

Evaluation of Physical Developer for Latent Prints

Morgan Korzik

Physical Developer is a chemical used in criminal forensics cases to develop latent prints on porous items of evidence, such as paper or cardboard. Physical Developer reacts with the lipids and fats in sebaceous sweat left behind in fingerprints and footprints. Dependent upon various agencies (United States Secret Service, Federal Bureau of Investigation, and North Carolina State Crime Laboratory as examples), there are deviations in the chemical preparation and processing steps of Physical Developer. The Physical Developer protocol is divided into four main steps: (1) pre-wash with distilled water with shaker, (2) maleic acid solution with shaker, (3) working solution (redox, detergent, and silver nitrate solutions combined) with shaker, and (4) tap water rinse without shaker. We devised a six-part experiment that involved modifying various reagent and environmental conditions to determine the optimal Physical Developer protocol, basing our modifications on deviations in the protocol for other agencies and literature that stated Physical Developer should specifically be used for sweaty prints on items of evidence that were previously wet. Our results indicate that Physical Developer is most successful when used to develop sweaty prints on evidence that was previously wet, using a 10-minute pre-wash and silver nitrate concentration of 10 g AgNO₃ and 50 mL dH₂O. [To view more photos and information regarding this research, you can access an in-depth presentation here.](#)