International Standard

ISO 11352

Water quality — Estimation of measurement uncertainty based on validation and quality control data

Qualité de l'eau — Estimation de l'incertitude de mesure basée sur des données de validation et de contrôle qualité

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Foreword

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This document was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

This second edition cancels and replaces the first edition (ISO 11352:2012), which has been technically revised.

The main changes are as follows:

— requirements for measurements for estimation of uncertainty component for the within-laboratory reproducibility have been changed from at least eight to 20 replicates with exception of a first estimation;

— the use of data from target control charts estimation of precision has been described;

— a new informative annex has been introduced to describe how to divide the measurement range into two parts for constant absolute and constant relative uncertainties;

— in Annex B (former Annex A) the estimation of the standard uncertainty from range control charts has been changed to the use of pooled standard deviation;

— the examples in Annex C have been adjusted;

— this document has been editorially revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The basic principles of the estimation of measurement uncertainty are set out in ISO/IEC Guide 98-3.[1] There are several ways of estimating measurement uncertainty depending on the purpose of the estimation and the available data; Eurolab TR 1/2007[2] gives an overview of the main approaches.

This document specifies a set of procedures to enable laboratories to estimate the measurement uncertainty of their results, using an approach based on validation and quality control data. Validation data can be used for first estimates of the measurement uncertainty, but should later be confirmed with data from quality control, when the method is in routine use. It is structured in a way that is applicable to analysts that do not have a thorough understanding of metrology or statistics.

Nordtest TR 537[3] has been used as a basis for developing this document. The approach taken is “top-down”, contrary to the mainly “bottom-up” strategy adopted in ISO/IEC Guide 98-3[1].

It is statistically acceptable to combine the uncertainty components associate with within-laboratory reproducibility for random error and the uncertainty associated the bias for systematic error into a single measure of uncertainty. The sources of data for this approach are validation and analytical quality control. The experimental approach specified in this document enables a good coverage of the sources of variation observed during routine use of the analytical method.