Insights from the New Hampshire State Police Forensic Laboratory

Timothy J. Pifer, M.S.
Laboratory Director
NHSP Forensic Laboratory

Fact or Fiction??

Forensic Laboratory Organization

Colonel Robert Quinn
Director - NHSP

Forensic Lab Director
Timothy Pifer, M.S.

Criminalistics Group
Toxicology Group

Forensic Laboratory Organization

Criminalistics Group

Quality Assurance/Control

Controlled Drugs
Serology/DNA
Firearms & Toolmarks
Identification
Trace
Digital Evidence & Photography

Forensic Laboratory Organization

Toxicology Group

Quality Assurance/Control

Blood Toxicology
Urine Toxicology
Breath Alcohol
50 Forensic Laboratory Personnel
- 15 Toxicologists
- 8 Drug/Trace Chemists
- 6 Serology/DNA Analysts
- 7 Identification Examiners
  - 2 Firearms/Toolmark Examiners
- 1 Photo Laboratory Criminalist
- 2 Forensic Computer Specialists
- 3 Administrative Assistants + 3 Evidence Techs
- 2 Forensic Toxicologists
- 2 QA Managers + 1 Laboratory Director

Laboratory Casework

<table>
<thead>
<tr>
<th>Discipline</th>
<th>2009</th>
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<tbody>
<tr>
<td>Controlled Drugs</td>
<td>6,544</td>
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<tr>
<td>Serology/DNA</td>
<td>730</td>
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<tr>
<td>Fingerprints</td>
<td>582</td>
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<tr>
<td>Firearms</td>
<td>78</td>
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<tr>
<td>Trace/Arson/Other</td>
<td>326</td>
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<tr>
<td>Video/Photo</td>
<td>27</td>
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<td>Computer Crime</td>
<td>27</td>
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<td>Blood Toxicology</td>
<td>2,765</td>
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<tr>
<td>Urine Toxicology</td>
<td>21,842</td>
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Inspected and Re-accredited in 2009 in the following disciplines:
- Controlled Drugs
- Fingerprints
- Digital Evidence
- Forensic Biology
- Firearms & Toolmarks
- Trace Analyses
- Toxicology

Drug Laboratory

Marijuana (Cannabis) Exhibits

Cocaine
Breath Alcohol Unit

- Portable Breath Testing
- Maintain and Certify PBTs
- Deploy and Train Law Enforcement
- Repair Units in Field

Ninhydrin Processing

DNA

- Deoxyribonucleic acid
Body Fluid Testing
Alternate Light Source
Semen, Vaginal Fluid, Saliva, Urine

Perkin-Elmer 310 Genetic Analyzer

CODIS
Combined DNA Index System
♦ National database consisting of DNA profiles of convicted offenders
♦ State of N.H. database is linked to the National database
♦ Profiles from non-suspect cases are entered into the database for comparison

Digital Evidence Unit

Photography Unit
Trace Evidence Unit
- Arson
- Explosives
- Paints/Plastics
- Fibers/Hairs
- Questioned Documents

Physically Examine and Chemically Analyze Paint Evidence for Comparison and Chemical ID
- Five-layer Paint Chip Viewed by SEM

Hairs and Fibers Evidence
- Examine fibers, fabrics and fabric marks evidence for Physical Comparison and Chemical ID
- Examine and analyze hair samples for Physical Comparison and Chemical ID

Examine lamps and lamp filaments for function and “on” or “off” condition at impact/breakage

Firearms/Ballistics
Examination Area

Test Firing
To ensure function and obtain known standards for comparison with evidence

Rifling
Lands and Grooves in barrel bore

Known Standards

Discharged Bullets
Bullet ID Using Striae Made by Rifling

Cartridge Case ID Using Breech Face Marks

Integrated Ballistics Identification System
aka NIBIN
Routinely Searches NH, VT, MA, ME, RI
NATIONAL SEARCH CAPABILITIES

Distance Determination Testing

Restoration of Obliterated Serial Numbers
Obliterated VIN

Restored VIN

Restoration of Obliterated Serial Numbers
Where is Toolmark Evidence Found?

- Point of entry
  - Doors
  - Windows
- Target areas
  - Safes
  - Locked drawers
  - Cut wires or fencing
  - Chains and padlocks
  - Slashed tires

Collection of Toolmarks

- Submit item bearing toolmark whenever possible
- Cut out area of toolmark
  - Clearly indicate cuts you made (e.g. fencing, chain, wire)
- Cast toolmarks on larger items
  - Door frame, window sill
  - Photograph the toolmark in its original location

Methodology

- Study how toolmark was made
- Make test mark with tool in same manner as questioned mark
- View with Comparison Microscope ACE-V

Individual Characteristics from Manufacture

Individual Characteristics from Wear

Use
Abuse

Physical Match Evidence

Types of Physical Matches include:

- Torn edge match
- Cut edge match
- Fracture match
- Paint or glue removal pattern
- Wear pattern patch from photograph
Physical Match Evidence

- **Surfaces may be:**
  - Metal
  - Plastic
  - Wood
  - Glass
  - Fabric
  - Paper
  - Tape
  - etc...

- **Examples may be:**
  - Broken knife blade with handle
  - Large paint chips
  - Broken vehicle headlamp assembly
  - Ripped duct tape
  - Broken window glass
  - Torn plastic bag
  - Cut paper

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Contact Information

- NHSP Forensic Lab    603-271-3573
- NHSP Toxicology Lab  603-271-4668
- timothy.pifer@dos.nh.gov
Thank you….and have a great day!