Forensic Drug & Toxin Measurements
Material Measurement in Forensic Science

Need.
• To ensure the accuracy and reliability of forensic results and measurements
• To create improved methods in forensic analysis

Objectives
• Improving Analytical Capabilities in Three Forensic Science Program Areas
  • Drugs and Toxins
  • Trace Evidence
  • Human Identity (DNA)
• Develop measurement toolset
  • Methods, Reference Materials and Data for Forensics
• Enable quantifiable uncertainty of measurements
• Improved efficiency/cost effectiveness

Customers and Partners

DNA profile generated 4X faster
Reliable ID of gunshot residue

Combined Chemical and Biometric Analysis of Fingerprint Lifts

Synthetic Cannabinoid Structure & Analysis

#NISTForensics
Drugs & Toxins

✓ Mass Spectrometry of Drugs
  • Improved reference data and approaches to uncertainty of identification

✓ NMR of Drugs
  • Develop approaches to reliable identification of drugs
  • Testing benchtop NMR
  • Rapid Identification of Emerging Synthetic Drugs
    • Synthetic drugs are constantly changing and their structures must be measured

✓ Marijuana Breathalyzer
  • Growing decriminalization and legalization of marijuana
  • Need for a test for auto/truck driver intoxication
  • Field screening approaches
Strategy for Drugs & Toxins

- Develop measurement toolset
  - Methods, Reference Materials and Data for Forensics

- Enable quantifiable uncertainty of measurements

- Improve the efficiency/cost effectiveness

- Mass spectral database
- Field tests
- Inkjet materials (trace evidence talk)
- Possible Fentanyl analysis web resource

- For both qualitative and quantitative analysis

- Desktop & handheld technologies
- Reduced consumption of reference materials
ILLICIT DRUGS AND TOXINS

• 3:40 pm – 4:00 pm William Wallace
  – Gas Chromatography Mass Spectrometry (GC-MS) Libraries for the Identification of Controlled Substances

• 4:00 pm – 4:20 pm Tara Lovestead
  – A Better Understanding of Cannabis Chemistry to aid in Vapor Phase Detection

• 4:20 pm – 4:40 pm Aaron Urbas
  – NMR in Forensic Drug Analysis

• 4:40 pm – 4:50 pm Q&A SESSION