



Criminalistics Section - 2015

B109 Development of Fingerprints From Items Submerged in Fresh Water Over Time

*Pamela Class**, Arcadia University, 450 S Easton Road, Glenside, PA 19038; *Kimberlee S. Moran, MSc*, Center for Forensic Science Research & Education, 2300 Stratford Avenue, Willow Grove, PA 19090; *Heather E. Mazzanti, MSFS*, 450 S Easton Road, Glenside, PA 19038; and *Elana Conant, MS*, Cedar Crest College, 100 College Drive, Miller #10, Allentown, PA 18104

After attending this presentation, attendees will better understand which fingerprint development and analysis techniques to use in cases involving items submerged in different bodies of fresh water.

This presentation will impact the forensic science community by raising awareness of the fact that little research has been conducted on developing fingerprints from items that have been submerged in water environments. Previous research on obtaining fingerprints from submerged items has been performed in a laboratory setting using deionized water. Since deionized water is not commonly found outside a laboratory setting, the results from the previous study are not beneficial for possible crime scene settings. It is expected that the results from previous studies will vary from the results of this study. Unpublished research has been performed on developing fingerprints from items submerged in saltwater environments.

In this study, a variety of types of items were placed in three different fresh water environments: a tub filled with tap water, a chlorinated pool, and a lake. Items that were placed in the pool and lake setting were placed in a mesh laundry bag for ease of recovery. The items that were examined included glass bottles, plastic bottles, copper piping, stainless steel piping, PVC piping, duct tape, and plastic bags. These items were selected because they are non-porous and are frequently found as items of evidence. Two different types of metal piping were selected to show that different metals produce different results in the same environments. Non-porous items were selected because the methods used for development work best on these types of items. Two sets of items were set up for each day. A depletion series of five thumbprints from the primary investigator's right hand was placed on each item. The items were then submerged in one of the three different environments, and removed in 24-hour increments. The first set was developed using Small Particle Reagent (SPR) and the second set was allowed to dry. After the items were dried, they were developed using cyanoacrylate fuming. The cyanoacrylate fuming was performed at the Montgomery County District Attorney's office in Norristown, PA. Based on this research, fingerprints containing level 2 detail can be developed from items submerged in fresh water for multiple days using SPR and cyanoacrylate fuming, meaning that investigators should attempt recovery of fingerprints from items even though the item has been submerged in a fresh water environment.

Fingerprints, Submerged Items, Small Particle Reagent (SPR)