

**E2-28 Suitability of ethylene diamine tetraacetic acid di-sodium salt as an analytical standard for determination of total Kjeldahl nitrogen in environmental samples**

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Accurate estimation of Total Organic Nitrogen (TKN) of environmental samples is of importance in several areas of environmental monitoring and engineering.

Determination of nutrient budget, trophic states, nutrient loads in natural aquatic ecosystems, estimation of nutrient requirements in wastewater treatment plants and estimation of nitrogen loads in waste effluents are among them. As the concentration of nitrogen plays a significant role in the existence and the operation of the above systems, its accurate determination is important. The experimental procedure of organic nitrogen determination by the Kjeldahl method has several drawbacks and the accuracy is greatly dependant on personal skills, reaction mixture temperature, acid salt ratio, organic matter content in the sample and the amount of interfering agents present.

Determination procedure of TKN in environmental samples suffers from an absence of a suitable analytical quality control (AQC) standard.

As a result, the environmental analysts find difficulties in judging the accuracy of results. Therefore, a study has been commenced with the view to check the performance of Ethylene diamine tetraacetic acid (EDTA) as an analytical quality control standard in determination of TKN in environmental samples. High stability and representative chemical composition (every molecule contains two nitrogen atoms each bound to three carbon atoms) permit accurate analysis of TKN.

The total organic nitrogen in pure EDTA (12 samples) was recovered with the mean of 100.35% (standard deviation 1.62) the total organic nitrogen in EDTA used to spike raw Beira Lake water (11 samples and filtered Beira lake water 12 samples) gave recoveries of 101.06% and 101.13% (standard deviations 0.92 and 1.54) respect. The accuracy of recoveries in all cases indicates that at 95% confidence level, the recoveries fall within the 100% accuracy limits. Presentation of results in Multiple Analytical Quality Control charts shows that data lies within the required control limits, in all instances. The total organic nitrogen of raw Beira Lake water in the absence of EDTA was 0.663mg (11 samples). The actual total organic nitrogen of raw Beira Lake water is not known, therefore, recovery of total organic nitrogen could not be calculated.

EDTA shows an excellent performance as a AQC standard in determination of Kjeldahl nitrogen in natural lake water under normal experimental conditions.