



Technology Transition Workshop | *Joan Ring and Kirk Grates*

FIDO Program Training Elements and Validation Study

Personnel Requirements

- Trainer Requirements
 - Trained operational drug chemist from a forensic laboratory
 - Experience using field test kits
 - Familiar with the training program
 - Flexible schedule (organization of program, document maintenance, case review, answering questions)
 - Excellent verbal and written communication skills

Personnel Requirements

- Law Enforcement Officer
 - Certified LEO
 - 3 to 5 years as a LEO
 - Strong record of arrests/drug arrests
 - Willingness to test other officer's evidence
 - Excellent verbal and written communication skills
 - Excellent courtroom skills
 - Cannot be color blind

Performance Standards

- Demonstrate competency and accuracy
 - Recommended grade for written exam is 80%
 - 100% is required on practical assessments



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Evidence Control

- FIDO program policies and procedures must insure the integrity of the evidence
- All submitted evidence must meet agency-specific packaging, marking and sealing guidelines
- Document chain of custody
- Request for Field Drug Test form (provided on CD)

Report Format

- Example provided on CD
- Heading
 - Date of report
 - Investigating officer, agency name and address
 - Agency case number
 - Field testing number (unique identifier)

Report Format

- Body
 - Suspect information
 - Description of item(s) submitted
 - Field testing officer certification
 - Examination results

Report Format

- Closing
 - Testing officer name and title
 - Field test file number
 - Date and time of field test
 - Reporting officer name and signature

Quality Control

- Report Review
 - Technical
 - Review notes, data, pictures
 - Example form on CD
 - Administrative
 - Editorial accuracy
- Laboratory re-analysis of 10% of cases per quarter per officer
- FIDO officers undergo annual recertification

FIDO Instructional Content

- Class outlines
- Certification lesson plans
- Recertification class lesson plans
- Class lecture and presentation content
- Practical exercises
- Written examinations
- Practical assessments
- Training completion record

Validation Study of Color Test Kits

- The validation study was designed and conducted to address the following criteria:
 - Adequate sensitivity to allow the detection of drugs at concentrations commonly encountered in street samples
 - Sufficient specificity to minimize false positive or false negative interpretation
 - Accurate results for drugs mixed with a variety of adulterants
 - Reproducible results

Environmental Conditions

- Test kit performance was assessed after kits were subjected to one of the following environmental conditions for two weeks:
 - Frozen (-3°C to -17°C)
 - Refrigerated (2°C to 5°C)
 - Oven (Dry Heat) (40°C)
 - Trunk of vehicle (Moist Heat) (\approx 20°C to 38°C)

Brands of Kits Tested

- NarcoPouch[®]
- nik[®]
- NARK[®]
- QuickCheck[™]



Types of Kits Tested

- Scott's Reagent (modified)
- Marquis Reagent
- Methamphetamine/MDMA reagent
- Mecke's Reagent



Sample Preparation

- Samples were prepared by combining pure drug standards with pure cutting agents in the following ratios (w/w):
 - 5:95
 - 10:90
 - 20:80
 - 30:70
 - 40:60
 - 50:50
 - 60:40
 - 80:20

Samples

- Cocaine HCl
 - Boric Acid
 - Caffeine
 - Mannitol
 - Procaine



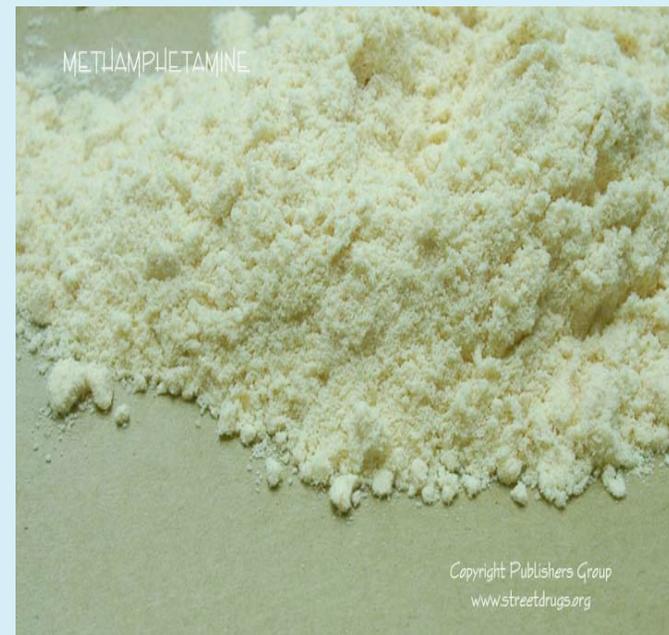
Samples

- Cocaine Base
 - Benzocaine
 - Caffeine
 - Mannitol



Samples

- Methamphetamine HCl
 - Caffeine
 - Dimethylsulfone (DMS)
 - Niacinamide



Samples

- Heroin
 - Caffeine
 - Procaine
 - Quinine



Testing Method

- Three milligram portions of sample were weighed out in duplicate using an analytical balance
- Each three milligram portion was placed into an appropriately labeled test kit for evaluation
- Ampoules were broken according to the procedure provided by each manufacturer

Testing Method

- After 60 seconds, the color, if one developed, was matched to a chip in the Munsell Book of Color
 - Color chips from the Munsell Book of Color were viewed at angles between 40-50° under General Electric Watt-Miser II F40LW-RS-WMII Lite White 34 Watt fluorescent bulbs
 - The hue, value and chroma were recorded

Munsell Color Chips



Conclusion

- All four brands of test kits are appropriate for use in a FIDO program as presumptive tests for the presence of cocaine, methamphetamine, and heroin with the following limitations...

Limitations

- Field drug test kits are presumptive in nature
- They do not provide any structural information and are subject to false positives
- Therefore, all samples producing a negative or ambiguous presumptive result should be sent to a forensic laboratory for a complete analysis

Limitations



- Kits should not be used for the analysis of residues
- Kits should not be used on liquid samples
- Color interpretation is subjective, especially when analyte concentrations approach the detection limit or when an interfering compound is present

Limitations

- Kits must be stored in environmental conditions that will not affect the integrity of the test kit or its components
- Kits should not be utilized past the manufacturer's recommended shelf life
- Use of the Cocaine test kit to distinguish between cocaine salt and base is problematic; it is not recommended to employ field test kits for this purpose

Contact Information

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Note: Unless otherwise indicated, all images contained within this presentation are courtesy of NFSTC.