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CAN'T TOUCH THIS:
USE OF NON-DESTRUCTIVE TECHNIQUES TO AVOID SPOLIATION OF EVIDENCE

I. Preserving the Evidence for Inspection

When an event that results in personal injury or property loss takes place, it is often the case that a physical object or product is the central piece of a trial or an insurance investigation. In order to preserve the context of these objects of interest, it is important to document as many facts of the event as possible via a combination of witness statements, reports or injuries and compilation of any available photos or videos.

Once facts have been documented, the next step is to segregate potential evidentiary items and turning them over to insurer, third party adjuster, or attorney, but this needs to be done carefully as to preserve said items so their size, shape, and material composition are available for future inspections or even trials.

A. Considerations for Preservation Options

The first consideration should always be safety, and thus one of the first steps in preserving the evidence is assessing whether any potential hazards can be associated with the evidentiary item and whether specialized equipment or training is required when handling said item. A clear example of the importance of this first step can be seen in cases dealing with chemical spills or residues. Understanding the chemical composition of a substance found near to a location where personal injury or property loss took place can produce insights into both the failure mode and liability (user abuse, material incompatibility, design issues), but mishandling unknown chemicals can lead not only to evidence spoliation via chemical contamination, but to personal injury of whoever is collecting the evidence for preservation. Thus, both Environmental Health & Safety (EH&S) training and specialized personal protective equipment (PPE) are required to deal with a chemical spill. Other potential hazards include respiratory hazards, like from air particulates at a fire scene, and fire hazards, like a latent short circuit on a battery that has been exposed to fire/water damage.

As indicated in the chemical spill example above, a second consideration should be avoiding the introduction of contaminants during evidence collection. Some examples of contamination during collection include handling a potential piece of evidence with bare hands, introducing natural oils that might obfuscate chemical analysis, or utilizing metal tools that leave particulates on the evidence. Introduction of contaminants can be avoided through proper PPE, such as gloves, and tool maintenance.

Another consideration is whether any of the evidentiary items are perishable, which means they are likely to change or disappear if not collected immediately. Some examples include gauge readings, ground scars, radio settings, fire damage, and the positions of switches on equipment[1]. Identification of perishable evidence, extensive photo documentation and, if possible, collection into containers that might stop, or slow down deterioration should be prioritized.

A similar consideration to perishability is the fragility of the evidentiary item, or the risk of potential destruction associated with an attempt at preservation. In many property loss cases (such as a fire), the damage associated with the property loss might have compromised the structural integrity of key evidentiary items. This means that even before collection of the evidence takes place, a plan must be in place on how to perform said collection with minimal disruption of the evidentiary item. Common approaches to these situations include sampling a larger area containing the evidentiary item or, if possible, reinforcing the evidentiary item at the time of collection, both of which should be done in such a way not to alter the evidentiary item and with thorough documentation of the process.

Finally, environmental conditions must also be taken into account at the time of evidence collection and preservation. Factors such as extreme temperatures or water ingress via high humidity/rain might spoil potential evidence. Although environmental factors cannot be controlled, thorough planning (scheduling, building temperature control) can minimize the effects of the environment.

B. Preservation Options

When it comes to storage and preservation of evidentiary items, multiple materials (cardboard, plastic, glass, metal) and form factors (boxes, bags, bins) are available. The considerations for choosing a container are similar to the considerations needed to preserve evidence, such as placing evidence susceptible to humidity in impermeable containers, placing evidence susceptible to light in opaque containers, placing fragile evidence with packing material that will minimize further movement or placing viscous/liquid evidence in glass containers.

In certain cases, the nature of the evidentiary item might require employing specialized containers, such as preserving electronic components in anti-static bags or storing gas samples in syringes. In all cases, thoughtful planning and documentation of the transfer process will help minimize the risk of evidence spoliation.

[1] https://www.oshatrain.org/notes/physicalevidence.html

C. Location of Material being Preserved

Once the evidentiary items have been collected and placed in appropriate containers, they will often need to be stored for further inspection at a later date. A critical step that needs to be performed before storage takes place is to label each evidentiary item with a unique (descriptive) name in such a way that it can be traced to a specific object/location of the scene of a failure. If possible, similar evidentiary – like different fragments of a broken object – should be grouped together during storage in order to ease their retrieval at a later date.

The storage process of evidentiary items itself should follow best chain of custody practices, and the storage location should be chosen to avoid or minimize evidence deterioration due to external environmental factors (humidity, moisture, heat, dust, etc.) identified during the evidence preservation considerations. Furthermore, the storage location should take into consideration potential sources of complete evidence loss, such as flooding or potential fires.

II. Inspection

In many investigations, unique and critical information may only be obtained by having a technical expert perform a detailed examination of an evidentiary item.[2] Thus, preserving the size, shape, and material composition of an evidentiary item up to the time of the inspection is paramount so that experts have the opportunity to examine said object and conduct the necessary analyses to formulate and support their opinions.

The same level of care employed in collection and storage of the evidence should also be exercised during a technical evaluation, such that the act of inspecting the object itself does not result in spoliation of the evidence.[3] Therefore, a critical step during a technical evaluation of an evidentiary item is to extract as much information as possible in a non-destructive manner. A variety of scientific techniques with varying degrees of ubiquity and complexity can be leveraged to perform non-destructive evaluations of evidentiary items.

A. Scientific Techniques

The most common non-destructive technique is to perform a visual inspection of the evidentiary item in order to identify any features of interest such as abnormalities, damage, discoloration, etc. The visual inspection process is often documented through digital photography, and it can be paired with dimensional analyses via the use of measuring tapes, rulers or calipers. The features of interest identified during the visual examination can be further analyzed through optical microscopy, which enables the examination of features too small for the human eye to detect and can also be paired with

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2 Koesel MM, Turnbull TL. The Duty to Preserve Evidence. In: Gourash DF, ed. *Spoliation of Evidence: Sanctions and Remedies for Destruction of Evidence in Civil Litigation.* Third ed.: ABA Book Publishing; 2013.

3 Gruppie GR, Mouradian MO, Winder KA. Lose the evidence, lose your case: understanding and avoiding spoliation of evidence. *FDDC Quarterly*. 2012;63(1):27-34.

digital photography for documentation purposes. Another common non-destructive physical characterization technique is weighing the evidentiary item through the use of an appropriate (in terms of size and sensitivity) scale.

Depending on the nature of the evidentiary item and of the scientific questions being posed by the technical expert, the common techniques described above might not be sufficient to perform all the analyses needed. For example, additional data on the condition and outer morphology of an evidentiary item can be collected non-destructively through advanced techniques such as laser scanning, white light interferometry, optical profilometry, and scanning electron microscopy (SEM)[4].

In many investigations, it is desirable to examine not only the exterior of an evidentiary item, but also the interior. However, this is not always easy to do because, by doing so, the evidentiary item could be altered or destroyed and result in spoliation of the evidence. This apparent dichotomy can be bridged by the use of advanced non-destructive techniques like ultrasonic imaging, radiography and X-ray computed tomography (CT) scanning, which can document the size, shape, condition, and features of both the surfaces and the interior of a product without loss or destruction of evidence.

B. Experts

Choosing the appropriate technical expert or experts is essential to the inspection process. First and foremost, an expert should be versed in at least one scientific field related to the investigation in order to be able to evaluate the evidentiary item and formulate an opinion. Should more than one field be involved in an investigation, they will need to be covered via a single expert with multiple areas of expertise or via multiple experts with one or more areas of expertise. Furthermore, an expert should not only have expertise in the subject matter(s), but also be cognizant of best practices when it comes to evidence handling in such a way as to prevent evidence spoliation.

C. Special Materials Needed

Besides equipment related to personal safety (PPE) or to minimizing the introduction of contaminants (gloves), the materials needed for the inspection will be primarily dictated by the scientific techniques to be used during the inspection. In general, materials related to common techniques such as visual inspection and photography are readily available, while advanced techniques such as profilometry or CT scanning require specialized equipment that may or may not be mobile, hence determining the location of the inspection (see below).

D. Location and Transport

The inspection should take place in a location with appropriate safety considerations, such as proper ventilation. The same considerations that were taken into account during evidence collection and storage should once again apply in choosing the location of the inspection, with the nature of the

[4] James BA. Medical Device Failure Analysis. In: Narayan RJ, ed. *Materials for Medical Devices.* Vol 23. Materials Park, OH: ASM International; 2012:343-344.

evidentiary items determining the need for environmental and contamination controls to minimize the risk of evidence spoliation.

Furthermore, should the inspection require the use of advanced characterization techniques, such as CT scanning, the inspection (or at least parts of the inspection) might need to be circumscribed to locations where such equipment can be found.

Finally, transportation of the evidence to and from the inspection site should be done following best chain of custody practices, as well as following any necessary federal, state and local regulations to transport the evidence to the location where the inspection will take place.

E. Communication & Coordination with Other Parties

Communication and coordination with other parties is key for preserving and protecting the item to be inspected. Best practices for preserving the evidence usually includes limiting the number of times the item is handled, tested, and transported. In addition, for litigation purposes, one would want to be present for the inspection done by opposing parties, ideally with your own expert present as well, in order to observe how other parties and their experts handle the material, what they do right, what they do wrong, what they missed and failed to consider, and more.

It is important that all parties effectively communicate their intentions and desires for the inspection prior to any inspection. While reasonable accommodations can be made and reasonable tests can be performed, there are always limits and objections to be made depending on the invasiveness or destructiveness of the testing. In addition, if the method to be used is also not a scientifically proven method, or a method not generally accepted in the scientific community, those considerations may be grounds for refusing said testing. If the parties cannot come to an agreement, the matter should be settled by the court prior to any inspection, unless there is a risk of spoliation caused by the additional passage of time.

When communicating with other parties, consideration should be given as to what information and details are shared with other parties prior to the inspection of the item. Sharing too much information or incorrect information can affect how the item is analyzed or tested, or how information from the testing is interpreted.

For the majority of cases requiring expert analysis, each party will ideally want their own expert to perform their own inspection. However, there are certain circumstances where even opposing parties may want to consider jointly retaining an expert or seeking the assistance of an impartial party. These circumstances may include situations where the testing required is cost-prohibitive, or the item or sample to be tested is too small to allow for multiple independent tests, or the testing to be done is inherently invasive and destructive enough that the integrity of the item is altered from its original state, such that a second testing would be rendered flawed.

F. Documentation of Inspection

As discussed before, much of the documentation of the inspection process, such as the visual inspection or some dimensional analyses, will be performed via photography. Observations that are not easily captured during the photo documentation process (such as equipment readings) should be carefully documented in the expert notes. In both cases, clear documentation of the context for these pictures or notes is crucial for their incorporation into an expert report later on.

Depending on the nature of the testing, the need to prove continuity of handling or the ability of all parties to be present during the inspection, there are times in which additional documentation of the inspection procedure can be achieved through video recording. Should video recording take place, it is important to ensure that the video equipment will be able to record the test in its entirety. An additional consideration during video recording is whether sound will also be included on the recording, for this will often need to be communicated with other parties present during the inspection.

Finally, the results of the inspection will often be presented in the form of an expert report. An expert report will include both technical opinions pertinent to the expert's field of expertise as well as any facts or documentation obtained during the inspection to support said opinions. Whenever appropriate, expert reports should also include references to relevant sources.

III. Other considerations

A. How to recognize the potential for litigation

Be it related property loss or injury, there are unique considerations that will apply to each case depending on the products, industries and participants involved in a potential case. Understanding the unique circumstances (i.e. company policies, standard operating procedures and employee training) and how they differ from norm is critical to determine if a particular event merits litigation.

B. Multinational Considerations

In an increasingly global economy, it has become common to find that some or all of a product was manufactured overseas. While many of those manufacturing companies do maintain direct ties with the U.S. that may give a U.S. court jurisdiction over a manufacturer, this is not always the case. In a situation where a manufacturer or component manufacturer is not subject to a U.S. court, liability may be transferred up the stream of commerce to another entity. For that entity to recover or seek contribution, it may become necessary to pursue the manufacturer overseas.

As we all know, in the U.S the parties retain their own experts. Courts and juries then look to the expert materials prepared on behalf of a party in determining liability. In many countries overseas, courts will appoint one expert to act on behalf of the court to aid in ascertaining liability. In those instances, the court appointed expert must be able to do any requisite testing of the product. Even where the manufacturer has been invited to participate in any testing involved in the underlying litigation, courts

overseas may not be willing to hear a matter where the court's own expert is not able to do testing. Forum shopping takes on a new meaning where parties are forced to determine what venues not only may have jurisdiction but would be willing to entertain a claim in the absence of a testable product.

Non-destructive testing offers a unique opportunity to circumvent some of these issues, since it can produce data to either inform legal strategies or assign liability while maintaining the possibility of future investigation by court appointed experts.