

Correlation between Planktonic and Attached-Growth Bacteria Densities in Bioaugmented Flow-through Column Test

Willard D. (Will) Harms, Jr. (will.harms@ehs-support.com) (EHS Support LLC, Tallahassee, FL, USA)

Dora Taggart and Kate Clark (Microbial Insights, Knoxville, TN, USA)

Background/Objectives. Recent commercial availability of molecular biological tests to identify and quantify environmentally relevant subsurface bacteria (and their genes for production of various enzymes) has changed the way stakeholders and regulators view assessment for and interpretation of natural and enhanced bioremediation initiatives. Users are faced with the decision of whether to test groundwater to garner measurement of water-borne planktonic bacteria or to test soil (or passive sampler) to garner measurement of attached-growth (sessile) bacteria. Interest in correlation between attached-growth bacteria densities and their planktonic counterparts is increasing. Knowledge about correlation between planktonic and sessile bacteria density in the subsurface could help stakeholders with their decision-making.

Approach/Activities. Flow-through soil/groundwater test columns were augmented with commercially-available dechlorinating bacteria culture SDC-9 and TCA-20. End-of-run water samples were collected at inlet, middle, and outlet of each of three columns (#1 column is control). Companion (collocated) end-of-run soil samples were collected upon tear down of the columns. Collocated water and soil samples were analyzed for total eubacteria (EBAC) and *Dehalobacter* spp. (DHBt) by CENSUS qPCR method.

Results/Lessons Learned. Correlation between planktonic and sessile EBAC and DHBt is shown below.

