Problems Related with Chemical Analysis of Water and plant samples

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Determination of Total N in Waters by the Kjeldahl Method

1. Analytical problems

For low N concentrations in waters one has to be very careful. All reagents must be tested. NaOH must be special for N determination. Several blanks must be measured.

2. Statistical problems

Total N via the Kjeldahl method is found by adding the Kjeldahl N resulted from organic and NH_4-N plus NO_3-N found by ion chromatography.
For these reasons the final value of total N is subjected to greater error than the total N value derived from one measurement.

The standard deviation of the value of total N is equal to the square Root of the sum of the variances of both Kjeldahl N and NO3-N. If the standard deviation becomes higher so does the standard error of the mean of total N.

For these reasons, in my opinion, the accepted limits of total N should be a bit enlarged.

Problems with Calibration of Flame Atomic Absorption Spectroskopy (FAAS)

Linear Range: Irrespective of what your instrument manual advices, you have to check the range of linearity.

I discovered that for Ca the range of a straight line is the 3 mg/L although the book claims that it is the 5 mg/L.

For K, I discovered that a straight line is impossible although the book claims that linearity exists up to 4 mg/L.

Colorimetric Determination of P in Plant Tissue

The determination of P with the molymdenum method after
Wet digestion presents some problems with the color development.

The reason is that the existence of concentrated acids affects the color.

The color development is very sensitive to pH. One solution would be
To use a buffer around pH 6 for both standards and samples.