

## What 'Total' means, in heavy metal detection

For in-process and on-line measurements of heavy metal content in industrial samples all preparation must be done continuously in one step:

- Interference influences must be eliminated.
- Oxidation stages have to be taken into account (or separated and excluded).
- Complexes have to be destroyed to free the heavy metal ions for measurement.
- Suspended particles must become dissolved again (or separated and excluded).

In SEIBOLD on line analysers this most important step is achieved by using our unique and proprietary reagents (buffers and dye).



CO Total Iron Fe(2+/3+) Analyser

### How is the term TOTAL HEAVY METAL defined?

Total heavy metal content is the sum of both dissolved and suspended heavy metals in all oxidation stages in the water. What has to be measured depends on the industrial needs and regulations where limit and target values are very clear specified. In most

industries the most important is free heavy metal form because of its greater mobility and biological activity.

### What do SEIBOLD on-line analysers measure?

Clear samples containing dissolved heavy metals can be analysed immediately by SEIBOLD analysers without any pre-treatment step. SEIBOLD measurement strategy is based on chelate complex formation, the complexometric reaction between heavy metals and an organic ligand. Stability of such chelate complex is very high comparing to stability complexes of heavy metals with the following organic ligands acetate, citric acid, dimethylglyoxime, EDTA, glycine, hydroxylquinoline, oxalate, salicylic acid, tartaric acid, thiourea, triethanolamine.

SEIBOLD unique and proprietary buffer has a very important role for chelate complex formation. It contains chemical compounds that release heavy metals from its labile complexes and prepare them for binding to a dye with strong complex stability.

### What are the requirements for accurate sample measurement?

Heavy metal analysis is accurate only when the sample is truly representative of the solution being analysed. Therefore, the importance of sampling and sample handling prior to delivery to the analyser is of great importance for reliable results. Once sample is taken for analysis chemical and biological reactions can occur changing the sample composition. For special purposes acidic pre-treatment and heating of the sample is done by SEIBOLD process analysers continuously in order to dissolve resistant particles.