



ITRC TECHNOLOGY/METHODOLOGY STATUS REPORT POST-IMPLEMENTATION

Protocol for Use of Five Passive Samplers to Sample for a Variety of Contaminants in Groundwater

Diffusion/Passive Sampler Team

December 2008

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Status of the Technology/Methodology

Passive samplers are no longer a mysterious sample collection device. The mechanisms for sample collection are clearly understood, and practitioners, along with regulators, have accepted and have become accustomed to the sample collection procedures and the representativeness of the analytical data. The industry has not abandoned volume purge sampling; however, passive samplers are quickly replacing volume purge sampling as the better sampling method across the country and worldwide. Existing passive sampling devices are being redesigned, and new passive sampling devices are being developed to sample for emerging contaminants (e.g., perchlorate). These new devices are similar in design and are still being tested in laboratory environments and in some full-scale applications that must be confirmed with comparison sampling.

Evolution of the Technology/Methodology

During the two years since implementation, the ITRC Diffusion/Passive Sampler Team Leader has observed that passive sampling has become a robust industry featuring many passive sampling devices. These devices have various applications defined by the mechanisms of sample collection—diffusion based, equilibrated grab type, and accumulation samplers. The industry has learned about these mechanisms as well as the condition of aquifer water within a screened interval of a well. This reality brings to question the quality of past data obtained from samples collected using volume purge sampling techniques.

During the past two years, passive sampler developments have overcome some of its initial limitations. Passive samplers can collect samples for a broad range of analytes. Volume capabilities are increasing while deployment times are decreasing, thereby reducing cost of collecting samples. HydraSleeve has developed a new and additional sampler design. Regenerated-cellulose dialysis membrane samplers are commercially available fully constructed. Rigid porous polyethylene samplers can collect greater volumes per deployment. SNAP samplers can collect multiple samples from multiple vertical zones in the screened interval simultaneously, and the Gore Module can be analyzed by more than one analytical laboratory.

ITRC GUIDANCE STATUS

Condition of the Guidance

Given new enhancements to passive sampler technology, the ITRC guidance identifies limitations which no longer apply. The guidance could mislead users to believe there are only five sampling devices that collect representative samples whereas in fact there are many more.

Recommendation

The ITRC guidance should be updated to reflect new developments in the technology.