

RemovAs

Development of an Arsenic Removal Device to Treat Drinking Water using Locally-Sourced Materials and Appropriate Technology



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En collaboration avec San Diego University (USD)

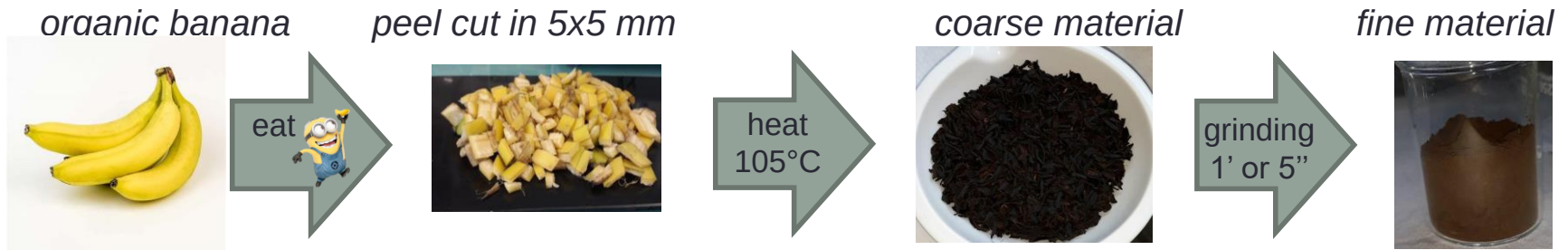


Objective:

Test banana peel as a sorbent material to remove arsenic from polluted freshwater, in an ecofriendly and low cost process

Experimental methodology

1. Sorbent material preparation



2. Sorbent material test

on arsenic removal from water



Studied parameters:

- material size?
coarse, fine, very fine grains
- material acid/base rinsing?
 H_2SO_4 / NaOH (0.4 M)?

Liquid batch

1 L synthetic
groundwater
+ 10 g material
+ 0.1 mg As

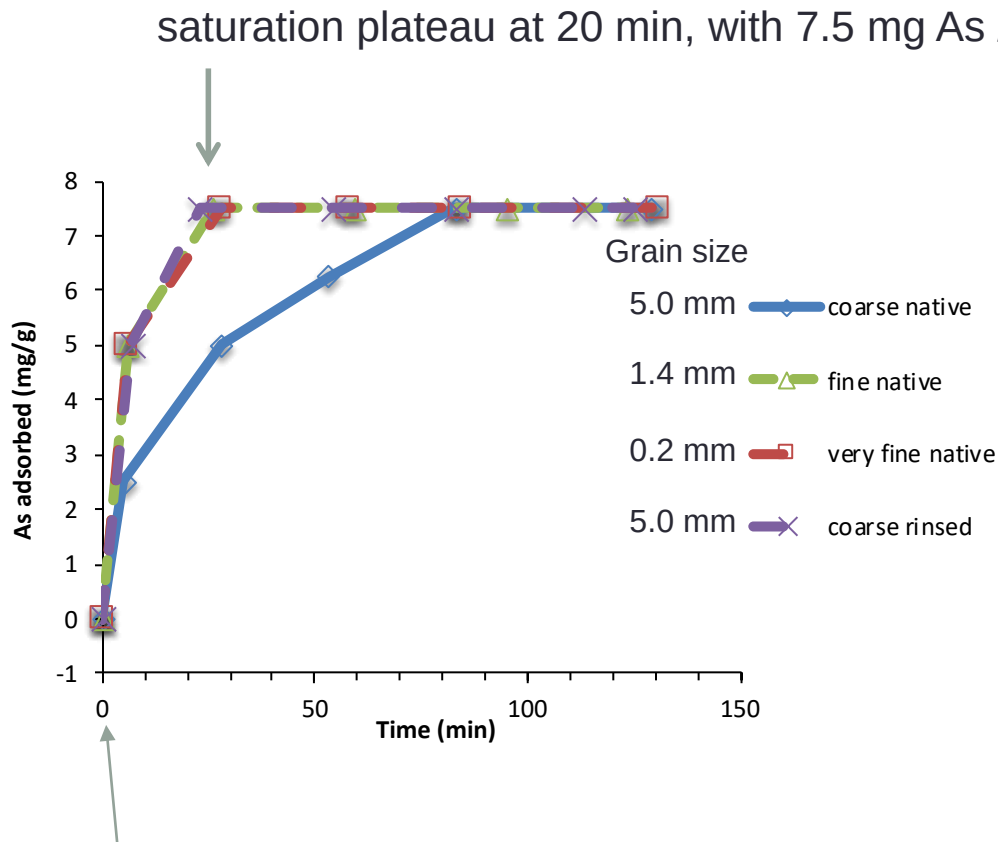


Flow-through



Results

Liquid batch experiments – As removal by banana peels vs. time and material preparation



Time 0: 10 g banana peel + 0.1 mg As

- Fine vs. coarse: slower removal with coarse, but similar capacity
- Coarse rinsed vs. native: adsorption faster with rinsing, balancing size effect
- Fine vs. very fine: no effect

Conclusion

- Banana peel appears a promising sorbent material for As removal from groundwater.
- Sorption capacity = 7.5 mg As / g banana peel
- Grinding the material into smaller grain size tends to improve the removal kinetics, but not the capacity.
- Future works: Flow through experiment must find a compromise between the contact time with sorbent material and the flowrate.

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Suite du projet

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- Projet mis actuellement en veille suite à la crise COVID