INDIANA STATE POLICE LABORATORY DIVISION

PHYSICAL EVIDENCE BULLETIN

GLASS EVIDENCE

I. INTRODUCTION

A. Broken glass from building windows, vehicle windows, bottles, and other objects may be evidence in crimes against persons, breaking and entering, hit and runs, and other types of crimes.

B. Glass evidence can be associative evidence in investigations in which the individual(s) or object(s) are not known to have been in contact with the broken glass source.

C. Glass evidence is typically associative (or class) evidence unless a fracture match is found. For a comparative examination of glass evidence, it is required to submit both the questioned item and a standard from a known source for comparison purposes.

D. Glass fragments can sometimes be large enough to be visible to the naked eye, but often are very small and can be recovered during microscopic examination of items in the laboratory. The Microanalysis (Trace) Unit can conduct analysis on large and small fragments of glass.

E. Glass panes can be examined by the Microanalysis Unit to determine the direction of force, type of impact, and the sequence of the impacts.

II. TYPES OF CASES

A. Crimes Against Persons

1. Bottles and other glass objects can be used as weapons in crimes.
2. An individual standing near glass when it is broken, or that walks through glass after it is broken, may have microscopic glass fragments on their clothing and/or shoes. The clothing and/or shoes should be collected to be examined by the Microanalysis Unit for the presence of glass fragments.

3. It is important to collect known glass standards from broken glass sources to compare to any questioned glass samples that may be recovered.

B. Breaking and Entering

1. An individual may break a window to gain entry to a building to commit a crime.
2. An individual standing near glass when it is broken, or that walks through glass after it is broken, may have microscopic glass fragments on their clothing and/or shoes. The clothing and/or shoes can be collected to be searched by the Microanalysis Unit for the presence of glass fragments.
3. If an object (e.g., tool, baseball bat, etc.) is used to break a window, the object may have retained microscopic glass fragments that can be recovered and analyzed by the Microanalysis Unit.
4. It is important to collect known glass standards from broken glass sources to compare to any questioned glass samples that may be recovered.

C. Vehicle Crashes

1. In vehicular crashes, windshield glass, side/back window glass, and mirrors may be broken.
2. In a hit and run, fragments of broken glass from the vehicle may be left at scene of the accident or on the clothing of the victim if a pedestrian has been struck.

III. COLLECTION AND PACKAGING OF GLASS EVIDENCE

A. LARGE VISIBLE FRAGMENTS

1. Collection
   a. Document exact location and approximate number of glass fragments. Photograph evidence if possible.
   b. Carefully collect the glass evidence. Use tweezers and/or gloves as appropriate and take care not to get cut by sharp glass fragments.
   c. A physical match examination may be performed with larger glass fragments that are not tempered.
   d. If a physical match or direction of force or sequencing examination is desired, all fragments should be collected and can be submitted to the Laboratory Division for examination.
2. Packaging
   a. Evidence shall be packaged in a manner to preserve the integrity of the evidence and to avoid loss and contamination per the requirements noted

in Physical Evidence Bulletin (PEB) #20 *Evidence Packaging and Submissions Guidelines*.

b. Carefully package the glass items in an appropriately sized container (e.g., pill box, paper bag, or cardboard box), ensuring that the glass fragments will not puncture the packaging.

c. Do not use glass containers.

d. If glass is collected for determining direction of impact of a bullet or other fracture analysis, label which side of glass was on the outside of the window and which side was on the inside.

B. FRAGMENTS OF MICROSCOPIC SIZE

1. Collection

   a. Keep handling to a minimum.

   b. Wrap any articles of clothing to be searched for glass fragments separately with butcher or brown paper. Wet or bloodstained clothing shall be dried before packaging in paper.

2. Labeling and Packaging

   a. Evidence shall be packaged in a manner to preserve the integrity of the evidence and to avoid loss and contamination per the requirements noted in PEB-20 *Evidence Packaging and Submissions Guidelines*.

   b. Objects such as tools or bullets to be searched for glass fragments shall be packaged in an appropriately sized pill box, paper bag, or cardboard box. Objects that may cut or poke through a bag (e.g., tire iron, baseball bat) shall be packaged in size appropriate cardboard box.

   c. Carefully place an evidence item in a container into which any debris will remain inside the packaging and the object will comfortably fit.

      i. Do not pack with cotton or other protective material directly touching object.

      ii. To prevent rattling, the object may be wrapped and sealed in butcher or brown paper and the container packed with crumpled paper or packing material.

   d. A pill box or similar boxes with tight fitting lids may be used.

   e. Do not use glass containers.

   f. Seal container completely with evidence or packaging tape, leaving no holes or open seams through which the glass may be lost should it become loose from the object.

   g. Label all evidence packaging per the requirements in Laboratory Division PEB-20 *Evidence Packaging and Submissions Guidelines*.

   h. Note on the Request for Laboratory Examination Form the source of each item submitted to the Laboratory Division for analysis.

C. COMPARISON SAMPLES

1. Collection
    a. The laboratory examination of glass fragments is almost exclusively a process of comparison of question samples collected at the scene or from an individual to samples from a known source. For this reason, collect as much broken glass from the known source(s) as possible to be submitted with the other of the evidence collected.
    b. If size limitations preclude collecting all the glass from the known source, always attempt to obtain a sample from an area near the point of impact and then collect and label separate specimens from distant corners of the pane as well.
    c. If multiple sources of glass have been broken, collect a known standard from each source.
2. Submission of All Sources of Glass
    a. Each potential source of glass shall be collected and packaged as separate items.
    b. If more than one side window of a vehicle is broke, a known standard should be collected for all pieces of broken glass.
    c. Likewise, for each piece of glass from a display case, a known standard should be collected.
3. Always keep the comparison samples separate from the fragments collected at a scene or from an individual.
4. Package in separate containers and label properly per the requirements in Laboratory Division PEB-20 *Evidence Packaging and Submissions Guidelines*.

IV. EXPLANATION OF RESULTS FROM LABORATORY EXAMINATION OF GLASS

A. If the pieces of broken glass can be made to fit together in the manner of a jig-saw puzzle, it may be possible to determine if that the pieces were once physically connected to and a part of each other.

B. Even if unusual properties are present, only an indication of common origin can be given, not an absolute identification.

C. If a window has been struck with a blunt instrument such as a rock, stick, or fist, it may be possible to determine the side of impact and the nature of the force involved.

D. If a window has been penetrated by a bullet, it may be possible to determine the direction from which it was fired.

E. If two or more points of impact are in close proximity, it may be possible to determine the sequence of impact.

V. CONTACT INFORMATION

For further information please contact the Indiana State Police Laboratory Division Microanalysis Unit at 1-866-855-2840 or 317-921-5300.