Introduction

Dissolved oxygen concentration in water is a crucial parameter to assess the condition or evolution of aquatic ecosystem health. This determination can be performed using an electrochemical sensor or the reference Winkler method that allows a more reliable measurement of this parameter. The comparison of dissolved oxygen values determined on two occasions or two samples requires calculating the measurement uncertainty. This uncertainty is also relevant to understand if the determination has adequately low uncertainty.

Results and discussion

- The determination of dissolved oxygen from analytical portions not lower than 50 mL is fit for environmental monitoring.
- It allows measurements between 0.3 mg L⁻¹ and 14.6 mg L⁻¹ with an expanded uncertainty between 0.36 mg L⁻¹ and 0.74 mg L⁻¹ (confidence level=95%)
- This uncertainty allows differentiating dissolved oxygen values between 0.51 mg L⁻¹ and 1.0 mg L⁻¹ with less than a 5% probability of being wrongly assumed a relevant difference [1]
- The described uncertainty evaluation strategy can also be used in other titrimetric determinations [1]

References


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A user-friendly MS-Excel spreadsheet that allows applying the developed uncertainty evaluation procedure was developed.