



# Dissolved Gas Sampling

## Technical Guidance from Microseeps

Microseeps septa are impermeable to diffusion

Taking samples of groundwater for dissolved gas analysis requires special equipment and techniques which are available from and have been developed by Microseeps.

Before any dissolved gas sample is taken, the well must be micropurged. This procedure calls for the use of a flow thru cell equipped with four probes which measure DO, temperature, conductivity and ORP. When these parameters have stabilized (+/- 10%) for a period of 10 minutes, the well is ready for sampling.

Water samples may then be collected directly into supplied 40 ml VOA's or bubble strip sampling may be used to collect samples for dissolved hydrogen. If the bubble strip procedure is used, both permanent gases and light hydrocarbons may be determined from the same sample that is used for dissolved hydrogen.

If the sample is taken for the purpose of dissolved hydrogen analysis, the well should have been in place for at

least 90 days and should not have a black iron screen. PVC screens are preferable. Stainless steel screens, particularly those that have been in place for long periods of time, are usually acceptable.

The analysis of the light hydrocarbon suite and the permanent gas suite may also be made from a water sample collected in a 40 ml VOA vial. These light gases, however, easily diffuse through the standard septa which are used for VOA samples.

A particularly egregious example is the diffusion of oxygen from the atmosphere into VOA vials equipped with standard teflon lined silicone septa. Microseeps has found that the rate of this diffusion is such that the sampled groundwater in such a VOA increases approximately 1mg/l dissolved oxygen per day following sampling. This means that a substantially anaerobic water sample becomes saturated with dissolved oxygen over the course of the 14 day holding time normally associated with analysis of these samples.

### Microseeps "Bubble Strip" Sampler

There is no known preservation technique to halt microbial degradation of dissolved hydrogen in a water sample. Microseeps developed a bubble strip sampler to overcome this problem and allow field personnel to sample for hydrogen in as little as twenty minutes while maintaining the integrity of the sample.

If the bubble stripping procedure is used for dissolved hydrogen, both the permanent gas suite and the light hydrocarbon suite partition into the bubble and may be determined from the same sample from which the dissolved hydrogen is determined.

It is always desirable to minimize the number of samples from which individual analyses are made to reduce the potential for sampling bias between samples.

Microseeps' bubble strip sampler has been evaluated by USEPA.

Microseeps septa are impermeable to the diffusion into the sample of dissolved oxygen and the diffusion out of the sample of the dissolved light hydrocarbons and carbon dioxide. Microseeps provides such septa with VOA vials to prevent diffusion from affecting the data derived from these samples.

