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Sample and Evidence Tracking

Procedures, documentation and tracking of incoming goods and/or raw materials is essential in the production of finished products and in the performance of services. In medicine, a unique number follows a patient through all consultations, tests and procedures helping to ensure correct diagnosis and treatment. In the agriculture industry, it is important to track the production and distribution of foodstuffs in order to be able to trace the source of any potential threat to public health. Employee and public safety is in the foreground in manufacturing processes, where handling of materials, a design fault or the failure of a single component or assembled product may present a possible danger to consumers and/or employees. The ability to trace each test from procedure to patient, each leaf of lettuce from farm to grocery store or restaurant, and every part to its ultimate destination helps to enrich and heal lives, protect public health and safety, and increase confidence in the economy. The tracing of samples and evidence throughout an investigation is also paramount to the reliability of analytical results and the outcome of any litigation.

Initial Plans and Procedures

Documentation and tracking of evidence and samples gathered in a fire/explosion investigation requires a carefully thought out set of quality assurance (QA) procedures and quality control (QC) parameters. The importance of initial plans and procedures are illustrated in a separate Gossman Forensics newsletter¹.

The O.J Simpson Trial illustrates the importance of following procedures in collecting and documenting evidence during an investigation². The collection and documentation of evidence had a major impact on the outcome of the case. A bloody fingerprint was found and listed in a detective's initial investigation notes but was not secured or collected at the time and was never entered into the chain of custody of evidence. Since the fingerprint was mentioned but never properly documented, it became one in a series of questionable procedures that made mishandling of evidence a major factor in the result of the trial.

On-Scene Collection

An experienced investigator will determine what to sample and what photographic/video documentation is necessary. In most cases, sampling is ideally initiated as soon as access to the scene is allowed. Contamination, evaporation or interaction of chemicals on site, and disturbance of materials increases as time passes at an incident scene. Knowledge of chemical interactions, fire and explosion behavior and previous experience will be part of the basis of location considerations. A fire inspector may be able to determine where a fire/explosion started by residue and debris patterns particular to force and explosive materials involved. Establishing the point of origin, or seat of the fire/explosion is vital and sampling should consider this area as a mandatory location for sampling to identify any characteristics of the incident. An experienced investigator will sample materials in a radius outward from the point of origin (if known). The location of the evidence can be a major factor in determining causation and/or events contributing to the incident. Video and photographic documentation is a crucial part of evidence collection. In many cases, photo/video evidence will be repeatedly reviewed to corroborate or clarify analysis results, opinions, or to help give insight into various aspects of the incident scene.

Many considerations should remain with the investigators as they examine the range of physical evidence: How are we documenting and examining evidence? How long can we store it? How long do we need to retain it? Some chemicals degrade over time – how quickly and efficiently can the required and proper analysis be performed? How can we fit our investigation and analysis into the timeline of litigation? Is our ongoing investigation and analysis conforming to the plans and procedures specified in our documentation? These are some of the questions that should be answered in the initial plan and documentation of procedures.

Data management and retrieval means having the samples and results of all analyses available, and being able to find all documentation relating to any testing. The prompt retrieval of information answers questions in a timely fashion and encourages confidence throughout the litigation team. Retained material samples as physical evidence may be as important as the testing results. In many instances, documentation and experimental results are required to be provided to opposing counsel and experts. Deficiencies in procedures and documentation will be noticed and become an avenue for attack by opposition.

Examples

Our team of experts was able to find the source of the dioxin emissions because of sample retention and tracking. A cement plant used a type of aluminum waste as a raw material in the production of Portland cement. The plant had done their emissions testing with normal results until suddenly one test indicated the dioxin emissions skyrocketed. The state stepped in and presented the company with the possibility of stiff fines for dioxin emissions. Gossman Consulting, Inc.³ was able to determine the source of the emissions to be not the plant process itself but specific raw materials being used. Our team of forensic investigators had the expertise to recognize the test signatures to be non-typical for a cement plant and narrowed down the choice of retained samples to be tested, greatly shortening the testing and detection process. Since the company kept representative samples of each lot of raw material and tracked its usage in the manufacturing process, the re-testing of the lot samples with extra-normal parameters showed the presence of dioxin in the material itself. This discovery was of great benefit to the company in its communication with the state.

The outcome of litigation may depend on the proper documentation and tracking of samples and evidence. Litigation may equally be determined by the lack of proper sampling, tracking, and documentation. Our experts were able to aid a client's successful defense based on the absence of evidence and sample tracking. A shipment of plastic bottles was rejected by the customer because of odor contamination. The manufacturer sued the warehouse where the bottles were stored as the source of the contamination. The plaintiff's laboratory took samples and performed tests but mishandled their procedures. Although the lab performed tests and generated results, Gossman Forensics was able to show that the lab could not produce an evidentiary chain of custody, any raw lab data, or relevant documentation regarding the samples they took, the tests they performed, or the data generated by those tests. The defendant not only won their case but a countersuit as well.

Conclusion

A written and agreed-upon plan for collection, examination, photographic/video documentation, analysis, storage, retention, and retrieval of any evidence and samples can be a valuable tool during an investigation. Like any plan, it is only as good as the training and dedication which carries it out. Gossman Forensics has the experience to create the plan, the training to implement it, and the dedication to follow it through to conclusion.

¹ https://www.gossmanforensics.com/newsletter/vol01_iss03.html

² <https://www.crimemuseum.org/crime-library/justice-system/forensic-investigation-of-the-oj-simpson-trial/>

³ Visit Gossman Consulting, Inc., our environmental consulting firm, at gcisolutions.com.