CALCULATIONS

(CALA) does not accredit analytes that are the result of a calculation. The main reason for this is that the standard used to assess laboratories, ISO/IEC 17025, specifies general requirements for the competence of environmental testing laboratories to carry out tests – not do calculations. There are other problems with having calculated analytes on scopes of testing: for example, a laboratory can potentially be suspended for individual components of a calculation (where Proficiency Testing (PT) is available for such analytes) but remain accredited for the sum. Another problem is that a laboratory can potentially pass PT for the individual components and fail the PT for the sum of the components.

Common Analytes that are the Result of a Calculation

There are some common tests that are typically done by calculation. Listed below are some examples of what you might find on a scope of accreditation, and which analytes that laboratory may be doing by calculation.

1) Using a colourimetric method, a laboratory is typically accredited for:
   - Nitrate plus nitrite (NO_3 + NO_2)
   - Nitrite (NO_2)

   In this case, nitrate will not show up on the scope because nitrate is calculated as follows:
   - Nitrate (NO_3) = (NO_3 + NO_2) – NO_2

2) Using ion chromatography (IC), a laboratory's scope will be as follows:
   - Nitrate (NO_3)
   - Nitrite (NO_2)

   In this case, Nitrate plus nitrite (NO_3 + NO_2) will not appear on the scope because this result is obtained by summing the two individual results; i.e.,

   NO_3 + NO_2 = Nitrate (NO_3) + Nitrite (NO_2)

3) Hardness

   A laboratory may be accredited to determine hardness by titration. Alternatively, hardness is calculated as follows:
   - Hardness = Calcium x meq for Ca + Magnesium x meq for Mg

Other examples:

Total Chlordane = gamma-Chlordane + alpha-Chlordane

Total Nitrogen = Total Kjeldahl Nitrogen + Nitrate + Nitrite

Organic Nitrogen = Total Kjeldahl Nitrogen – (Ammonia+Ammonium)

Aldrin + Dieldrin (this aggregate will not appear on the scope but each individual component will appear)

Atrazine + N-dealkylated metabolites (this aggregate will not appear on the scope but each individual component will appear)

DDT + metabolites = o,p'-DDT + p,p'-DDT +p,p'-DDD + p,p'DDE

Total Trihalomethanes = Bromodichloromethane + Bromoform + Chlorodibromomethane + Chloroform

Total Haloacetic acids

Total Xylenes = m/p-xylene + o-xylene

Heptachlor + Heptachlor Epoxide

This list is not exhaustive, and it is recommended that clients or regulators contact the laboratory if in doubt as to why an analyte is not appearing on the scope of testing.