

QUESTIONS:

1. Do the results we get from a laboratory represent the actual water quality in a closed a system?
2. Can anything change in a closed system water analysis sample in transit to the testing laboratory?
3. Are the results the same for the sample as for the water in the system the sample was taken from?

The conclusions of the CSCA Technical Group are as follows:

A) Chemistry:

- i) The pressure change on sampling may affect dissolved gasses e.g. evolution/reduction of dissolved carbon dioxide (CO₂) and oxygen. If the pH in the system is high, then CO₂ could be absorbed into the sample and as a result pH change can occur as a result of evolution of or reaction with of CO₂.
- ii) Dissolved oxygen levels may increase on sampling or transport to the laboratory.
- iii) Dissolved and undissolved metals can alter as dissolved metals can precipitate due to increase in pH or by oxidation.
- iv) If pH increases due to evolution of dissolved CO₂ on sampling calcium carbonate precipitation may occur reducing total and calcium hardness levels.
- v) Suspended solids and turbidity can increase due to precipitation of dissolved metals and hardness, or can decrease due to settlement or adsorption onto surfaces.
- vi) The temperature, odour and colour can change with time.

B) Microbiology:

- i) Regarding microbiology, bacteria in the absence of biocide may continue to multiply and may alter by as much as one log when plated out in the laboratory.
- ii) Oxygen may or may not kill Nitrite Reducing Bacteria (NRB) and Sulphate Reducing Bacteria (SRB) depending on how full the bottle is and whether or not there is an air gap.
- iii) In the presence of dissolved oxygen NRB and SRB can become stressed and may be more difficult to develop in a laboratory.
- iv) Nitrite/nitrate levels can change if NRB are present in the sample.
- v) Sulphate levels can vary if SRB are present in the sample.

In conclusion, a lot can change in a closed system water sample in transit to the testing laboratory. Some things can change within minutes and certainly hours. The results from the laboratory represent what is in the sample bottle and not necessarily what is in the system. There are certain things you should do on site and not rely solely on the laboratory analysis if you want to know and understand what the water quality is 'in the system'.