

The z_L -score—combining your proficiency test results with your own fitness-for-purpose criterion

The 2006 revision of the Harmonised Protocol

[1] encourages providers of

they occur. Moreover, laboratories are increasingly bidding for contract analytical work.

Scoring systems

Most proficiency testing schemes in analytical chemistry use the scoring system recommended in the Harmonised Protocol. In this system, the participant's result x is converted into a z -score given by the equation:

$$z = (x - x_a) / \sigma_p,$$

where x_a is the assigned value, the provider's best estimate of the true value, and σ_p is the standard deviation for proficiency assessment

to apply a different criterion to the result, to represent fitness for a purpose different to that envisaged by the scheme provider. These recalculated ' z_L -scores' are appropriate for criteria agreed between laboratories and their customers.

Background

Proficiency testing is a method for regularly assessing the accuracy of results in laboratories conducting particular measurements. In analytical chemistry, proficiency testing usually comprises the distribution of effectively identical portions of the test material to each participant for analysis as an unknown. The laboratories conduct the test under routine conditions, and report the result to the organiser by a deadline. The organiser then converts the result to a score which helps the participant assess the accuracy of the result in relation to a fitness for purpose criterion defined by the scheme provider. (See Technical Briefs Nos 11 rem

edial activity. Proficiency tests have also acquired secondary purposes beyond the original self-help ethos. Accreditation agencies usually require that candidate laboratories (a) participate in appropriate proficiency tests where available, (b) perform satisfactorily overall, and (c) have a procedure for investigating exceptional errors when

variety of deviations from . Never-the-less, except in exceptional circumstances, the properties of the normal distribution are still useful for defining action limits when represents fitness for purpose. If, however, y