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Air quality — Guidelines for estimating measurement uncertainty

Qualité de l'air — Lignes directrices pour estimer l'incertitude de mesure

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 20988 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 4, *General aspects*.

Introduction

The general concept of uncertainty estimation is described in the *Guide to the Expression of Uncertainty in Measurement* (GUM). Practical considerations of the GUM are focussed on evaluation of series of unbiased observations. In air quality measurements, series of observations may rarely be considered unbiased due to the presence of random effects not varying throughout a series of observations.

This International Standard supports evaluation of random effects causing variation or bias in series of observations for the purpose of uncertainty estimation. Appropriate data may be collected in experimental designs providing comparison with reference material, or with reference instruments, or with independent measurements of the same type. In provision of experimental data for uncertainty estimation, it is important to ensure representativeness for variations and bias occurring in intended use of the method of measurement.

Generic guidance and statistical procedures presented by this International Standard are addressed to technical experts of air quality measurement, acting, e.g. in standardization, validation or documentation of methods of measurement in ambient air, indoor air, stationary source emissions, workplace atmospheres or meteorology.

This International Standard does not provide comprehensive information on planning and execution of experimental designs to be evaluated for the purpose of uncertainty estimation.

Uncertainties of results of measurement caused by incomplete time-coverage of measurement data are not considered in this document, but in ISO 11222[2]. Uncertainties of results of measurement induced by incomplete spatial coverage by measurement data are not considered in this document.