



Attachment 1

Organic Chemicals Passive Samplers – SPMD and POCIS

In this study, the Friends of the North Fork deployed two types of samplers: Semipermeable Membrane Device (SPMD) and Polar Organic Chemical Integrative Sampler (POCIS). The two work together to collect the trace organics in the water to which fish are exposed. The SPMD is designed to sample the non-polar (hydrophobic), fat-soluble organic chemicals in water. The POCIS is designed to sample the polar, water-soluble organic chemicals in water.

Both the SPMD and the POCIS are integrative samplers that provide an average concentration of chemicals over the time period that the samplers are in the river. In our case, they were deployed for 42 to 50 days. Both are also known as passive samplers, meaning that they have no mechanical or moving parts and do not require a power source or maintenance while they are in the river.

The SPMD consists of lipid oil inside a membrane. Chemicals pass through the membrane and remain in the oil. The SPMD is housed in a protective plastic container while it is in the river. The SPMD mimics the bioaccumulation of organic contaminants in the fatty tissues of fish.

The POCIS consists of a solid sorbent inside a membrane that allows water and dissolved chemicals to pass through to the sorbent where the chemicals are trapped. The POCIS is housed in a protective stainless steel cage while it is in the river. The POCIS mimics the respiratory system of the fish.

Both are state-of-the-art samplers created by the United States Geological Service for studies of the type we have done.

For more information on these sampling devices, go to:
http://biology.usgs.gov/contaminant/passive_samplers.html