# PoSH™ Waste Materials as Low-Cost Sorbents for Water- and Air- Pollutants

With the mission to reduce the size of landfills, the PoSH™ (Porous Shells and Husks) project utilizes agricultural waste and industrial by-products as potential sorbents for water- and air- pollutants. To-date, the PoSH™ project has screened and tested many waste materials, disposed from households, restaurants, farms and various industries, for sorption of several heavy metal pollutants, viz. lead (Pb), zinc (Zn), copper (Cu) and nickel (Ni) from contaminated water.

Low-cost PoSH™ materials showed a great potential in adsorbing the studied heavy metals from contaminated water. More specifically, egg shells, coffee grinds, corn husks, peanut hulls and other waste materials removed 70-90 % of the heavy metals present in water within 1 hr of contact time. Studies to determine the optimum contact time (sorbent/contaminated medium) are underway along with studies on the effects of other parameters (pH, temperature, PoSH™ material particle size, PoSH™ sorbent/contaminated water weight ratio) on the sorption of heavy metals and other types of pollutants by PoSH™ materials. Moreover, assessment of real-life air- and water- samples taken from different locations and subjected to decontamination by PoSH™ sorbents is envisioned.

SE Pb Ca
MAG: 76x HV: 20kV WD: 13.0mm   300 µm
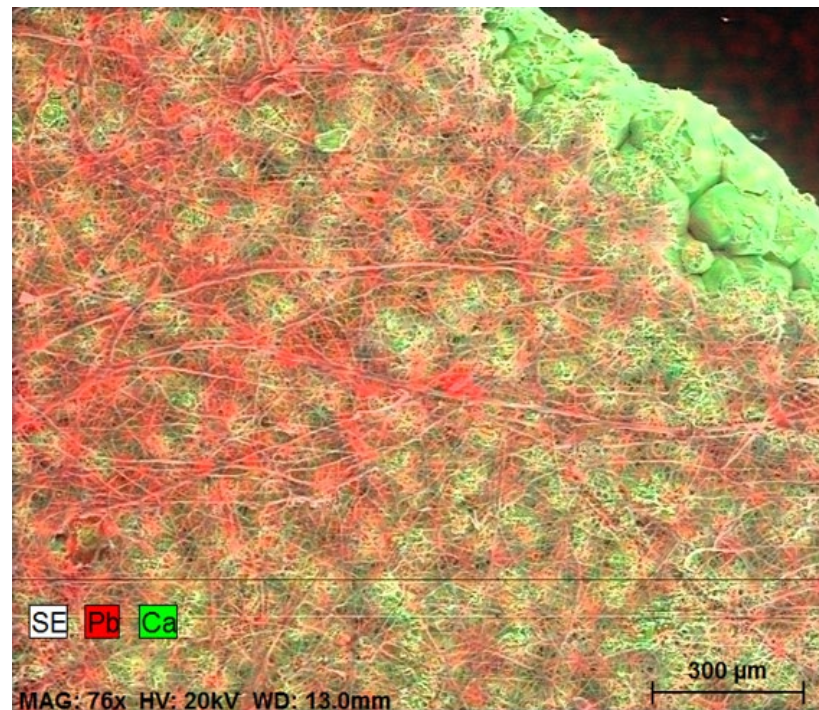
SEM micrograph with EDS analysis of egg shell used in decontamination study of Pb-contaminated water.

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