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Development of Latent Fingerprints on Non-Porous Surfaces Recovered from Fresh and Sea Water

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Abstract : Criminal offenders have a fundamental goal not to leave any traces at the crime scene. Some may suppose that items recovered underwater will have no forensic value, therefore, they try to destroy the traces by throwing items in water. These traces are subjected to the destructive environmental effects. This can represent a challenge for Forensic experts investigating finger marks. Accordingly, the present study was conducted to determine the optimal method for latent fingerprints development on non-porous surfaces submerged in aquatic environments at different time interval. The two factors analyzed in this study were the nature of aquatic environment and length of submerged time. In addition, the quality of developed finger marks depending on the used method was also assessed. Therefore, latent fingerprints were deposited on metallic, plastic and glass objects and submerged in fresh or sea water for one, two, and ten days. After recovery, the items were subjected to cyanoacrylate fuming, black powder and small particle reagent processing and the prints were examined. Each print was evaluated according to fingerprint quality assessment scale. The present study demonstrated that the duration of submersion affects the quality of finger marks; the longer the duration, the worse the quality.The best results of visualization were achieved using cyanoacrylate either in fresh or sea water. This study has also revealed that the exposure to sea water had more destructive influence on the quality of detected finger marks.

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