



## McCormick and Baxter Creosoting Company, Superfund Site, California Bio-Trap Sampler

### Summary

<b>Media:</b>	Groundwater
<b>Study Type:</b>	NA
<b>Technology:</b>	Accumulation
<b>Peer Reviewed:</b>	No
<b>Publication Date:</b>	April 2010

### Study Description

The Superfund site in Stockton, CA, associated with the former McCormick and Baxter Creosoting Company stems from wood preservation activities that resulted in a groundwater contamination plume to a depth greater than 200 feet within discontinuous sand layers within shallow aquifer and sandy gravels/gravelly sands of upper part of deep aquifer.

Naphthalene is the primary risk driver, and other chemicals include acenaphthene and pentachlorophenol.

This case study describes an in situ stable isotope probing study using Bio-Trap samplers baited with naphthalene-carbon-13 as a contaminant tracer and installed in various monitoring wells within, side-gradient, and downgradient of the naphthalene plume and within methanogenic and sulfate-reducing conditions in the aquifer.

### Remedial Phase

Remedial phase prebench-scale microcosm study using Bio-Trap samplers to determine whether biodegradation of naphthalene is occurring in groundwater under methanogenic or sulfate-reducing conditions, whether a bench study should be performed, and optimum locations for collecting bench study groundwater and soil samples.

### Outcome

Naphthalene-carbon-13 tracer was detected in biodegradation end products (new microbial mass and carbon dioxide). All 19 locations tested were positive for carbon-13 in the biomass, indicating that indigenous microorganisms metabolized the carbon in the naphthalene-carbon-13. Carbon-13 results for carbon dioxide also confirmed the carbon metabolism by indigenous microorganisms at seven of the 19 locations that were positive for naphthalene degradation. Locations with detectable carbon-13 above the acceptance threshold for carbon dioxide were detected in methanogenic, sulfate-reducing, and iron to sulfate-reducing conditions. These findings supported moving forward with the bench-scale microcosm study.

### Case Study Source

Shaw Environmental, Inc., Haley & Aldrich, Inc., and Microbial Insight, Inc., 2010, Final Bio-Trap Study Report, McCormick and Baxter Superfund Site, Stockton, California, April.



## Reference

Shaw Environmental, Inc., Haley & Aldrich, Inc., and Microbial Insight, Inc., 2009, Sampling and Analysis Plan, Bio-Trap Use and Analyses, McCormick and Baxter Microcosm Study, McCormick and Baxter Superfund Site, Stockton, California, Final, Stockton, California, March 13.