

CAPTURING THE MOMENT: PHOTOGRAPHING DNA SWABS AND PSA CASSETTES OF SEROLOGY TEST RESULTS

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Forensic analysis of physical evidence for bodily fluids in connection with criminal investigations incorporates rapid presumptive and confirmatory testing. The results of such tests must be recorded usually within seconds of their completion, owing to their time sensitive nature. Photography with its many applications in forensic science can complement case file documentation and capture the outcome of time-dependent serology screening tests. Clear, detailed, and objective photographs which accurately depict results of tests performed during forensic investigations provide a permanent visual record of the evidence and a corroborating tool that can subsequently be used to examine and verify an expert witness testimony in a court hearing. This is particularly important for faint results which can be challenging to photograph. To this end, it is imperative that the photographs are in focus, properly exposed, well-illuminated, and of high enough resolution and technical quality to be admissible as evidence in court.

In the present study, a Nikon D5000 camera with a Nikkor 85mm macro lens was used with an ISO of 200, a shutter speed of $1/125^{\text{th}}$ of a second and an aperture setting of $f/22$ to collect photographs of several test results, including faint results. Different settings were used to capture multiple PSA cassettes and swabs prepared routinely during confirmatory and presumptive testing respectively. These include varying color backgrounds combined with different exposure compensation and lighting angles in the case of photographs taken from swabs and a series of images with a number of lighting angles coupled with a wide range of exposure compensation settings due to the reflective nature of the plastic cassette's white background.

A -0.3 exposure compensation on an 18% neutral gray background with direct lighting resulted in a photograph which captured both a positive result and a negative results as well as a wide range of positive results with increasing strength (including weak positives) among several different swabs all in one single image. This is especially of interest since multiple tests can sometimes be conducted simultaneously during evidence screening which necessitates optimal settings able to capture and clearly reveal all types of results in a single shot.

Results from PSA confirmatory tests suggest an exposure compensation setting of -1.7 with direct lighting was able to produce the most favorable photographs. These preliminary data underscores the importance of photography as a forensic tool in documenting all testing performed in a case. It provides the judge and jury with an added means of understanding the testing conducted and a record of the results obtained. More extensive validation studies should follow to optimize and standardize photographic settings suitable during digital documentation of casework test results in a laboratory setting.