



Aqueous and Mineral Intrinsic Bioremediation Assessment

Supporting Monitored Natural Attenuation

Microseeps
has developed
a suite of
analytical methods
in support of
AMIBA



Aqueous and Mineral Intrinsic Bioremediation Analyses (AMIBA) are used to assess the quantity of iron that can participate in bioremediation as well as the quantity of reduced iron and sulfide bioremediation produces.

Microseeps has developed and is performing a suite of solid phase analytical methods for clients who are seeking a more definitive evaluation of their sites.

AMIBA samples are solid samples collected from beneath the water level and stored frozen under anoxic conditions. This process is not technically intensive and every effort has been made to make it practical for the average sampling team.

To help our clients take advantage of the power offered by AMIBA, Microseeps has written descriptive sampling procedures that cover a range of sample collection methods and contain flow-charts to help sampling

technicians rapidly and easily determine which procedure they are to use.

AMIBA analyses are used to:

- Quantify the products of petroleum hydrocarbon biodegradation. Since a very large percentage of those products go into the solid phase, it makes the most sense to measure that solid phase.
- Differentiate between iron that is immediately available for biodegradation and iron that is less readily available.
- Evaluate the minerals previously produced by biodegradation.
- Characterize the extent of reduction in the mineral phase and assess the potential for abiotic remediation.

Weak Acid Soluble Iron (WASFe) – The measurement of surface bound iron by WASFe. It is useful for assessing if iron reduction has begun and may also be useful for assessing the potential for abiotic degradation.

Acid Volatile Sulfide (AVS) – The measurement of FeS produced by the products of iron reduction (Fe^{+2}) and sulfate reduction (S^{-2}). This measurement helps prove that sulfate reduction is an active part of the remediation, even if sulfide is not observed in the ground water. AVS measurement is sometimes referred to as ferrous sulfide measurement.

Strong Acid Soluble Iron (SASFe) – The measurement of the capacity of material to support iron reduction. This is a particularly useful measurement when a carbon substrate such as EOS or HRC is to be added. It can be determined how much iron must be overcome to get to methanogenesis or sulfate reduction.

Chromium Extractable Sulfide (CrES) – This is the measurement of slightly aged and oxidized products of sulfate reduction, such as FeS_2 and elemental sulfur. This helps assess the historic contributions of sulfate reduction. CrES measurement is sometimes referred to as ferrous disulfide measurement.

