Anions and Cations

There are a group of ionic species in groundwater whose concentration is also useful in characterizing chemical and biological degradative processes which are active in a contaminant plume.

Naturally Occurring Ionic Species:

- **Nitrate**
- **Ferric Iron**
- **Sulfate**

Products of Degradative Process

- **Chloride**
- **Nitrite**
- **Ferrous Iron**
- **Manganese (II)**

For several of these species there are field kits and other field analytical tools which may be utilized depending on the needs of the client.

For species like ferrous iron and nitrate, which are in-situ reduction products of the active biological processes in the plume, there was a concern that they may reoxidize during transport to the laboratory. For that reason, field data was preferable to laboratory data.

Pace Analytical has overcome this problem by utilizing glass vials with septa which preclude the diffusion of oxygen into the sample. The reduced state of these species may be preserved for long periods of time and laboratory analyses may be equally as reliable as the field methodologies.

Even in the laboratory, there are choices in methodologies that may be used to determine the concentration of each of these species. PAES has developed ion chromatography methods which monitor each ion independently and are generally superior in terms of reliability and detection limits.

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