B112 An Investigation Into the Source of Contamination of Gunshot Residue (GSR) Primer Found in an Exam Room Used to Analyze Clothing for GSR

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Learning Overview: After attending this presentation, attendees will have a better understanding of one way to perform a root cause analysis and preventive action for a GSR contamination incident in the laboratory.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing practitioners insight into the procedures used to determine the cause and remediation of a GSR contamination.

The laboratory will perform gunshot primer residue testing on GSR stubs from a person's hands when the time from the shooting to the stubbing of a person's hands is less than four hours. In the event that the police do not apprehend the suspect within four hours, the laboratory will perform GSR testing on the clothing the suspect was wearing when the shooting occurred.

The laboratory performs the clothing stubbing in one of the trace evidence laboratory exam rooms. These rooms are thoroughly cleaned once a month to eliminate any possibility of GSR from previous cases contaminating the exam room. In addition, when a case is examined for GSR, the exam tables are cleaned with bleach and a clean piece of white paper is placed on the table. This white paper is stubbed with a GSR stub for a paper blank. The evidence is transferred from the table where it is opened to a different table where the blank white paper is. After the evidence is stubbed, the paper blank is analyzed along with the stubs taken from the clothing. In the 15+ years that the laboratory has performed this procedure, the paper blanks have always been negative.

In April of 2020, a characteristic GSR particle was identified and confirmed on one of the paper blanks.

An investigation was initiated into the source of the particle. The laboratory surmised that there were three possible main causes and several other remote causes for the contamination: (1) the particle came from inadequate cleaning techniques, (2) the particle came from the evidence packaging, or (3) the particle was airborne in the room and landed on the paper. After multiple cleaning and testing of various items in the room, the most plausible source of the GSR particle was from evidence packaging.

As part of the remediation procedure, the following cleaning steps were implemented. The exam room will be cleaned by wiping down the cabinets and exam tables. The wipes will be stubbed and analyzed. If the stubs are positive for GSR, then the procedure is repeated until the stubs come back negative. Items of clothing will be removed from evidence packaging outside the room from where the clothing is processed for GSR. Another room has been designated for processing evidence items known to have GSR on them. Clothing being processed for GSR will not be examined in the above room.

This research takes a novel approach to investigating a GSR contamination issue in the laboratory's exam rooms.

Gunshot Residue (GSR), Contamination, Remediation

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