



McC Campbell News- December 17, 2004 edition

McC Campbell Develops Capability to Analyze for Fire Retardants in the Environment

McC Campbell Analytical Inc., has developed the capability to analyze trace levels of Polybrominated Diphenyl Ether (PBDE) flame retardants in water, soil, sediment, tissue, solvents, and air. Sensitivities can be as low as 1 part per trillion (ppt) in water.

PBDE's are used as flame retardants in garments, furniture, plastics, and hundreds of consumer goods. They have been bio-accumulating in our environment and have been detected in high levels in the breast milk of California women. They are considered potential endocrine disruptors, which can interfere with the normal hormone function in humans and animals that controls metabolism, growth, and reproduction. California legislators passed a bill (AB 302, Wilma Chan) to phase out penta and octa- PBDE's from consumer products by January 1, 2008. The European Union banned their use starting in 2005 and Japan has already voluntarily phased out their use.

McC Campbell provides 5-day turn around time on PBDE analysis and is experiencing greater interest from its clients as EPA control regulations and the California ban are phased in.

McC Campbell News- January 21, 2005 edition

McC Campbell Revives its Capability to Analyze Methane, Ethane, and Ethene in Water

In response to increased client requests, McC Campbell Analytical Inc has reinstated its capability to analyze for Methane, Ethane, and Ethene in water using RSK Method 174. This a headspace equilibrium GC-FID method developed specifically for groundwater. Sensitivities as low as **0.5 parts per billion** are routinely achieved.

A vast number of studies have been performed that clearly demonstrate the aerobic (oxygen present) bioattenuation of hydrocarbons in groundwater & soil, ultimately yielding CO₂. Conversely, biogenic methane & other light hydrocarbons are generated under anaerobic conditions (oxygen absent) & their concentrations appear to correlate with the degree of hydrocarbon or chlorinated solvent contamination.

This indicates that the presence of organic contaminants creates anaerobic conditions in groundwater. The degradation of most chlorinated solvents in groundwater occurs by oxidation-reduction reactions that are predominately carried out by anaerobic bacteria in the environment. Methane appears to be the ultimate end product of anaerobic



degradation of larger / more complex organic molecules, analogous to CO₂ under aerobic conditions.

McC Campbell News- March 7, 2005 edition

McC Campbell Adds Pyrethrin & Pyrethroid Testing

Pyrethrins are insecticides that are derived from the extract of chrysanthemum flowers. The plant extract, called pyrethrum, contains pyrethrin I and pyrethrin II collectively, called pyrethrins. Pyrethrins are widely used for control of various insect pests and degrade quickly in the environment, often in a few hours.

Pyrethroids are synthetic (human-made) forms of pyrethrins that have higher environmental persistence. There are two types that differ in chemical structure (presence of a cyano group) and symptoms of exposure.

Type I pyrethroids include allethrin, tetramethrin, resmethrin, d-phenothrin, bioresmethrin, and permethrin. Some examples of type II pyrethroids are cypermethrin, cyfluthrin, deltamethrin, cyphenothrin, fenvalerate, and fluvalinate.

Both type I and II pyrethroids inhibit the nervous systems of insects. This occurs at the sodium ion channels in the nerve cell membrane. Some type II pyrethroids also affect the action of a neurotransmitter called GABA.

McC Campbell Analytical Inc, recently added the capability to analyze 14 type I and II pyrethrin and pyrethroid compounds, in various matrices such as water, soils, food, and sediments, to trace level sensitivities.

Pyrethrin II Structure

