



## Ferrous Iron in Water Sample - must now be field filtered

The industry guidelines for sample preparation and preservation for Iron species in water samples can be vague, in that sample filtration is not compulsory.

However, large discrepancies are observed on many occasions i.e. total dissolved Iron (typically 0.45 $\mu$ m filtered into HNO<sub>3</sub>) << *unfiltered* samples for Ferrous Iron provided in Hydrochloric Acid (HCl) preserved containers.

The discrepancies are particularly prevalent where there is sediment present in the unfiltered sample. The sediment in the presence of HCl may lead to elevated Iron concentrations in the water as Iron is dissolved by the HCl. The aim of HCl addition is to stabilise Ferrous Iron (Fe<sup>2+</sup>).

Therefore Envirolab recommends the following:-

Ferrous Iron (Fe<sup>2+</sup>) Water Sampling – Samples must be filtered on site through a 0.45 $\mu$ m filter into a 60ml plastic bottle pre-preserved with hydrochloric acid. Completely fill the container to reduce the potential for oxidation due to the presence of air. Total Dissolved Fe will also be tested from this same bottle by ICP-MS. Ferric Fe (Fe<sup>3+</sup>) is then calculated as Total Dissolved Iron less Ferrous Fe (Fe<sup>2+</sup>).

If samples are not field filtered into HCl as described, the analysis will still occur, however, data discrepancies may occur as unfiltered samples are not ideal for the reasons described above.

### Method Background

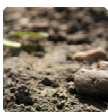
Because groundwater is often anoxic (low oxygen), any soluble iron in groundwater is usually in the ferrous state. On exposure to air or addition of oxidants, ferrous iron is oxidized to the Ferric state (Fe<sup>3+</sup>) and may hydrolyze to form red, insoluble hydrated ferric oxide. In the absence of complex forming ions, ferric iron is not significantly soluble unless the pH is very low. (APHA 3500-Fe).

FOR FURTHER INFORMATION AND TECHNICAL ASSISTANCE CONTACT YOUR LOCAL LABORATORY OR OFFICE ON

1300 42 43 44 or [www.envirolab.com.au](http://www.envirolab.com.au) OR [www.mpl.com.au](http://www.mpl.com.au)

Issued- February 2013

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