



### **B200 An Evaluation of Four Fentanyl Colorimetric Testing Options for Field Use**

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**Learning Overview:** After attending this presentation, attendees will be familiar with multiple, available, on-site colorimetric test kits for fentanyl and the most effective choice for field work in terms of accuracy. Attendees will see the challenges encountered when field testing fentanyl analogs and mixtures with colorimetric test kits.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by providing a side-by-side comparison of four available fentanyl field test kits evaluating accuracy, reliability, and ease of use. Determining the best method for on-site fentanyl detection will allow for safer handling and securement of fentanyl for law enforcement personnel.

Over the past several years, the country has experienced a surge of opioid use, specifically a rise in the synthetic opioid, fentanyl. The rise of fentanyl use has led to many concerns. Most alarming are the dangers associated with its potency, as well as the risk of accidental exposure as the drug is a known inhalation and contact threat. These facts have led law enforcement personnel to improve on-site protocols looking for efficient, safe, and accurate field detection methods for the detection of fentanyl. The purpose of this research was to evaluate four colorimetric fentanyl field tests to determine the most accurate and reliable method for fentanyl field detection, taking into account ease of use for untrained personnel to easily evaluate a scene when unknown powders are present. Early detection could allow other law enforcement personnel responding to the incident to upgrade their Personal Protection Equipment (PPE) and keep the area contained for the safety of bystanders. Field detection of fentanyl could also contribute to safer handling, packaging, transporting, or shipping of evidence for analysis or court-related proceedings. Additionally, chemists or those further handling the evidence could be alerted to the potential risks of the exhibit.

This evaluation focused on the colorimetric tests' ability to detect known fentanyl and some of its common analogs and fentanyl in mixtures, such as in a mixture with heroin. One hundred case samples were evaluated using four field colorimetric tests: the Presumptive Drug Test (PDT) Fentanyl Reagent Box, the Narcotic Analysis Reagent Kit (NARK II), the MDT Fentanyl, and the MMC Fentanyl/Oxycodone, Heroin/Morphine, Codeine Test Kit. When assessing whether each of the four colorimetric tests would correctly identify the primary controlled substance present in each case sample, the NARK II correctly presumptively indicated fentanyl 77% of the time. As for correctly identifying fentanyl samples and mixtures containing fentanyl or fentanyl-related compounds, the NARK II colorimetric test presumptively indicated fentanyl correctly 50% of the time, while the PDT colorimetric test correctly presumptively indicated fentanyl 75% of the time. The results indicated that NARK II indicates heroin instead of fentanyl in mixtures where both heroin and fentanyl are present. While the PDT color test outperformed the NARK II in terms of fentanyl detection, the PDT test also had the most false positives than the other tests evaluated. Based on the colorimetric test results coupled with the preliminary observations, the NARK II colorimetric test had a higher presumptive indication rate for fentanyl/heroin identification in the field out of the four colorimetric tests evaluated.

#### **Heroin, Fentanyl, Color Tests**