

Multi-Incremental Sampling – is here, are you ready? Torrent is, since 2008!

Multi-Incremental Sampling – Why and How

Multi-Incremental sampling (MIS) is a structured sampling protocol that reduces data variability and increases sample representativeness. The objective of IS is to obtain a single sample for analysis that has a mean analyte concentration representative of the decision unit. The decision unit size is site-specific and represents the smallest area on which to base a decision or conclusion. Samples are collected from multiple locations within the decision unit and composited so the samples are spatially representative of the decision unit. The decision unit must be defined so that the results are relevant to explicitly articulated sampling objectives.

The incremental sampling strategy improves the reliability and defensibility of sampling data by reducing their variability compared to conventional discrete sampling strategies. The data distribution for IS replicate samples tends to be normally distributed, as contrasted to the positively skewed distribution seen with discrete samples. Fewer non-detect results can be expected using MIS, thus mitigating problems caused by using censored data sets and lessening the chance of missing significant contamination. In addition, levels of statistical confidence and decision uncertainty that would require a large number of discrete analyses can often be obtained with a few multi-incremental samples. ¹

The two key components of IS are field sample collection and laboratory processing. Each of these requires a thoughtful approach.

Laboratory Processing and Sub-sampling

- ▶ Employ procedures for developing relatively uniform and small particle size

The entire sample received is spread evenly over a drying sheet and allowed to air dry in a controlled environment for up to 72 hrs. After that the samples is thoroughly homogenized and passed through a 2mm sieve.

- ▶ Use multi-increment sub-samples to provide representative aliquot for analysis

Once sieved, 30 incremental 1 gram sub samples are taken from random areas of the prepared material and composited to a single mass. The extraction and analysis is performed on the composite sample. ²

These procedures yield highly reproducible mean concentration.

References – ¹ ITRC – Incremental Sampling Methodology, July 2009

² Torrent Multi Incremental Sampling SOP # TLICD110, Rev 1.0 2011