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Standard Guide for Preservation of Liquid Soaked Documents[1]

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1. Scope

1.1 This guide provides procedures that should be used by forensic document examiners (Guide E444) for the preservation of liquid soaked documents.

1.2 These procedures include evaluation of the sufficiency of the material requiring preservation.

1.3 The particular methods employed in a given case will depend upon the nature of the material requiring preservation.

1.4 This guide does not cover all procedures to preserve unusual or uncommon liquid soaked documents. Consultation with a document conservationist, archivist, or related material expert, as well as reference materials, may be necessary.

1.5 This guide does not replace knowledge, skill, ability, experience, education, or training (Guide E2388) and should be used in conjunction with professional judgment.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E444 Guide for Scope of Work of Forensic Document Examiners

E1732 Terminology Relating to Forensic Science

E2195 Terminology Relating to the Examination of Questioned Documents

E2388 Guide for Minimum Training Requirements for Forensic Document Examiners

E2710 Guide for Preservation of Charred Documents

3. Terminology

3.1 *Definitions:*

3.1.1 *bone folder, n*—a piece of shaped bone or other material, such as plastic or Teflon, typically used by bookbinders to crease paper and to separate pieces of paper that are stuck together.

3.1.2 *parylene processing, n*—the deposition of a clear polymer coating on a document(s) within a vacuum chamber to strengthen and stabilize the document(s).

3.1.3 *polyester film encapsulation, n*—a process whereby a document is sealed between two sheets of polyester film to preserve, stabilize, and facilitate handling.

3.1.4 *submersion, v*—the placement of a document(s) into an appropriate liquid to facilitate cleaning, unfolding, or separation of the document(s).

4. Significance and Use

4.1 The procedures outlined here are grounded in the generally accepted body of knowledge and experience in the field of forensic document examination and related fields. By following these procedures, a forensic document examiner can reliably process liquid soaked documents to optimize their preservation.

5. Interferences

5.1 Items submitted may have inherent limitations that interfere with the procedures in this guide. Any limitations should be recorded.

5.2 The results of prior storage, handling, testing, or processing can adversely affect the preservation of the document(s). The document(s) should be frozen or otherwise immobilized as soon as possible to stabilize their condition prior to preservation.

5.3 The extensive time required for some procedures and the type of procedures chosen can conflict with investigative needs and other forensic examinations. Coordination with the submitter, experts in other forensic disciplines, and other relevant individuals might be warranted.

6. Equipment and Requirements

6.1 Appropriate light source(s) of sufficient intensity to allow fine detail to be distinguished.

NOTE 1—Natural light, incandescent, LED or fluorescent sources, or fiber optic lighting systems are generally utilized. Transmitted lighting, side lighting, and vertical incident lighting have been found useful in a variety of situations.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

6.2 Magnification sufficient to allow fine detail to be distinguished.

6.3 Picks, such as dental picks, probes, and tweezers.

6.4 Atomizer.

6.5 Trays, tanks, and pliable screening.

6.6 Bone folder or similar device.

6.7 Polyester film or other encapsulation material, as required.

6.8 Imaging or other equipment for recording observations, as required.

6.9 Other apparatus, such as freeze dryer, book press or other suitable press, humidity chamber, laboratory oven, and chemicals, as appropriate.

6.10 Sufficient time and facilities to complete all applicable procedures.

7. Procedure

7.1 All applicable procedures should be performed and noted when appropriate. These procedures need not be performed in the order given.

7.2 Document procedures performed, relevant observations, and results.

7.2.1 Images should be made to document the initial condition of the evidence and subsequently as needed.

7.3 It is at the discretion of the examiner to discontinue or limit the procedure outlined in this guide when further processing is no longer practical or appropriate. Document the reasons for such a decision.

7.4 Evaluate the documents for the following:

7.4.1 The nature and condition of the documents.

7.4.2 The nature of the liquid(s).

7.4.3 The extent of the effect from the liquid(s).

7.5 Determine the appropriate procedures to optimize preservation of the document(s).

7.5.1 For wet, single-page document(s):

7.5.1.1 Select a suitable method, such as submersion or drying, to unfold the document(s), if necessary.

7.5.1.2 Select a suitable method, such as air drying, freeze drying, or pressing, and dry the document(s).

7.5.2 For wet, multi-page document(s):

7.5.2.1 Determine if the wet pages can be separated or unfolded without additional damage. This can be accomplished by submerging the document(s) in an appropriate liquid, such as water or mineral spirits. If the pages cannot be separated or unfolded, select a suitable drying process, such as air drying, freeze drying, or pressing.

7.5.3 For dried document(s):

7.5.3.1 Attempt to separate, if necessary, and flatten the pages using appropriate equipment, such as bone folders, picks, probes, and tweezers. Prior to or during the attempt to separate and flatten the document(s), it may be necessary to rehumidify or resubmerge the document(s). Rehumidification with appropriate fluids may be accomplished with an atomizer, humidity chamber, or both. When resubmerging the document(s), an appropriate container and screen should be utilized.

7.5.4 For documents received frozen:

7.5.4.1 Freeze dry the document(s) and refer to 7.5.3.1. If time does not permit, thaw the document(s) and treat as wet document(s).

7.6 Encapsulation of the document(s) upon completion, such as with polyester film or glass, or other procedures, such as parylene processing, may be advisable.

7.7 Other forensic examinations may be conducted as required.

8. Report

8.1 Report the results of these procedures as appropriate.

9. Keywords

9.1 forensic sciences; freeze dry; liquid soaked documents; preservation; questioned documents; water soaked documents