

## Lab 1 Introduction to Identification and Individualization

**This** exercise is designed to familiarize the student with the concepts of identification and individualization as they are used in forensic science. You will practice: individualizing a **person** using fingerprints; finding characteristics which identify and individualize a **laboratory beaker, bottle cap, or other mass produced article**; and matching broken and **torn edges** of wooden and paper articles. Some of these operations may seem trivial, but **they** incorporate important forensic science concepts.

You should record all your observations in your laboratory notebook. Observations must be documented contiguously from the title page of the exercise to the report. Do not treat the three parts of this exercise as separate exercises.

The questions which should be answered in your notebook are italicized.

### **Part A. Fingerprints**

Print your name and the date in the space provided on a fingerprint card and also in the upper left corner of a blank piece of paper. Have yourself fingerprinted by a member of the laboratory staff or by a student experienced in fingerprinting and record the action in your notebook. An ink-pad should be used to produce a set of inked prints on the fingerprint card and a set of inked contact (non-rolled) exemplar prints on the piece of paper. Label the left and right hand on the exemplar. A fingerprint will be cut from the piece of paper and issued as an unknown. The fingerprint cards will be used to form a "file" which each student will search to individualize the unknown.

### **Part A. (Manufactured Articles) - Bottle Caps**

The object of this part of the exercise is to consider those parameters that identify a mass-produced product as a particular type of product (class characteristics) as distinguished from those parameters which make it distinct from all others (individual characteristics). Students will examine a set of five "new" manufactured articles and five "used" manufactured articles. Bottle caps, if taken from one brand of beverage, are an excellent example of used samples. To identify a beaker, consider those class characteristics which all bottle caps have in common such as overall shape, shape of spout, proportions, etc. To identify a beaker as belonging to a certain class of beakers consider factors such as volume, graduations (or their absence), labeling, brand designations, etc. Typical parameters that should be considered in individualizing a bottle cap could include such things as precise measurements of mass and dimensions, labeling defects, shape deviations, scratches, etc. It is not sufficient to simply find differences in the selected bottle caps; you must find a sufficient number of distinguishing characteristics to individualize them from the millions of others in their class. Document the distinguishing characteristics. Draw enlarged sketches, when appropriate, to clarify written descriptions. Use your imagination in deciding on other individualizing parameters. Consider parameters that you are able to examine on-the-spot as well as parameters that you feel

would have potential use if you had the time to measure them. Summarize the class characteristics and individual characteristics previously documented under appropriate headings. Use the same methodology for examining the set of "used" manufactured articles.

- (1) What parameters did you use to individualize the mass produced products?*
- (2) What parameters would you have used to individualize the mass produced products had sufficient time and equipment been available?*
- (3) Would you expect the differences in individual characteristics to be greater in a single lot of the product used in this exercise or in a sample of an equal number selected at random?*
- (4) List differences that you would expect to be greater in randomly selected samples as opposed to differences among items in a single batch or lot.*
- (5) What differences do you feel would not be greater in such a randomly selected sample?*
- (6) What differences would you expect to find if the items were used?*

### **Part C. Matching torn, cut, and broken fragments**

Obtain a piece of unlined letter size paper from the laboratory technician and cut it into ten small squares. Code each of the squares by writing a letter on the left side and a number on the right side. Do not use obvious codes, such as A-1, B-2, etc. Put the coding table in your laboratory notebook for later reference. Next, tear five of the squares in half (separating the letters from the numbers), shuffle them, and examine the torn edges. Do this analysis with the code side down so as not to influence your analysis. Is the detailed shape of these edges unique? Can you find any pair that matches that was not one piece earlier as evidenced by your table? Document all observations in your notebook.

Examine the halves torn by another student to determine whether or not any of your torn samples match. Ask another student to prepare a practice unknown for you, giving you one lettered fragment and all five numbered fragments. Determine which numbered piece matches the lettered piece. Use the stereoscopic binocular stereomicroscope to examine the edges of two matching pieces when they are juxtaposed. Document all observations, using sketches to illustrate relevant details.

- (7) Would individualization be possible if a piece of paper were torn into three pieces and the middle section destroyed?*
- (8) If so, what factors would you consider in attempting an individualization of this type?*
- (9) What difficulty would you expect if pieces of paper are cut apart with scissors rather than torn?*
- (10) Would individualization still be possible?*
- (11) If so, what factors would you rely on in attempting to accomplish an individualization in such a case?*

Cut the other five coded squares of paper in half, separating the letters from the numbers. Examine them with the stereomicroscope. Can you match the appropriate halves? Document your observations in your notebook, using sketches when appropriate to clarify written descriptions.

- (12) What factors would you consider in attempting an individualization of torn cloth?*
- (13) What difficulty would you expect if pieces of cloth are cut apart with scissors rather than torn?*
- (14) Would individualization still be possible?*
- (15) If yes, what factors would you rely on in attempting to accomplish an individualization of cut cloth?*

**Set up** a similar experiment using broken wooden toothpicks. Place a "code" on opposite ends of five toothpicks, break them apart, and shuffle them. Because of the limited area, the code might consist of dots and dashes of different colors. The code should not be easily deciphered without reference to the notebook. Using the stereomicroscope, try to locate the matching halves. Document your observations. Check the "matches" against the code documented in the notebook.

- (16) What factors would you consider in attempting an individualization involving broken wooden toothpicks?*
- (17) What difficulty would you expect if a toothpick was broken in three sections and the middle section is lost?*
- (18) Would individualization still be possible?*
- (19) Do you feel that you understand the concepts of identification and individualization?*
- (20) How are they important in forensic science?*
- (21) Which of these two concepts or operations is common to other sciences?*
- (22) Is any one of these unique to forensic science? Justify your answers.*
- (23) Why is it important to record all observations continuously in your notebook?*