



C.L.A.M. – Continuous Low-Level Aquatic Monitoring A Discussion of Detection Limits

Quite simply, if an EPA method was run on a 1 liter sample with a given detection limit, the C.L.A.M. can provide up to 100 liters of sample lowering the detection limit 100 fold.

SPE (Solid Phase Extraction) disks are used in EPA method 3535A, for the extraction of trace organics in water, and are a standard extraction device used in laboratories to extract organics from aqueous samples for many EPA methods. The PQL of the laboratory is determined by the amount of sample water extracted through the SPE disk and the final extract volume.

If you increase the sample volume, you lower the PQL.

By field extracting 2-100 liters over several hours through these SPE disks, the C.L.A.M. is able to concentrate the sample on the extraction disk and systematically lower the detection limits while lowering the analytical cost. As the C.L.A.M. is field extracting, it is eliminating the cost of lab extraction while lowering the cost of sample transport. There are no longer tight time restrictions or the need for overnight shipping. Breakage and contamination issues are greatly reduced.

The C.L.A.M. uses active sampling and draws water slowly in a submersed state through an SPE disk that is specified by EPA method 3535A, that has special lofted pre-filtration filters. This reduces media clogging allowing for a pre-extracted quantitative continuous sampling event representing 2 – 100 times the volume of traditional samples, thus providing ultra-low detection of target analytes and a sampling event that is hours to weeks long, as compared to a few second "snap shot in time" grab sample.. The small dry extraction disk is all that is sent to the laboratory for solvent elution and analysis. The sampling is active and is powered using standard batteries, and newly developed micro-pumps with small chips for control. This method draws water through the SPE disks first, so contamination due to tubing and pump is avoided.

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