WHICH METAL FRACTION TO ANALYSE?

TOTAL, TOTAL RECOVERABLE, ACID SOLUBLE OR SOLUBLE?

One of the most frequent reasons for our booking-in staff having to contact clients after receipt of samples is the failure of the client to specify which sample fraction they want analysed, especially for metals

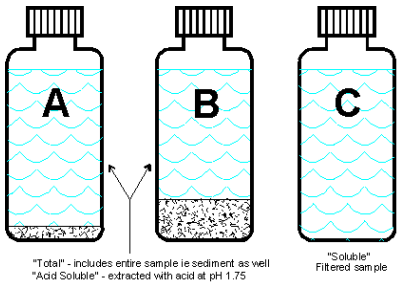
These fractions are;

- Total
- Total Recoverable
- Acid Soluble
- Soluble or Dissolved

"**Total"** components are those which are solubilised by boiling the sample, including any sediment, with concentrated acid so that all sediments and suspended solids are dissolved. This may be requested, for example, on stormwater or effluent samples, where the total amount of analyte being discharged into the receiving water is required, or on surface waters such as rivers and lakes.

"**Total Recoverable"** metals are those extracted from the sample by nitric acid at 85°C for two hours. The USEPA specifies the use of Total Recoverable metals for surface and waste waters, as these are thought to reflect bioavailability of the metals.

"**Acid soluble"** metals are those which are released into solution by subjecting the entire sample to acid extraction (pH 1.65-1.85, 18 hrs) after which the solution is separated from any remaining sediment. Acid solubilisation is often used with contaminated sites and landfills.



Note that, if sample A and B (See Diagram) were both subjected to acid solubilisation, total recoverable extraction or total digestion then the results would reflect the varying amount of sediment present in these samples.

"**Soluble", or "Dissolved"** components are those which are analysed on a **filtered** sample.

The filtering may be carried out at the laboratory, or in the field, which is preferred for low level metals. Samples can **NOT** be preserved before filtering as this would change the nature of the solution.

Dissolved analytes are preferred for groundwaters as these reflect the metals moving in the groundwater, and a variable amount of sediment will be removed from the bore by pumping or dipping, giving biases if the other fractions are analysed.

Dissolved analytes are also now often used with surface waters as they reflect the immediate bio-availability of the metals to aquatic life.

Every job has different requirements for the fraction to be analysed. Please feel free to contact us to discuss any of these points.

Contact

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