

TÓTH, KRISZTINA – KISS, ISTVÁN

The Importance of Accreditation in Forensic Expert Examinations

Introduction

This study is based on a presentation delivered at this year's St. László Day Conference and examines the significance of accreditation in forensic expert activities. The presentation showcased the experiences of specialised fields, which have held accreditation for more than 12 years, from both quality management and criminalistic perspectives.

The Hungarian Institute for Forensic Sciences (HIFS, NSZKK), including its accredited forensic departments, such as the Department of Criminalistics, increasingly relies on laboratory analyses and objective evidence as technology advances. In this context, accredited testing methods play a prominent role. Accreditation, as an independent certification system, guarantees that laboratories operate in accordance with strict quality management and competence requirements set by international standards.

This system ensures that the methods applied during criminalistic examinations are authentic and validated, the instruments are calibrated, and the expert colleagues who use the instruments and conduct the examinations have received appropriate training for their activities. Accreditation directly increases the legal acceptability of expert opinions and helps ensure credibility in court proceedings. Furthermore, accreditation supports international cooperation and the broad acceptance of results, which is crucial for both cross-border law enforcement and forensic work.

This study aims to demonstrate the significance of applying accredited methods in criminalistic laboratory examinations.

The study also draws on practical examples from accredited, quality-assured HIFS institutes.

The ISO/IEC 17025¹ Quality Management Standard

The purpose of the standard is to ensure confidence in laboratory operations. It formulates requirements that enable laboratories to demonstrate proper operation and to produce reliable and traceable testing results. The standard requires implementing laboratories to plan and execute measures to address risks and opportunities related to their operations.

The application of the standard facilitates cooperation between laboratories and other bodies, promotes a unified approach, supports the exchange of information and experiences, and coordinates standards and procedures. This is of particular significance not only for coordinating the workflows of different laboratories, but also for coordinating workflows that span across national borders. A good example of this is the operation of expert fields that use international databases.

Technical Competence and Quality Assurance

According to the provisions of the ISO/IEC 17025² standard, criminalistics laboratories are required to apply documented, regularly validated testing procedures. They must ensure the calibration of measuring instruments, the continuous training of personnel, and the verification of their competence. According to the ISO/IEC 17043³ standard, participation in regular proficiency testing provides objective evidence of the correctness and compara-

¹ Source: <https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html>
Accessed: 01.07.2025

² Source: <https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html>
Accessed: 01.07.2025

³ Source: <https://www.iso.org/standard/80864.html>
Accessed: 01.07.2025

bility of the laboratory's results, significantly reducing errors and maintaining examination accuracy⁴. Proficiency testing conducted in accordance with the ISO/IEC 17043 standard is a fundamental tool for the continuous evaluation of laboratory performance. Thus, quality assurance helps ensure that examinations conducted with technical competence lead to authentic and validated results.

Court Acceptance and Legal Credibility

In court proceedings, the value of expert opinions depends not only on the substantiation of the testing method, but also on the laboratory's accreditation⁵. The results of accredited criminalistic laboratories carry greater weight in court because they are prepared in a transparent, standardised, and controlled environment⁶. This transparency and standardisation create legal certainty and reinforce the credibility of forensic expert work.

International Cooperation and Recognition

Accreditation under the ISO/IEC 17025⁷ standard provides international recognition for criminalistics laboratories, which is crucial for cross-border law enforcement cooperation and the exchange of forensic information⁸. Hungary's national accreditation organisation, NAH⁹, is a signatory to the

⁴ Okezue, M. A. – Adeyeye, M. C. – Byrn, S. J. – Abiola, V. O. – Clase, K. L.: Impact of ISO/IEC 17025 laboratory accreditation in sub-Saharan Africa: A case study. BMC Health Services Research, Issue 2020/20. 1065. o.

DOI: <https://doi.org/10.1186/s12913-020-05934-8>

⁵ Doyle, S. (): A review of the current quality standards framework supporting forensic science: Risks and opportunities. WIREs Forensic Science, 2020/2/3. e1365.

DOI: <https://doi.org/10.1002/wfs2.1365>

⁶ NAH (2024): National Accreditation Authority Annual Report 2024. NAH, Budapest

⁷ Source: <https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html>
Accessed: 01.07.2025

⁸ NAH (2024): National Accreditation Authority Annual Report 2024. NAH, Budapest

⁹ Source: <https://nah.gov.hu/hu/oldal/bemutatkozas/>

ILAC MRA¹⁰ and the EA¹¹ MLA¹². NAH's membership and status were reviewed and confirmed by the EA Multilateral Agreement Council (MAC) in 2024, verifying compliance with the ISO/IEC 17011¹³ standard. This guarantees that examinations accredited by NAH are internationally accepted. The mutual recognition agreements and guidelines (e.g., ILAC G19) concluded by ILAC¹⁴ (International Laboratory Accreditation Cooperation) and other international organisations ensure that the results of examinations conducted in one country are also acceptable in other countries, thereby supporting the global justice system.

Challenges and Development Opportunities

Although accreditation is a fundamental guarantee of quality, it does not, in itself, mean complete error-free performance or professional excellence¹⁵. The administrative burdens of the accreditation system frequently pose problems, which can divert attention from actual professional work. The problem can also be caused by formal, inactive application of accreditation¹⁶. Meeting the complex requirements of ISO/IEC 17025¹⁷ and

Accessed: 01.07.2025

¹⁰ Source: <http://ilac.org/ilac-mra-and-signatories/>

Accessed: 01.07.2025

¹¹ Source: <https://european-accreditation.org/about-ea/who-we-are/>

Accessed: 01.07.2025

¹² Source: <https://european-accreditation.org/mutual-recognition/the-ea-mla/>

Accessed: 01.07.2025

¹³ Source: <https://www.iso.org/standard/67198.html>

Accessed: 01.07.2025

¹⁴ Source: <http://ilac.org/about-ilac/>

Accessed: 01.07.2025

¹⁵ Doyle, S. (2020): i.m.

¹⁶ ¹⁶ NAH (2024): National Accreditation Authority Annual Report 2024. NAH, Budapest

¹⁷ Source: <https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html>

Accessed: 01.07.2025

ISO/IEC 17043¹⁸ standards poses particular challenges for smaller criminalistic laboratories. Successful implementation depends equally on management commitment, adequate resources, and continuous professional training¹⁹. Efforts should be made to achieve the necessary level of administration and to exploit the opportunities provided by the standardised management system, thereby minimising risk factors and ensuring optimal operation.

Accreditation is not a one-time event, but continuous compliance with standard requirements. Audits, inspections, and self-improvement mechanisms promote the professional development of criminalistic laboratories, the correction of identified errors, and the application and widespread adoption of the best testing methods. For laboratories to keep pace with scientific development, it is equally necessary to provide resources for expert training, quality assurance, and technological developments.

The Hungarian Situation

In Hungary, several criminalistic laboratories of the HIFS²⁰ hold accreditation according to the ISO/IEC 17025²¹ standard, which is regularly audited

¹⁸ Source: <https://www.iso.org/standard/80864.html>

Accessed: 01.07.2025

¹⁹ Arıcan, M. – Yalçın, A. (2025): ISO 17025 and ISO 9001: A review on quality management in digital forensics laboratories.

Source: <https://dergipark.org.tr/en/pub/isrjournal/issue/90669/1521028>

Accessed: 03.07.2025

Einseln, A. (2019): The Evolution of ISO/IEC 17025 and Accreditation Requirements.

Source: <https://www.sciencedirect.com/science/article/pii/S2589871X19300518>

Accessed: 01.07.2025

²⁰ Nemzeti Szakértői és Kutató Központ: Szervezet és tevékenység [Organisation and activities].

Source: <https://nszkk.gov.hu/szervezet-es-tevekenyseg>

Accessed: 01.07.2025

²¹ Source: <https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html>

Accessed: 01.07.2025

and reviewed by NAH²². Domestic regulation and practice are increasingly aligned with European Union norms, which in the long term improves the reliability, credibility, and legal acceptance of expert work.

The accredited central departments of the HIFS under ministerial guidance are the Dactyloscopic Expert and Facial Analysis Department, the Genetic, Physical and Chemical, Drug Testing, Criminalistic (trace, weapon, handwriting and document analysis), and Toxicological Expert Departments, in which expert work is conducted with a total of 248²³ accredited testing methods.

The management systems of accredited organisations, their procedures, risk management, and continuous internal and external control of operations ensure compliance with standard requirements.

Potential Consequences of Lack of Accreditation

The use of non-accredited testing methods may pose risks with significant consequences. One of the most significant risks is that the court may declare the examined evidence invalid. Persons previously wrongfully convicted based on such testing methods may request a retrial of their case, as a result of which the professional reputations of the investigating authority and the criminalistic laboratory may be damaged, and their professional credibility may be lost.

There is also a risk that other countries will not accept the laboratory's results, potentially leading to international isolation.

²² NAH (2024): National Accreditation Authority Annual Report 2024

²³ Nemzeti Szakértői és Kutató Központ: Minőségbiztosítás [Quality assurance].

Source: <https://nszkk.gov.hu/minosegbiztositas>

Accessed: 01.07.2025

Summary²⁴

This publication highlights the significance of accreditation in criminalistic examinations. Criminalistics, as the scientific foundation pillar of justice administration, increasingly relies on laboratory examinations and objective evidence during technological development. In the case of criminalistic quality examinations, experts evaluate the test results, and the main factor influencing their assessments is professional experience, based on identification theory. Quality assurance is particularly important in our criminalistic specialties because, in the case of expertise based on professional experience, only this way can the greatest possible objectivity be ensured.

In practice, accredited testing methods play a prominent role during the examination of evidence, as well as the complex and regulated quality management system based on the MSZ EN ISO/IEC 17025:2018²⁵ standard that provides an appropriate background for the examinations, which ensures professional competence, reliability and accuracy of procedures, reproducibility of examinations, and legal acceptability. However, for effective operation, the commitment of the organisation's management and staff to continuous quality improvement and professional development is essential.

Accredited testing methods are, on the one hand, technical regulations, and on the other hand, guarantees of legal certainty and the enforcement of

²⁴ Bócz, E. (2008): A kriminalisztika elmélete és gyakorlata [Theory and practice of criminalistics]. KJK-Kerszöv, Budapest, European Network of Forensic Science Institutes (2015): ENFSI vision on the role and value of forensic science in the criminal justice system.

Source: https://enfsi.eu/wp-content/uploads/2016/09/ENFSI_Vision_paper_final.pdf
Accessed: 01.07.2025

International Organization for Standardization (2017): ISO/IEC 17025:2017 – General requirements for the competence of testing and calibration laboratories.

Source: <https://www.iso.org/standard/66912.html>
Accessed: 01.07.2025

²⁵ Source: <https://ugyintezes.mszt.hu/webaruhaz/szabvany-adatok?standard=134618>
Accessed: 01.07.2025

human rights. The activities of criminalistic laboratories have a direct impact on the fate of people involved in proceedings; therefore, the scientific foundation, consistency, and accountability of the applied testing methods must be basic conditions, whether it concerns the establishment of innocence or guilt.

One of the most important tasks of future criminalistics is to preserve the objectivity and legality of examinations despite the challenges associated with technological development, for which accredited testing methods provide both assistance and a professional framework.