TITLE: Powder-type Evidence Analysis

A. PURPOSE: To define a method by which powder-type evidence will be examined and / or compared.

B. RESPONSIBILITY:

Forensic Science Examiner who has successfully completed powder-type evidence training in accordance with the Trace Section Training Manual (SOP-TR-01)

The Director or Supervisor may act as the co-signor of a report, which includes powder-type evidence examination or comparisons.

C. SAFETY:

The appropriate measures for the proper handling of biohazard materials, sharps instruments and chemicals will be used according to the Connecticut State Forensic Science Laboratory Safety Manual.

D. PROCEDURE: Set up

1. The examiner will use his / her discretion to assess the probative value of the evidence; as well as, determine the types and extent of the examinations conducted.
2. The examiner may deem it necessary to vary from the set powder-type evidence analysis protocol based on the evidence submitted. If a variation in the powder-type evidence analysis procedure is necessary, the submitting agency will be notified.
3. If at any time during the comparison of a known and an unknown powder the examiner determines a significant difference, no further examinations will be conducted and the powder will be deemed “dissimilar”.

E. PROCEDURE: Documentation

1. Evidence will be documented. (SOP-TR-05) Evidence Documentation.
2. Evidence and powder-type samples examined in the Trace Section will be documented on the appropriate Quality Record Worksheet. The required information will be recorded. The worksheet(s) will remain in the case jacket.
3. The examiner may photo document powder-type evidence.

F. PROCEDURE: Collection

Powder-type evidence may be transferred from other sections of the Laboratory to the Trace Section for further examination.

G. PROCEDRUE: Analysis and Comparison

1. When comparing an unknown and a known tape sample the following scheme will generally be followed, based on the examiner's discretion – all or some of the following may be used: Comparison of-
   a. Gross Overall Physical Characteristics – Macroscopic / Microscopic Examination
   b. Polarized Light Microscopy
   c. Instrumental analysis may be used : FT-IR

   *The powder sample used for visual-type examinations will then be used for instrumental analysis.

2. Supplemental examinations may be utilized at the discretion of the examiner for the determination of location, recovery, collection, identification or comparison of powders. These examinations may include UV light, alternate light source (Crime Lights-brand), florescence microscopy, microspectrophotometery, solubility or SEM EDAX. If one or more of these supplemental forms of examination are utilized, their use will be documented in the case jacket.

   ** If a powder sample will be examined via SEM EDAX, an examiner from the Chemistry Section of the Forensic Science Laboratory may perform the analytical analysis needed and provide the data/ results/ images to the Trace Evidence Examiner. The data / results / images provided will be included in the case jacket for the case examined.

   ******* If an instrumental reference collection is used, a hard copy of the reference data should be included in the case jacket.

H. PROCEDURE: Storage

1. Powder samples may be packaged / stored on a glass vial or between glass microscope slides or a similar method. The examiner will determine the best method to secure powder-type evidence for examination and / or storage. A variation of the previously listed methods may be used.
2. Retained powder evidence from a case will be placed in a sealed envelope with the examiner's initials across the seal and stored in the appropriate long-term storage area.

I. PROCEDURE: Report Writing

1. The examiner will assess the macroscopic / microscopic optical results and comparisons and analytical data (instrumental analysis) along with utilizing their training and experience to determine if two powders are similar or dissimilar.
2. Upon the completion of a powder comparison, the examiner may utilize wording similar to those listed below. The examiner will use their training and experience to draft a report, which reflects the results obtained on a case-by-case basis.

Typical statements used when writing a report may include:

*A white powder was located in item #1 (envelope). This powder exhibited microscopic and instrumental characteristics similar to the white powder located in submission #3 (container of powder).

*A white powder was located in item #1 (envelope). This powder exhibited characteristics dissimilar to the white powder located in submission #3 (container of powder).

The white powder located in submission #1(envelope) exhibited microscopic and instrumental characteristics similar to talc.

The examiner will consult with the co-signer to draft a report, which best reflects the results obtained.