

Ricardo J. N. B. da Silva
Júlia R. Santos
M. F. G. F. C. Camões

A new terminology for the approaches to the quantification of the measurement uncertainty

Received: 22 June 2005
Accepted: 27 November 2005
Published online: 15 February 2006
© Springer-Verlag 2005

R. J. N. B. da Silva (✉) · J. R. Santos
Direcção-Geral de Protecção das
Culturas, Quinta do Marquês,
2780-155 Oeiras, Portugal
e-mail:
ricardosilva@dgpc.min-agricultura.pt
Tel.: +351-214464028
Fax: +351-214420616

M. F. G. F. C. Camões
CECUL/DQB – Faculdade de Ciências
da Universidade de Lisboa,
1749-016 Lisboa, Portugal
e-mail: mfcamoes@fc.ul.pt
Tel.: +351-217500008
Fax: +351-217500979

Abstract A new terminology for the approaches to the quantification of the measurement uncertainty is presented, with a view to a better understanding of the available methodologies for the estimation of the measurement quality and differences among them. The knowledge of the merits, disadvantages and differences in the estimation process, of the available approaches, is essential for the production of metrologically correct and fit-to-purpose uncertainty estimations. The presented terminology is based on the level of the analytical information used to estimate the measurement uncertainty (e.g., supralaboratory or intralaboratory information), instead

of the direction of information flow (“bottom-up” or “top-down”) towards the level of information where the test is performed, avoiding the use of the same designation for significantly different approaches. The proposed terminology is applied to the approaches considered on 19 examples of the quantification of the measurement uncertainty presented at the Eurachem/CITAC CG4 Guide, Eurolab Technical Report 1/2002 and Nordtest Technical Report 537. Additionally, differences of magnitude in the measurement uncertainty estimated by various approaches are discussed.

Keywords Uncertainty · Terminology · Metrology · Quality