

## Training in the Forensic Examination of Primer Gunshot Residue (pGSR) Using Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry (SEM/EDS)



### WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy-to-understand factsheets to summarize the contents of technical and professional forensic science standards on the OSAC Registry. They are not intended to provide an interpretation for any portion of a published standard.

### WHAT IS THE PURPOSE OF THIS STANDARD?

This practice describes the minimum requirements of a training program in primer gunshot residue (pGSR) analysis by scanning electron microscopy/energy dispersive X-ray spectroscopy (SEM/EDS).

This practice is intended to be used in conjunction with [ANSI/ASTM E2917-24a](#), as well as a forensic science service provider's (FSSP's) existing generalized training protocols, standard operating procedures, and quality practices, to develop a complete training-to-competency program in pGSR analysis by SEM/EDS. This practice provides the required additional, discipline-specific elements for pGSR analysis by SEM/EDS in accordance with ANSI/ASTM E2917-24a.

### WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

This practice provides a summary of the knowledge and skills required to establish competency as an independent pGSR analyst. It includes GSR SEM/EDS specific information that builds on the general topics in ANSI/ASTM E2917-24a (e.g., human factors – ways to minimize the impact of cognitive bias).

FSSPs' conformance to this standard practice will bring uniformity to pGSR training programs across the forensic community as it relates to how trainee performance and competency are evaluated and how pGSR analytical activities and reporting are performed. This approach supports the use of pGSR in the legal system.



### HOW IS THIS STANDARD USED, AND WHAT ARE THE KEY ELEMENTS?

This practice is to be used to develop and implement a training program by FSSPs that provide detection, analysis, and classification of pGSR particles. The lessons, practical exercises, and methods of progress monitoring and trainee evaluation are designed to be incorporated into an individual FSSP's training program.

This standard supports flexibility in how the training is provided, requiring specific topics and practical exercises but not requiring a specific type of instruction. Instruction can be through a combination of training methods including, but not limited to, reading; instruction by, observation of, and discussion with other pGSR examiners; and practical exercises, tests, and mock/moot court.

The following topics have specific requirements for the training program:

- Introduction to pGSR Evidence
- pGSR Formation
- Firearms/Ammunition
- Retention and Transfer
- Collection of pGSR Samples
- Contamination
- Instrumentation and Analysis
- Interpretation of Particles as pGSR
- Reporting
- Testimony
- Practical, Written and Oral Exercises
- Evaluation

The FSSP is required to document and maintain all training records.

