Colonization and growth of dehalorespiring biofilms on carbonaceous sorptive amendments

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 Removal of polychlorinated biphenyls (PCBs) from contaminated sediments is a priority due to accumulation in the food chain. Recent success with reduction of PCB bioavailability due to adsorption onto activated carbon led to the recognition of in situ treatment as a remediation approach. In this study, reduced bioavailability and subsequent break-down of PCBs in dehalorespiring biofilms was investigated using Dehalobium chlorocoercia DF1. DF1 formed a patchy biofilm ranging in thickness from 3.9 to 6.7 µm (average 4.6 ± 0.87 µm), while the biofilm coverage varied from 5.5% (sand) to 20.2% (activated carbon), indicating a preference for sorptive materials. Quantification of DF1 biofilm bacteria showed 1.2?15.3 × 10 9 bacteria per gram of material. After 22 days, coal activated carbon, bone biochar, polyoxymethylene, and sand microcosms had dechlorinated 73%, 93%, 100%, and 83%, respectively. These results show that a