An introduction to Bailleurs

What is a bailer?
Most bailleurs consist of some form of tubing with a one-way check valve at the bottom. Water in a tank or groundwater well will fill the bailer when it is submerged. On retrieving the bailer, the check valve closes containing a sample of the contents of the well or tank. Bailleurs come made from various materials (polyethylene, Teflon, stainless steel, acrylic), lengths (from 30cms to 180cms), widths (19mm to 90mm) and with numerous features like weighted, unweighted, single check-valve, double check valve, controlled flow bottom, etc. Even with the advent of automated groundwater purge/sampling systems, the bailer remains a popular sampling tool. Despite the apparent simplicity of the bailer, it is one of the most difficult tools to use for representative groundwater sample collection. As with other activities in groundwater monitoring, bailer use should be separated into the practical aspects of sampling and the technical objectives of sample collection.

When to use a bailer
The bailer is useful as a sample collection device if the well is first purged using a less disturbing method (e.g. portable pump), when the well is slow to recover or when there is very little stagnant water to be removed prior to sample collection.

Advantages
Bailleurs offer several practical advantages over other sampling equipment:
- Simple construction, reliable operation
- Does not require electric or pneumatic power
- One person operation
- Extremely portable
- Relatively easy to clean and maintain
- Inexpensive

Disadvantages
The greatest problem associated with bailer use is the purging activity. Monitoring wells that must be purged of several standing volumes of water require the bailer to be introduced to the well numerous times. This repeated intrusion into the well increases the potential for “drag down” contamination.

Further, when a bailer is repeatedly dropped down the well such that it impacts the water surface, two problems can develop.

First, the impact of the bailer on the water surface creates shock waves that reverberate down the water column. This loosens fine particles in the formation, encouraging them to migrate into the well, making metals filtration more time-consuming and difficult.

Secondly, the impact of the bailer on the water surface creates a splash that breaks water into small droplets that are exposed to atmospheric conditions. That contributes to loss of dissolved gases leading to altered sample chemistry. Target constituents that are vulnerable to such change are metals, alkalinity and volatile organic compounds.

Similarly, when the bailer is lifted from the well, water adhering to the outer surface of the bailer body drips to the surface. Those droplets which will later be sampled, are exposed to the biasing conditions of the air above the water column.

Five reasons to use disposables
(1) Cost Effective
Disposable Bailleurs are much cheaper than conventional ones. Further why have your money tied up in expensive conventional bailleurs when you can buy disposable bailleurs as and when you need them.

(2) Accurate Samples
Residual contaminants can pollute your samples and have extreme consequences on the outcome of your results.

Ensure the highest accuracy by eliminating cross-contamination with disposable bailleurs. Each unit is decontaminated after manufacture by washing and rinsing and then individually packed and sealed.

(3) Time Effective
Eliminates time wasted on decontaminating re-usable bailleurs. No more field decon time.

(4) Equipment Damage
Save your expensive reusable bailleurs from permanent damage that can occur when it is exposed to high concentrations of contaminants.

(5) Employee health and safety
Employee exposure to toxic substances during decon pose a health risk due to cumulative effects in the body.