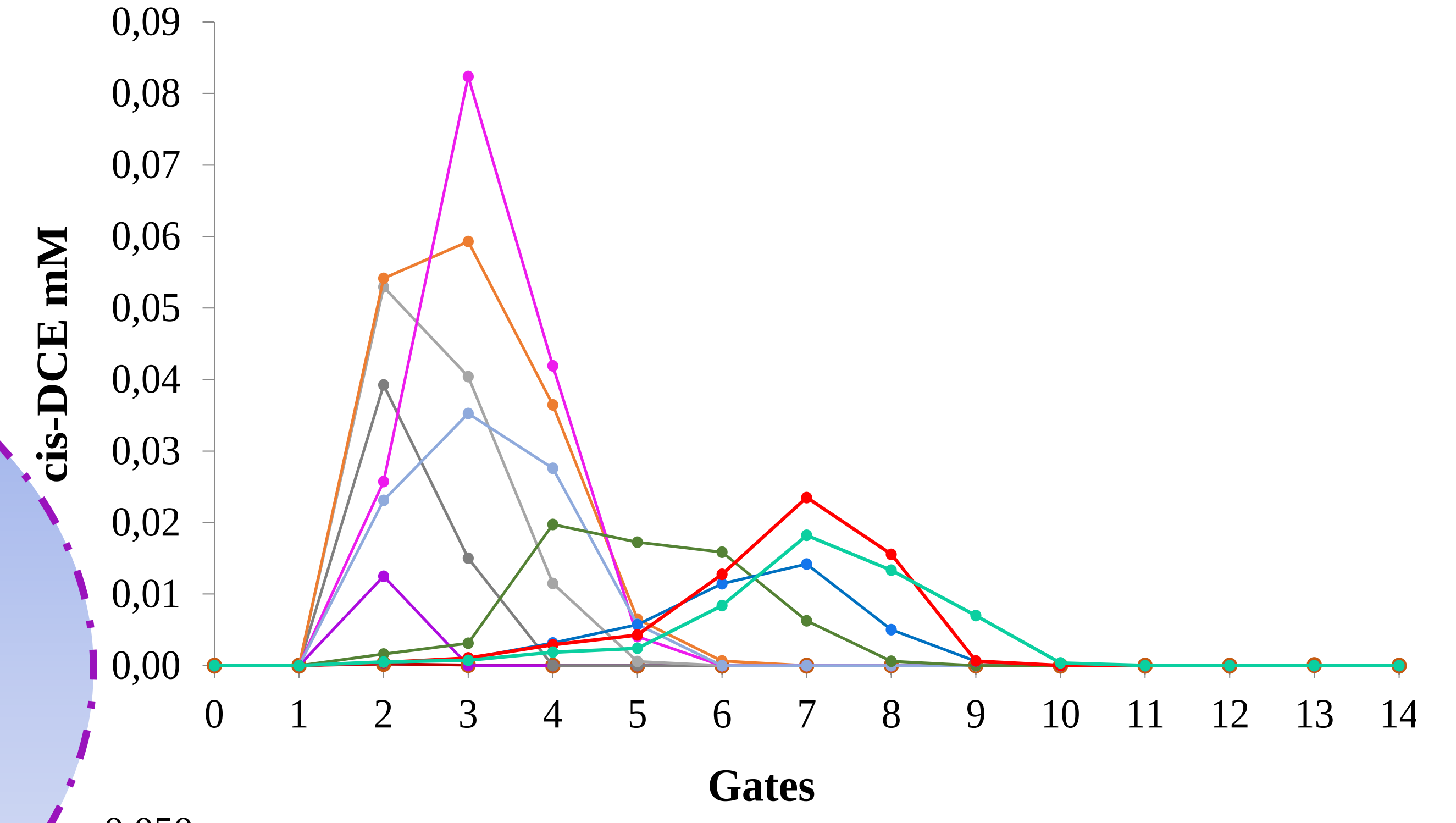
Rossi M. M., et al. 2022a. https://doi.org/10.3390/bioengineering9050192
Rossi M. M., et al. 2022b. https://doi.org/10.3390/microorganisms10010101

WHAT WE GOT









- 1350 L of treated water (337 PV)
- Complete TCE removal
- 10 g of TCE removed
- Complete VC conversion until ED was available

UP TO NOW