A Forensic Guide for Crime Investigators

Standard Operating Procedures

LNJN National Institute of Criminology and Forensic Science
The advances in science and technology are increasingly enhancing the role of forensic science and scientific aids in criminal investigation. This is a positive trend as it strengthens the much needed objectivity of investigation, thereby enhancing the credibility of investigation process and improving probability of bringing offenders to justice.
Standard Operating Procedure

The Need (Cont.)

Each type of forensic evidence requires relevant method for forensic examination:

I. Collection
II. Handling
III. Packing
IV. Forwarding

• Mishandling of evidence may lead to destruction of its evidentiary value. Therefore, Investigating Officers need to know:
  a) The correct procedure to handle evidence at Scene of Crime and
  b) Relevant queries to be asked from expert(s)
Standard Operating Procedure

The Need (Cont.)

• **Authenticity?** No authentic ready reckoner is available for an I.O. to remember the correct procedure in detail for vast range of physical evidences that need forensic examination.

• **Gap?** Designed to fulfill the gap between technical and non-technical functionaries of Criminal Justice System.

• **Requirement?** Also caters the scientific requirement of the forensic community for analysis of exhibits.

• **Peer-reviewed and updated?** information as on date.
Drafting of Chapters, the process

1. **Workshops** conducted with field functionaries to understand their requirement and problems in handling of exhibits.

2. **Lead Author(s)** - experts in the field who developed the technical chapter.

3. **Contributing Author(s)** – experts who were invited to review the chapter and fill the gap, wherever necessary.

4. **External Reviewer** – external subject experts invited to review the contents of each chapter independently.

5. The lead author(s), in light of external reviewer’s comments, redrafted the chapters.

6. For comfortable understanding by I.O.s comprehensive photographs, created by NICFS, and photographs of real-life cases received from Directors General of Police were incorporated.

7. The draft again reviewed by senior functionaries of Criminal justice Administration, which was circulated to Central & State Police Organisations and their suggestions incorporated.
Structure of Chapters

Each technical chapter comprises –,
• Type of crime
• Relevant sections of law
• Crime statistics
• Crime scene management
• Crime scene kit
• Beginning & end of search
• Potential evidence
• Procedure to handle evidence including its preservation, packaging & transportation to laboratory
• Some sample queries to be asked from laboratory
• Do’s & Don’ts
• Precautions
• Case studies
• References
Thank you
Burnt body and Double Hanging Cases
Digital Signature of Wildlife Products
<table>
<thead>
<tr>
<th>Do’s</th>
<th>Don’ts</th>
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<tbody>
<tr>
<td>To establish identity of deceased from skeletal remains, always collect intact long bones (femur, humerus)/molar teeth in duplicate.</td>
<td>Never prefer to collect the clavicle bone.</td>
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<tr>
<td>Preserve tissue, fetus and other similar samples in 0.9 per cent DNS and keep it in refrigerator for a short period if there is any delay in completing legal formalities for forwarding the sample to the laboratory.</td>
<td>Never use formalin to preserve tissues and bones.</td>
</tr>
<tr>
<td>Liquid blood with EDTA in sterile vials and container having tissue, fetus and other similar samples should be kept in thermos flask/ thermocol box stuffed with ice/coolant packs.</td>
<td>Never send such samples without ice/coolant pack.</td>
</tr>
<tr>
<td>Always wrap stained clothes and fabrics in paper sheet after completely drying and pack in cotton cloth or aerated container.</td>
<td>Do not pack clothes/garments, stains and swab in wet condition.</td>
</tr>
<tr>
<td>If there is more than one sample pack them separately.</td>
<td>Never dry stains, swabs in direct sunlight, by use of heater, hot air blower, etc.</td>
</tr>
<tr>
<td>Always take two or more types of samples in duplicate from a corpse</td>
<td>Do not send completely burnt/broken bones, burnt or singed hair.</td>
</tr>
<tr>
<td>Always use paper bag as packing material for biological evidence.</td>
<td>Never use polythene bag as packing material for biological evidence.</td>
</tr>
</tbody>
</table>
Packing of Evidence
Narcotic drug detection kit
Identification of Digital Evidence

Switch Mode Power Supply (does not contain any data)
CD/DVD drive may contain disc (Non-Volatile data)
Floppy drive may contain floppy disc (Non-Volatile data)
Hard Disk (Non-Volatile Data)
Battery for CMOS clock of the computer
RAM (Volatile Data)

Inside a CPU chassis
Collection of trace and latent evidences

Vacuum pump with special attachment used to collect trace evidence

Use of Iodine fuming gun to locate latent fingerprints
Blood samples packed in tube (air tight), pouch (air tight) and paper envelope.
Authors

Chapter 20-Digital Evidence

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Sample Queries

Likely Queries to be Raised (may vary from case to case):

From Medico-legal expert
(i) Cause of death.
(ii) Whether the drowning was ante-mortem or post-mortem.

From Forensic expert
(i) Whether diatom profile generated from crime scene sample (water) matches with the diatom profile of the sample (blood, bone) collected form deceased during autopsy.
(ii) Whether viscera sample contains any kind of drug/poison.
Data acquisition and imaging - Flow Chart

Evidence (Suspect Media)
- Write Blocker
  (use software, viz., FTK/Encase/C-DAC software, etc.)

Acquisition
- Read bit-by-bit (use software, viz., FTK/Encase/C-DAC software, etc.)
- Write bit-by-bit and make three copies of evidence contents, i.e. for police/court, FSL and Defence Council on new sterile non-volatile storage media such as new USB hard disk, CD, DVD, etc.

- ‘Generate Unique Identification Number’ to the contents of the evidence media using Hash Algorithm
  → Mark the Hash Value of original contents as N1

- ‘Generate Unique Identification Number’ to all three copies of the evidence contents using Hash Algorithm
  → Mark the Hash Value of imaged contents as N2, N3 and N4