

TRANSFER AND PERSISTENCE ANALYSIS OF GUNSHOT RESIDUE BY MP-AES AND ICP-MS. Deanna Haas¹, Shannon Accettone^{1,2}, David Ruddell³, **Sanela Martić**^{1,4}. ¹Department of Forensic Science, Trent University, Peterborough, ON, Canada, ²Department of Chemistry, Trent University, Peterborough, ON, Canada, ³Center of Forensic Sciences, Toronto, ON, Canada, ⁴Trent School of Environment, Environmental Life Sciences, Materials Science Program, Water Quality Center, Trent University, Peterborough, ON, Canada. (sanelamartic@trentu.ca)

Gunshot residue (GSR) involves the deposition of metal particles emitted from a firearm [1]. The combination of lead, barium, and antimony is characteristic of GSR particles. Among the challenges in using this evidence is the transfer and persistence of these particles. Specifically, the transfer and persistence of GSR on fabrics are of forensic relevance (primary, secondary or tertiary transfers). The detection and quantification at these trace metal levels are required for evidentiary analysis of gun-related crimes [2]. Herein, metal transfer and persistence on fabrics were evaluated using MP-AES and ICP-MS instruments. Various GSR-contaminated fabrics were analyzed for intra-transfer and intertransfer of GSR. GSR transfer during evidence packaging was probed. Metal deposition heat maps were generated to monitor GSR location on the fabrics. All metals were found during transfer studies, but the amount of transfer was highly dependent on the fabric type. Data provide additional insight into the GSR transfer and persistence which is of value to forensic scientists.

[1] F Romolo et al. *Forensic Sci Int* (2001) 195-211.

[2] M Christopher et al. *Analyst* (2013) 4649-4655.