



Transport and retention of biocolloids in water saturated porous media: effect of water velocity and grain size

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Groundwater may be accidentally contaminated with infective human enteric viruses from human and animal sewage through wastewater discharges, sanitary landfills, septic tanks, and agricultural practices or by artificial groundwater recharge, which is often used to reverse the rapid depletion of aquifers. To predict the presence of pathogenic organisms (biocolloids) in water and wastewater, the transport behavior of three indicator organisms (*Escherichia coli*, MS2, and Φ X174), which are commonly associated with fecal contamination, was examined using laboratory-scale columns packed with clean quartz sand with three different grain sizes and pore water velocities. The attachment behavior of *Escherichia coli*, MS2, and Φ X174 in columns packed with ultra-pure, saturated quartz sand was evaluated. The mass recoveries of the three biocolloids examined were proportional to the sand size, also the observed mass recoveries were in the order: *Escherichia coli* > Φ X174 > MS2.