

The use of certified reference materials in forensic toxicology

CHRISTIAN ZEINE

LGC Promochem GmbH, PFC, Mercatorstrasse 51, D-46485, Wesel, Germany

Reference materials are a critical tool for successful quality assurance and accreditation. Pure materials are used as calibrators, whereas matrix materials are used during method development, validation and in routine quality control to verify the real samples.

From a metrological point of view, a distinction can be made between certified reference materials (CRMs) – which does not just mean a reference material with a certificate - and “normal” reference/control materials. CRMs are mainly produced by National Metrology Institutes (NMIs) and have their place in the upper part of the so called traceability chain, which is a central part of the metrological hierarchy of CRMs.

This presentation provides an introduction to the metrological hierarchy, explains the traceability chain and the difference between CRMs and reference/control materials and gives an overlook over the few CRMs from NMIs like NIST (USA), LGC (UK) and NMIA (Australia), which are available in the field of forensic toxicology. A short reference to the JCTLM (Joint Committee for Traceability in Laboratory Medicine) is also made. The committee issues lists with reference materials of higher order, some materials of that lists are also interesting for the field of forensic toxicology.

Furthermore, some information about suitable reference/control materials, which are mainly produced by commercial companies and have to be distinguished from CRMs, is also given. Materials in this area come with extensive certificates of analysis in case of pure materials, or are matrix materials with values derived from ring trials (proficiency tests), determined by a large number of participants. Due to the low range of CRMs for forensic toxicology, they contribute significantly to the quality assurance in this field.

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Corresponding author: christian.zeine@lgcpromochem.com