

Forensic Science Standards: Recovery and Analysis of Forensic Evidence

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Introduction

General requirements for laboratories are outlined in The International Organization for Standardization (ISO) Standard 17025 and have been adapted for the accreditation of forensic laboratories by the National Association of Testing Authorities (NATA) Australia in their Field Application Document (FAD). These documents leave many forensic processes insufficiently dealt with. To address this situation, the Australia New Zealand Policing Advisory Agency National Institute of Forensic Science (ANZPAA NIFS) helped form a Standards Australia (SA) Forensic Analysis Committee in 2009. Assisted by funding from the Australian Government, the Committee established a project to develop a range of forensic standards for use in Australia. The forensic standards are based on internationally recognised and accepted practices and procedures and will help ensure that the use of forensics is robust, repeatable and consistent across all jurisdictions in Australia.

The framework for the forensic standards development consists of core standards that provide a comprehensive matrix and are applicable to the majority of forensic science disciplines. These core standards for the more universal aspects of forensic science cover collection of forensic material, examination techniques, interpretation of results and reporting findings (See Figure 1). Core standards can then be supplemented by the development of discipline specific forensic science standards or guidelines.

This paper describes the formulation and current status of the first two core standards which have been recently published. The remaining two standards covering Interpretation and Reporting in forensic science are described in an accompanying paper. A discipline specific standard for Minimizing the risk of contamination in products used for forensic DNA purposes was also published recently and is described in an accompanying paper.

AS 5388.1 Forensic Analysis Part 1: Recognition, recording, recovery, transport and storage of material

This published Standard expands on the basis provided by ISO 17025 and the accompanying NATA Field Application Document (FAD) and aims to define standard practises for activities that are not specified by those documents.

The purpose of this Standard is to set out standard practices for the recognition, recording, recovery, transport and storage of physical material from crime scenes in order to preserve its integrity for forensic purposes. This Standard covers the following areas:

- underpinning principles for the recognition of material of possible forensic relevance
- preservation of forensic material
- the systematic approach to scene examination (planning, initial examination and scene management)
- occupational health & safety (protective clothing, decontamination, disposal of waste, handling, labelling and storage of chemicals and biological material, including transport of dangerous goods, physical (sharps), radiological and electromagnetic radiation hazards, asbestos, explosives, CBRN and psychological well-being)
- recording material in situ (notes, diagrams and plans, digital photographic recording and storage, video recording)
- item collection (enhancement techniques, presumptive tests, instrumental techniques, collection of physical material from the scene, minimising cross contamination, sampling protocols, deceased remains, post mortem attendance, exhumations, collection of material from a person, biological material, sexual assaults, collection of fingerprint impressions, entomological samples)
- packaging and labelling of material
- item transport, storage and security (documentation, continuity, security and transport)
- specific storage requirements for different types of material
- informative appendices (search and seizure, FMEK guidelines, entomological samples, handling sharps and packaging guidelines).



Figure 1. The forensic science development framework in Australia.

Implications

- The development of internationally recognised standards will:
- provide consistency and a required level of practice at all stages of forensic work from sample recognition at a scene to reporting evidence in courts of law. This reduces the risk of poor justice outcomes and thereby creates savings to society by reducing the costs of re-trials or other legal processes
 - facilitate professional mobility. This has advantages in times when a rapid response is required to scenes of major crimes or mass disasters which may be beyond the means and capabilities of any one laboratory
 - benefit smaller specialised forensic service providers and individual practitioners by giving guidance in developing procedures and protocols that will ensure legal acceptability and consumer confidence, without the need for costly accreditation.

The forensic standards being developed in Australia all have the potential for international adoption or may form the basis for the development of international Standards.

Further work will, however, be required to formulate guidelines for specific disciplines and to more easily incorporate the new Standard into an assessment and/or accreditation process.

AS 5388.2 Forensic Analysis Part 2: Analysis and examination of material

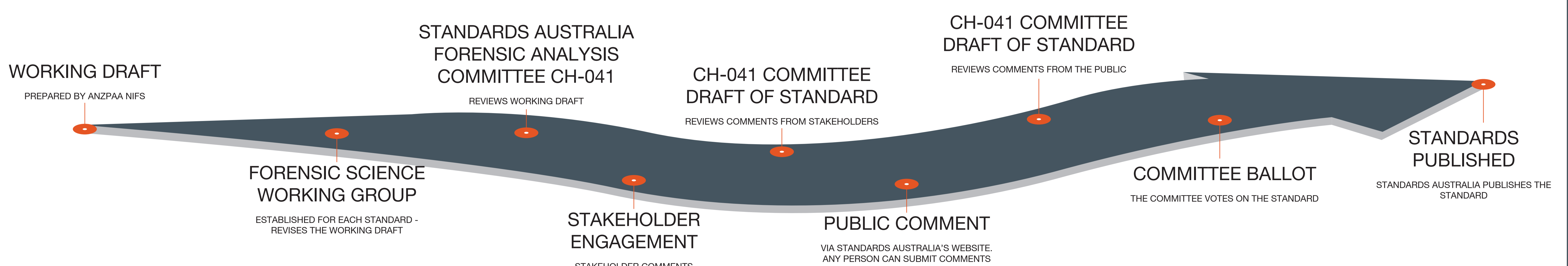
This published Standard extends beyond ISO 17025 and the FAD to better address forensic requirements regarding examination and analysis of forensic evidence.

The purpose of this Standard is to set out standard practices for the forensic examination and analysis of physical material, in order to obtain results to assist an investigation, a court of law or other tribunal. This Standard covers the following areas:

- underpinning principles
- acceptance and rejection of physical material for analysis
- analyses across more than one location or discipline
- item continuity (item management system, item security)
- occupational Health and Safety
- recording material received (note taking, photography, weighing and measuring)
- presumptive and preliminary tests
- order of examination and preservation of evidence
- sampling (representative samples, sub-samples)
- statistical sampling (hypergeometric, Bayesian)
- scientific methodology (collection and assessment of data, formulation of hypotheses, hypothesis testing)
- observations
- calculations and data transfer
- validation and verification
- instrumental methods
- comparative methods
- measurement uncertainty
- reference standards, reference collections and databases
- instrumental analysis
- method selection
- sample preparation
- separation and Identification, confirmation of identification
- quantification (standard preparation, standard curves, calculations)
- comparative testing
- recording results.

Method

The Standards Australia Forensic Analysis Committee (CH-041) was established by Standards Australia in 2009. It comprises representatives from stakeholder organisations; law enforcement, forensic facilities, judicial representatives, educators and testing facilities from around Australia. The key objective of the Committee is to develop forensic science draft standards based on the practices and procedures currently employed in the majority of accredited forensic facilities in Australia and New Zealand and therefore acceptable to the preponderance of those facilities. To this end, the Committee resolves competing interests to maximise consensus and consults with all interested constituencies through an open process to maximise transparency and acceptance.



Affiliations

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