



B158 The FBI Laboratory's Response to Recommendations Regarding Comparative Bullet Lead Analysis

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Attendees will learn the FBI Laboratory's response to recommendations regarding the analysis, assessment, and significance of comparative bullet lead examinations, which were offered in an independent report by the National Research Council of the National Academies.

This presentation will impact the forensic community and/or humanity by informing the forensic community of the FBI Laboratory's response to recommendations set forth in a report by the National Research Council of the National Academies regarding comparative bullet lead analysis and its interpretation.

Comparative bullet lead analysis is the physical and chemical examination of lead bullets, fragments, or shot pellets. It is a non-routine examination, in that, it is only performed on damaged specimens that are unsuitable for direct comparison by a firearms examiner or in the absence of a firearm for comparative projectile testing. The FBI Laboratory has provided this examination for over 35 years in support of local and federal investigations involving recovered ammunition.

Throughout the history of this examination, challenges have been raised in court as to its validity, scientific merit, and probative value. As each criticism has been raised, the FBI Laboratory has sought to address these concerns through the use of publications and presentations at scientific meetings. Not all of the challenges, however, have concerned the scientific method employed. Questions regarding the significance of the examinations have consistently been posed to courts, which have chosen to allow the jury to decide the issue. Periodically, more comprehensive *Daubert* and *Frye* challenges have also been presented to the court regarding this examination. Comparative bullet lead analysis has successfully withstood each of these challenges.

The FBI Laboratory has always welcomed constructive assessments of its scientific practices. The Scientific Working Group (SWG) program has been an excellent forum to allow for spirited scientific discussions that ultimately result in consensus documents to serve as sample protocols for the community. Unfortunately, comparative bullet lead analysis is an examination that is non-routine or non-existent in the FBI Laboratory's peer organizations at both the state and federal level. Trace element analysis, in general, is still fairly non-routine for most laboratories. The necessary consumption of a portion of the evidence, the cost to purchase and maintain the requisite equipment, and the challenges associated with deriving a meaningful conclusion from the quantitative analysis of the composition of a mass-produced, man-made entity have all contributed to a lack of other laboratories embracing the technology.

To provide an impartial assessment of the comparative bullet lead procedure, statistical analysis and subsequent testimonial assertions, the FBI Laboratory commissioned a study by the National Research Council of the National Academies as a means of addressing the challenges to this examination. The intent of this study was to obtain guidance as to what improvements might be necessary to continue to produce quality results that could be appropriately presented to a non-technical audience. To that end, the FBI Laboratory also requested that the NRC consider appropriate language to convey the bullet manufacturing process, chemical analysis, statistical assessments, and interpretative conclusions to a jury in a manner that was both thorough and concise.

This presentation will summarize the committee's recommendations to the FBI Laboratory. The recommendations cover a very broad range of topics including: the analytical protocol, the number of elements analyzed, quality control and proficiency testing measures, statistical recommendations for interpretation of the results, report wording, testimony language, and the use of phrases that the NRC committee developed to describe some of the concepts presented to a jury during direct testimony. The FBI Laboratory's response to each suggestion will be described after presentation of the specific recommendation.

Bullet Lead Analysis, NRC Recommendations, Comparative Examinations