

PERSISTENCE AND RECOVERY OF DNA ON SUBMERGED DUCT TAPE

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Both duct tape and items retrieved from water are common pieces of evidence in forensic casework. However, there is little research uniting DNA recovery from immersed tape evidence. The goal of this study was to test the effects of submersion duration and initial cellular concentration on the ability to recover DNA and STR profiles from folded duct tape that has been submerged in ocean water for up to two weeks (336 hours), as well as the ability to recover touch DNA from such evidence. This was accomplished by spiking strips of duct tape with human cells or latent prints and submerging them in the Delaware Bay. Samples were retrieved at specific intervals between one and 336 hours of immersion in ocean water. After sample retrieval, DNA was extracted from the tape's adhesive surface and processed for STRs. The results indicate that it is possible to recover enough DNA to yield a complete STR profile from folded duct tape that has been submerged in ocean water for up to 336 hours, provided that the initial amount of cellular material is sufficient. It is also possible to recover touch DNA from latent prints, with full STR profiles recovered from samples submerged for up to 168 hours (one week). Overall, the durability and adhesive nature of duct tape seems to provide protection to cellular material on its surface while submerged in aqueous environments.