

FORENSIC SCIENCE

Forensic science is critical to an effective justice system, which in turn is a pillar of a civil society. It is an interdisciplinary field that includes chemistry as a foundational and integral component. Physical evidence presented in courts is frequently analyzed using forensic science techniques that are often grounded in chemical principles and methods. The credibility of the legal system critically depends on forensic tests that are consistent, accurate, and scientifically valid. Consequently, it is of significant importance to the American Chemical Society (ACS) that best practices from chemistry are part of how forensic science is carried out.

The 2009 National Academies' report, *Strengthening Forensic Science in the United States: A Path Forward*, enumerated the recommendations that must be adopted to improve the forensic science discipline. The report noted that due to its history, its interdisciplinary and applied nature, and its close ties to law enforcement and the legal system, forensic science has not developed a culture that reflects important aspects of how sciences such as chemistry are conducted – the centrality of evidence, the analysis and interpretation of verifiable data, efforts to identify and avoid bias, and clear connection to and building on peer reviewed research. Therefore, it is necessary for practitioners of forensic science to be equipped with the knowledge required to establish validity and reliability in analytical methods that are hallmarks of other scientific fields.

Forensic science also plays a critically important role in other areas such as the investigation of domestic and international incidents, U.S. national security, environmental protection, and ensuring public health and safety. This requires novel methods of evidence collection and innovative forensic techniques. Strengthening the scientific foundations of forensic science will benefit these areas of public concern as well.

ACS recognizes the importance of the Organization of Scientific Area Committees for Forensic Science (OSAC) under the National Institute of Standards and Technology. ACS asks policymakers to support forensic science through the following recommendations:

Strengthen scientific rigor within the forensics culture and expand and integrate forensic science research with the larger scientific community, including ACS

- Consult scientists, law enforcement, and legal professionals to identify and post current forensic science research priorities.
- Expand federal funding opportunities to support forensic science research and graduate education by both senior and junior members of the scientific community.
- Promote a rigorous education of practitioners that emphasizes a strong foundation in analytical chemistry and scientific ethics.

The American Chemical Society (ACS) Board of Directors Committee on Public Affairs and Public Relations adopted this statement on behalf of the Society at the recommendation of the Committee on Chemical Safety, and the Division of Chemical Health and Safety. ACS is a non-profit scientific and educational organization, chartered by Congress, with more than 230,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public awareness of chemistry, and brings its expertise to state and national matters.

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- Strengthen and expand the federal government's support of forensic science research by coordinating efforts across agencies.
- Support collaboration and communication between scientists performing basic and applied research relevant to forensic science and forensic science practitioners.
- Ensure the independence from law enforcement of scientific advisory boards, panels and commissions comprising the forensic science community.
- Support improvements in the quality of the forums for communication of advances in forensic science, including rigorous peer review in all journals.

Validate and improve the accuracy of forensic analytical methods and data

- Develop quantitative criteria and standardized procedures as part of validated analytical techniques in forensic science.
- Research and quantify sources and effects of human error and automate forensic tests where appropriate.

Monitor and ensure the quality of forensic science education and practice

- Promote basic and applied forensic science research, as well as translation and deployment of new techniques into forensic laboratories.
- Continue to work towards rigorous accreditation of laboratories at all levels (federal, state, local, tribal) by a recognized accrediting body, certification of scientists and other forensic science practitioners, continued education, and establishment and promotion of ethical standards for forensic scientists.
- Provide education for law practitioners, scholars, and judges in forensic science methods and practice.
- Develop outreach programs for the public that highlight the capabilities, limitations, and potential of forensic science.