

The analysis of evidence submitted to forensic laboratories by police agencies has often been the focus of relevant articles published in the scientific literature. Presentation of these results to a jury is just as important but receives little notice. If the information is not relayed to the trier of the fact (i.e., the judge or the jury) in an understandable fashion, it may be ignored.

The presentation of forensic evidence to a jury involves conveying technical information to a group of people who may have little to no knowledge of the subjects under discussion. The expert's task is to present his information in such a way as to inform, without insulting, the broad range of personalities found in a jury. Educational levels will certainly vary, but more likely is that few will have any knowledge whatsoever about clandestine production of controlled substances. The expert's testimony, therefore, plays a key role in educating a judge or jury about what a clandestine lab is and how the evidence does or does not indicate that one exists in the particular case before them.

In this chapter, the focus will be on the format that courtroom presentation of forensic evidence in a clandestine lab case should take to be most productive. Chapter discussions will be directed toward forensic chemists. However, these principles can be applied by anyone involved in presenting physical evidence.

The expert's testimony is an essential element in the prosecution of a clandestine lab. Investigators gather the pieces of the clandestine lab puzzle, collecting the facts that establish who the participants in the illegal activity are and delineating the items of evidence that were seized. The expert's explanation puts the pieces of the puzzle together. His description of how the chemicals and equipment can be combined to manufacture a controlled substance is critical in establishing that a crime was committed. If the expert does not effectively relay this information to the jury, a conviction may be unnecessarily difficult to obtain.

There are two situations in which a forensic expert may be called to testify in a clandestine lab case. The first situation is where the expert was an active participant in the lab seizure or performed laboratory analyses on the evidentiary samples. In the other situation, the forensic expert acted as an independent expert who evaluated the information concerning a suspected clandestine lab operation. Although each situation is handled in a similar manner, there are subtle differences.

7.1 Case Preparation

Trial preparation for a clandestine drug lab case begins long before the trial or deposition subpoena is issued. Conversations with the investigator preparing an affidavit for a search warrant are important. Every comment or opinion the expert gives to the investigator can potentially have evidentiary value. His expert opinions are used in the affidavit to justify the search warrant or guide the investigation in one direction or another. If he provides incorrect or faulty information, the search warrant could potentially be invalidated, or the investigation could go into an ineffective or inappropriate direction.

The expert providing opinions to investigators or attorneys concerning the potential existence of a clandestine lab should document his conversations, noting with whom he spoke, any facts that were presented, and the opinion he provided. The technical nature of the information the expert provides to a nontechnical individual has the potential to be inaccurately reflected in documents that are submitted by others to the Court. Therefore, it is wise for the expert to maintain files documenting and, hopefully, clarifying these conversations.

What the scene chemist does and says at the clandestine lab scene should also be documented. As the on-scene technical advisor, his words and actions guide the investigation. Even if he is not the person who actually finds or seizes a particular item of physical evidence, his opinion is the basis for the investigator's actions. Everything the scene chemist does and says at the scene has potential evidentiary value. The chemist determines what samples are taken, what items should be disposed of due to contamination, and what controlled substances were potentially being manufactured.

A good photographic record supplemented with comprehensive notes taken at or shortly after the search will be invaluable come trial time. These records will allow the chemist to remember details of that particular lab operation and the sampling procedures used on which he based his opinion of the existence of a clandestine laboratory operation. Photographs and notes will also help the chemist remember why certain items were sampled and others were not.

Generically, the laboratory analysis and testimony concerning samples from a clandestine lab are no different from the analysis necessary to identify

a controlled substance. A reaction mixture is, in essence, a liquid in which the chemist is trying to identify any controlled substance; he also can use this to identify precursors, by-products, diluents, reagents, and solvents. Many of the same techniques used to identify the controlled substance are simultaneously used to identify these other components.

The generic chemist's testimony concerning the analytical results is as straightforward as the analysis. The chemist describes how and when he received the sample, his examination procedures, and finally, his results, all of which should be supported by his working notes. A standard set of questions is generally encountered, and a great deal of trial preparation is not required for the experienced chemist.

The clandestine lab chemist takes the analysis of clandestine lab samples beyond the basic identification of a controlled substance. The required opinions necessary to establish the elements of clandestine manufacturing mandate the identification of the other components of the various mixtures found at the scene. The chemist should devise his analytical scheme in anticipation of presenting his results to a jury. Opinions that are generated concerning the operation or a specific exhibit must be substantiated by the analytical chemist's laboratory data to establish the facts beyond a reasonable doubt. If the analytical chemist is going to talk about a specific chemical within a mixture, he should have the analytical data to support its existence. If the analytical chemist is going to talk about the synthesis route used to produce the methamphetamine detected in the reaction mixture he analyzed, he should also have identified the components in the mixture that support his conclusion.

The clandestine lab chemist's trial role significantly deviates from the traditional forensic chemist's role by providing opinions concerning the "how" and "why" of the operation. Traditionally, the forensic drug chemist's testimony does not include significant speculation concerning the condition or potential use of the exhibit he examined. The clandestine lab chemist's testimony can potentially be filled with opinions concerning the various aspects of clandestine lab chemistry. With the information from the laboratory analysis and the scene information, the chemist should be able to form opinions concerning the following: the synthesis route being used, the exact step in the synthesis at the time of seizure, other synthesis routes that may have been used, an estimate of the production of each synthesis route using the chemicals and equipment on hand, and finally, determination of the total amount of finished product. Each of these opinions needs to be supported by some type of objective physical evidence.

The chemist's courtroom presentation of a clandestine lab case is the other half of his job, and in some instances, that may be the most important. His testimony ties all the pieces of information together and must be done in an understandable fashion. His presentation of the technical information

is a key factor in establishing the cause and effect relationships between what appear to be ordinary items and the manufacturing of controlled substances. A conviction may be difficult to obtain if the chemist cannot demonstrate how it all fits together, no matter how much evidence is presented.

The chemist's courtroom presentation can be broken into two distinct phases: the pretrial conference and the actual testimony. This discussion will be from the perspective of a generic expert witness. Although the prosecution presents most of the expert testimony in clandestine lab cases, the defense has the opportunity to present its own expert's opinion of the significance of the physical evidence. Whether the chemist is testifying for the prosecution or the defense should be a moot point, because in either case, the expert should be objectively evaluating the evidence and, only after careful consideration, relaying his opinion. Although the steps in the process for either side are essentially the same, it is obviously in the interpretation of the evidence and formation of an opinion that differences may arise.

7.2 Pretrial Conference

A pretrial conference with the attorney should be scheduled as soon as the chemist knows he will be testifying in a clandestine lab case. Ideally, the attorney handling the case will be knowledgeable in clandestine lab prosecutions. In the real world, prosecutors handling these cases are often inexperienced and not knowledgeable of their intricacies. Because of the special nature of clandestine lab cases, defense attorneys may not be any better prepared. Therefore, the chemist's first job is that of a teacher.

During this pretrial conference, and all subsequent meetings, the chemist should educate the attorney about clandestine drug labs in general; educate the attorney about the specifics of this clandestine drug lab; explain what indicates that a clandestine drug lab exists in this instance; determine what items are missing; determine the sampling procedures that were used; and finally, explain the chemical disposal process (if used).

7.2.1 Educate the Attorney about Clandestine Drug Labs in General

The chemist should explain to the attorney exactly what a clandestine lab is and delineate the many forms it may take. The attorney must truly understand that clandestine labs come in many shapes and sizes. The chemist must explain what they are and, just as importantly, what they are not. The attorney must understand that clandestine drug labs can range from a simple "crack" conversion operation performed in a kitchen to an elaborate chemical synthesis using exotic chemicals and expensive equipment. He must be informed

that the common household equipment and the proper combination of chemicals that can be found in “his” own house can be turned into drugs or explosives. However, the totality of circumstances surrounding the case will determine whether a clandestine lab exists or not.

Auxiliary issues concerning clandestine labs should also be addressed in the initial interviews. Information concerning the direct and indirect hazards related to the operation should be relayed. The prosecutor must realize that the significance of the case goes beyond manufacturing the operation’s final product. He must understand the jeopardy to the health and welfare of everyone who had contact with the operation. This may not be a significant point in proving the facts of the case. However, it may place a different spin on the overall significance and priority of this type of case.

7.2.2 Educate the Attorney about the Generalities of this Clandestine Drug Lab

Once the attorney knows and understands what a clandestine lab is, the chemist can explain what type of operation is being dealt with in this particular instance. The chemist should begin by generally explaining the synthesis route he suspects was used in the operation and what chemicals and equipment were needed. He should walk the attorney through the process, providing a step-by-step explanation of how all the items fit together. This big-picture overview should be done in a generic way, in order to paint a picture of how the operation would be conducted in a perfect world.

7.2.3 Tell the Attorney what Indicates that a Clandestine Drug Lab Exists in this Instance

The chemist can explain the specifics concerning which items of evidence support the opinion about this operation, once the attorney understands the process being used. At this point, the chemist shifts his focus from the ideal situation to the case at hand. He may explain how the reaction flask and heating mantle in an ideal scenario are an ordinary Mason jar and pressure cooker, respectively, in the present case. During this portion of the interview, he explains how each piece of physical evidence fits together to complete the manufacturing operation puzzle.

7.2.4 Tell the Attorney what Items Are Missing

Crime scene puzzles are always missing pieces. Clandestine lab scenes are no different. The chemist must inform the attorney what items were not found at the scene, what their significance to the process was, and if their absence affects the opinion about this operation. If there is a problem justifying the existence of a clandestine lab through the physical evidence (or lack thereof), the attorney should be made aware of it.

The chemist is not there to prove the attorney's case by manipulating insufficient physical evidence to give the illusion that something exists. He is there as an objective seeker of scientific truth. If the case is legitimate, the physical evidence is there. The chemist identifies what pieces of the puzzle are missing and what could possibly have been substituted. Again, if the evidence is not there, the chemist should make the attorney aware of what is missing and what is needed to fill the hole.

7.2.5 Explain the Sampling Procedures that Were Used

The attorney needs to understand the sampling scheme used at the scene and the thought process behind it. He must understand that it is unrealistic to sample every container at the scene. Therefore, the chemist must explain the purpose behind the sampling process and how this scientific method has brought calm to chaos through the condensing and consolidating of the mass of physical evidence into manageable packages. With this process, everything possible is done to preserve the integrity of the scene and to document all of the physical evidence that was located. The attorney must understand the thought process behind the determination of which items were sampled and how each sample was selected to serve as a piece with which to complete the puzzle. The attorney must be able to trust and rely upon the training and experience of the scene chemist.

7.2.6 Explain Chemical Disposal (if Used)

The toxic and hazardous nature of many of the chemicals and equipment seized from a clandestine lab requires disposal according to protocol by following guidelines mandated by an established set of local, state, or federal regulations. The lack of proper storage facilities has led many jurisdictions to opt for more immediate disposal after proper sampling and photography have been completed. The attorney needs to clearly understand that such protocol exists for the safety of the personnel at the scene, for lack of proper storage facilities of the seized chemicals, and for avoidance of contamination of the courtroom by bringing hazardous material in during trial. It must also be stressed that no evidence was destroyed. It is, therefore, critical that all evidence be documented and photographed and only then sampled. Original volume must also be noted and photographed before material is disposed of according to the appropriate regulations.

7.2.7 Outline Testimony

Trial attorneys follow a basic rule concerning questioning: do not ask a question unless you know the answer. There is no reason the chemist should be surprised by a question from the attorney whose client he is representing.

The chemist should work with the attorney to create a known line of questioning for the direct examination. It should flow smoothly with no surprises, with all relevant questions being addressed. Presented in a Practical Example in [Chapter 9](#) is a scenario of shaky testimony resulting from incomplete testimony preparation.

During this part of the pretrial process, the chemist and the attorney should develop an understanding concerning their respective limitations in each other's fields of expertise. Each should have enough knowledge of the other's job to be helpful, yet understand and accept that such knowledge can be dangerous in less-experienced hands. As the number of cases each attorney and chemist present at trial increases, their knowledge and comfort levels will increase. However, each should know and understand separately or together his limitations and particular role in the process. The chemist should present his knowledge of the relevant statutes concerning the manufacture of controlled substances, simultaneously not attempting to make legal assumptions without consulting the attorney. The attorney should never make assumptions concerning certain pieces of physical evidence as scientific fact without consulting the chemist.

For example, while attorneys are masters of the English language as it relates to the law, their expertise dwindles to the apprentice level when English is applied to the technical arena of forensic science. In this instance, the chemist's knowledge of the proper terms should be utilized to create a script of questions that will present the evidence in a logical sequence that uses the appropriate terminology. This provides the chemist with knowledge of what the question is, and the attorney with the knowledge of what the response will be, simple yet essential.

A word of caution is necessary for trial. It is important for both sides to stick to the script. Slightly changing the way a question is phrased may elicit a response that is not expected. At the same time, an unexpected response may result in additional questions to explain what should have been apparent if the original answer was presented as planned. Again, it is always dangerous to play with the unknown, and this can give opposing counsel grounds to challenge the testimony that really counts. The strength of expert testimony may lie simply in how well conversant in his subject the judge is or how the jury perceives the expert.

How the exhibits will be presented should be discussed. It is not wise for either party to see the exhibits for the first time in the courtroom. The chemist and the attorney should discuss what exhibits demonstrate the points they want to make. At the same time, they should develop a logical presentation sequence that will relate each item's use in the operation to the jury. This type of preparation provides a flowing and understandable format for the testimony that does not surprise either party.

7.2.8 Discuss Visual Aids

The use of simple, concise visual aids should be discussed with the attorney. Used properly, visual aids can take a complicated process and reduce it to simpler terms. The combination of oral explanations with visual reinforcement provides a more interesting testimony format and enhances retention of the information presented. For example, visual aids can be used to demonstrate what items are necessary to manufacture a controlled substance and to compare this information to the actual evidence exhibits. They can also be used to demonstrate how the equipment exhibits fit together to make the reaction apparatus.

7.3 Testimony

The testimony of the chemist or forensic expert can make or break a case that is presented to a jury. The expert's appearance, demeanor, and presentation affect how jury members interpret the information they receive. Lack of testimonial skills or an improper attitude or presentation can substantially reduce the credibility of even the most qualified expert. During his presentation, the chemist should present a professional appearance, tell the truth, address answers directly to the jury, and answer only the questions presented.

7.3.1 Direct Testimony

Clandestine lab forensic testimony is divided into three basic phases. The level of expertise and the number of people involved in the forensic portion of the investigation will dictate the number of people required to testify. The three phases of testimony include scene processing, analytical examination, and expert opinions.

In many situations, the scene chemist acts only as a technical advisor during the seizure of a clandestine lab. He is not responsible for the seizure of the physical evidence and may not be called to testify. However, he provides the expert opinions and the technical knowledge used to guide the investigator's decision to seize or not seize a given item. As such, the scene chemist should be able to articulate the thought process he used during the processing of the scene, if he is called to testify. He should also be able to articulate his role in the chain of custody of the items and samples seized into evidence.

The way testimony is given by an analytical chemist in a clandestine lab case will be similar to the way testimony is given about any controlled substance. The voir dire process, the testimony establishing the chain-of-custody, and the results of the laboratory analysis are essentially the same. The level of a chemist's expertise in the clandestine manufacture of controlled sub-

stances will determine how far beyond the identification of the sample components his testimony may be allowed to extend. In some instances, he may be able to articulate how the laboratory results can be used to outline or depict the role of the samples in the manufacturing process. In other instances, his lack of knowledge would dictate that someone who specializes in clandestine manufacturing techniques would be more qualified to address those issues.

Expert testimony concerning how seized items could have been used to manufacture a controlled substance should be the dynamic part of the chemist's presentation. This is the pinnacle of the expert testimony and should be presented in such a way as to relate technical information in a nontechnical format that is not condescending. This testimony should fit all of the pieces of the puzzle together. The chemist or forensic expert links the testimony concerning the scene processing to the analytical results, hopefully painting a picture of how the manufacturing process worked. The chemist should interact with the appropriate exhibits and prepared visual aids to demonstrate to the jury how the exhibits relate to each other.

There are a few basic principles that should be followed, as they apply universally to the "success" of expert testimony — the witness' appearance, how he answers questions, how he addresses the jury, and how he interacts with exhibits.

The forensic expert should present a professional appearance. He should dress in business attire that is appropriate for the region of the country and the court in which he is testifying. While a sport coat, tie, and cowboy boots may be acceptable in some state court situations in the western United States, this manner of dress would be distracting in a federal court in Manhattan. He should address the attorneys representing each side with the same respect. He must clearly present himself as being there to establish the scientific facts of the case, not being there as a hired gun for one side or the other.

The chemist should direct his answers to the jury members. His testimony is for their benefit. Answers to questions should be presented in terms that the layperson can understand. Obtuse technical language should be avoided. However, when technical jargon is required, it should be explained in a noncondescending manner.

The chemist must adjust his testimony style to facilitate the job of the court reporter and, hence, the official written record. During his testimony, he must refer to evidence items by their exhibit number. Even though he is holding the exhibit, and the jury can see what is being described, he must always be aware there is a written record being taken. The written transcript must reflect his actions as well as his words. The reader of the transcript would not understand "Insert this here" but would comprehend "Place Exhibit #13 into the outlet on Exhibit #24." Therefore, the expert should

always describe what he is doing with the evidence items so the written record will accurately reflect his actions.

The attorney's style, the personality of the chemist, and what the Court will allow dictate the format used for testifying about clandestine labs in general and about the specifics of the particular case. Testimony formats range from questions with rambling narrative answers to questions with specific responses. The chemist and attorney should work together to establish a basic approach, so they will both be comfortable with this portion of the testimony. If the chemist is not comfortable giving narrative answers in front of the jury, his testimony may be more effective with a specific-answer format.

In the narrative-answer format, the attorney asks an open-ended question. The chemist then provides a narrative answer covering as much of the topic as appropriate. When necessary, he asks the Court's permission to use the exhibits or prepared visual aids to demonstrate his answer to the jury. This method of testimony can be entertaining as well as informative. Such information may have more jury impact because of the deviation from the typical, dry question and answer format.

In the specific-answer format, specific questions are asked and specific answers are given in order to present information to the jury. This format is drier and can be more time consuming than the narrative-answer approach. The jury may get bored, lose interest in the testimony, and end up not retaining key information concerning the facts of the case. Still, there are situations in which specific questions with a yes or no response should be used to introduce large amounts of boring material. Alternating narrative answers with quick yes and no answers is also a more effective way to keep the jury's attention during lengthy testimony.

There may be occasions where, regardless of how prepared the chemist and attorney are for a narrative-answer format, the opposing counsel may object and the Court may rule that only a specific-answer format can be used. It is, therefore, essential that the attorney be knowledgeable in the particular type of clandestine drug lab being tried so that appropriate questions may be substituted at a moment's notice.

The points the opposing counsel would normally address should be covered during the direct examination. This is done to avoid an appearance of deception. Examples of these points are as follows: "What are the legitimate uses for the chemicals and equipment seized from the scene?" "Why were the chemicals and equipment disposed of?" "What other products could result from the combination of chemicals that were seized?" Addressing issues like these keeps the attorney focused on objectivity and transparency. Addressing questionable issues during direct examination also takes the wind out of the opposing counsel's sails by addressing them in an up-front manner.

There are situations in which enough evidence was obtained to indicate that a particular synthesis was being used, even though all of the chemicals or equipment necessary for a particular synthesis route were not found at the scene. In these instances, the expert's testimony should address this issue during the direct examination. The opposing counsel will contend that the expert cannot make the determination of the existence of a clandestine drug lab, because all the necessary items were not found at the scene. If the issue is addressed immediately during direct examination, and the expert is confident with his opinion, he is less likely to get caught in the "What if?" game the opposing counsel will try to play in order to establish "reasonable doubt."

7.3.2 Cross-Examination

Cross-examination methods used to question experts vary widely. The options can range from "No questions" to a wide range of hypothetical questions designed to cloud the issues raised during the direct examination. There should be no problem with the cross-examination if the expert is properly prepared for direct examination.

During cross-examination, the expert should keep in mind the following: be sure to understand the question, answer only the question, do not argue with the attorney, know his limits, and be truthful.

Understanding the question and answering only the question that is asked are closely related issues. Attorneys that specialize in litigation are often wordsmiths who ask questions in a particular way for a reason. They craftfully word questions in a specific manner to elicit a specific response. The question may be intentionally vague and unclear so as to obtain a particular response from the witness in an effort to undermine his credibility. The expert should not outfox himself by playing word games with a professional wordsmith. Answering what he thinks the question is or what he thinks the attorney wants to hear will only lead to problems and misunderstandings. If the expert does not understand the question or does not like the way it is worded, he should ask the attorney to repeat or rephrase it. However, if the expert thinks the response to a particular question would be intentionally misleading, he should preface his response with a brief explanation. All of this can be cleared during redirect examination; however, the chemist's credibility may already be compromised and a certain amount of doubt already created.

Do not argue with the attorneys. Opposing counsels have been known to badger and harass expert witnesses. This combative approach to cross-examination is done to shake the witness' confidence or fluster the witness into giving inaccurate answers to his questions. The opposing counsel should be treated in the same courteous manner as the attorney the expert is representing; no appearance of favoritism should be visible on the part of the expert. If the expert loses composure, a certain amount of credibility may be

lost. A calm, composed response to an offensive line of questioning can give the jury the impression that the expert is being abused by the opposing counsel, potentially giving the testimony more credibility.

The expert should know the limits of his expertise. Even if he possesses knowledge beyond what the common juror would, the expert would be well advised to limit his testimony to the areas in which he is strongest. A degree in chemistry does not make the chemist an expert in all areas of science. If the answer to a question is beyond his expertise, he should simply say so. There is no sin in defining the scope of his knowledge. Stating facts without direct knowledge, embellishing the truth to make a point, or showing off his expertise could all end up causing more harm than good.

Telling the truth to the best of one's knowledge is the best defense to an attack on your credibility. Experts work long and hard to build reputations as experts; one bluff or exaggeration can forever tarnish credibility.

7.3.3 Independent Expert

There are times a qualified chemist or forensic expert will be called to provide testimony concerning a suspected clandestine lab in which he had no direct involvement. A chemist or forensic expert familiar with clandestine labs can give expert testimony concerning his interpretation of the facts of the case. The independent expert takes similar steps in preparing for this type of case as if he had direct involvement in the case.

The pretrial conferences with the attorney cover essentially the same areas as the pretrial conferences held when the expert was an active participant in the lab seizure. His review of the case documentation may bring up additional questions that were not addressed during the original investigation. The independent expert may also ask for additional examinations to be performed or additional items of information to be provided.

The independent expert's testimony is almost solely opinion, giving a little more latitude to what he can testify to. He must stick to the facts of the case, but, as an expert giving an opinion, he is allowed to make some assumptions based on those facts, being careful not to exaggerate the significance of a point. The independent chemist should be conservative in his opinions, keeping in mind that the goal is the truth.

Many of the items seized in clandestine drug labs have legitimate uses, and the independent expert should be willing to admit to such uses. If the facts as presented indicate that the items were being used to manufacture a controlled substance, he should be willing to say so. By the same token, he should be willing to accept legitimate reasons for the combination of chemicals and equipment, if the totality of circumstances dictates them. The independent expert is not a hired gun; he is there to present all of the options to the Court to allow for a fully informed decision to be made.

7.4 Visual Aids

The use of visual aids is an important component of the trial presentation of a clandestine lab case. The use of visual aids will allow the expert to demonstrate the relationships among items that helped him form the opinion that the items were used to manufacture a controlled substance. Studies show that an audience will retain approximately 55% of what they see as opposed to 10% of what they hear. Thus, the use of appropriate visual aids should enhance a point the expert is trying to make. Such a courtroom change will also break up the dull question and answer format of a trial, leaving a greater impression on the jury.

The expert can use visual aids as memory refreshers when talking about a process or a particular set of exhibits. A well-prepared set of visual aids can be used as an outline for a narrative testimony. The expert can use the key words and items the jury must remember to remind him of what he wants to say.

To be most effective, visual aids should be simple, easy to read, easy to understand, and colorful.

7.4.1 Simple

Visual aids should be simple. They should be prepared using the one-to-one rule, i.e., one central idea per visual aid. If a visual aid is too busy or confusing, the point may be lost in the clutter, thus resulting in the jury ignoring it. Shown in Figure 7.1 is an example of a busy visual aid. It presents a lot of relevant technical information concerning conventional serology testing in one package. All of this information may be informative to the jury. However, what single piece of information does the expert want the jury to retain? Does he want to correlate the number of positive tests between the suspect, victim,

RESULTS OF A BLOOD STAIN EXAMINATION							
Sample	ABO	PGM	EsD	GLO	EAP	ADA	AK
Suspect	O	1+1-	1	2	B	1	1
Victim	O	1+1-	1	1	B	1	2-1
Sheet	O	1+1-	1	1	B	1	2-1
Frequency of occurrence (victim)						3:10,000	
Frequency of occurrence (suspect)						63:10,000	

Figure 7.1 Busy visual aid.

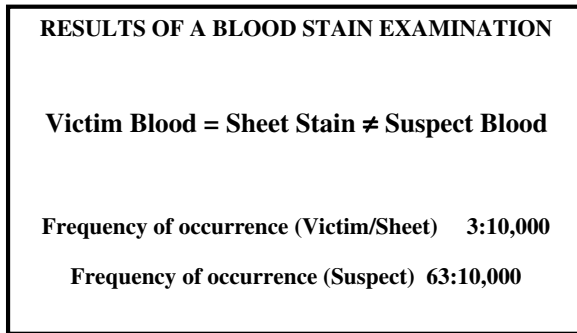


Figure 7.2 Less busy visual aid.

and evidentiary sheet? Does he want the jury to know the frequency of occurrence each set of tests represents? Does he want the jury to remember that the stain on the evidentiary sheet was the same as the blood of the victim and not the suspect?

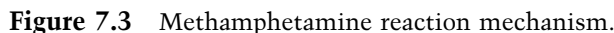
In designing the visual aid, the expert should ask himself, “What single piece of information do I want the jury to retain?” From there, the visual aid can be easily designed. Complete sentences should be avoided unless absolutely necessary. Too many unnecessary words create a busy visual aid. Key words, phrases, or ideas that emphasize the expert’s opinion and will stick in the jury’s mind should be used. Shown in Figure 7.2 is an example of how the information from Figure 7.1 can be simplified to demonstrate the relationship between the victim’s blood, the stain on the evidentiary sheet, and the suspect’s blood. The visual aid simply states the expert’s opinion that the victim’s blood and the stain are the same. It supplements that conclusion by adding statistical information concerning the frequency of occurrence that would produce the test results. The information concerning the results of the individual tests used to make the conclusion is unnecessary detail that may detract from the central point being made.

7.4.2 Easy to Read

The expert should put himself in a juror’s position and determine whether everything on the visual aid can be seen. Points that cannot be seen clearly will not receive the visual reinforcement desired and will lose their impact. Easy to understand terms and symbols should be used. Again, key words and phrases in large bold print produce a good visual impact.

7.4.3 Easy to Understand

Technical symbols and abbreviations should also be avoided unless they are explained and will result in ease of comprehension. The expert should also



Many chemicals have some type of abbreviation or common name to which the jurors can relate. The expert should utilize as much common terminology as possible in his visual aids and his narrative explanations. The same philosophy holds true with diagrams of reaction apparatuses; the diagrams should be as simple and generic as possible, while still getting the point across.

In [Figure 7.4](#), a simple list is presented as an alternative to the technical diagram in the previous figure. The list presents all the chemicals required to manufacture methamphetamine with the HI reduction technique, using the chemical's common household name. Presented properly, this list can be used to demonstrate the same concepts relayed in [Figure 7.3](#) in a visual manner that will keep the attention of some of the jurors.

Color can be an effective tool, especially if a single visual aid will be used to make a number of different points. While each color represents separate ideas or concepts within a single visual aid, the one idea per one visual aid concept is maintained. An example of this would be to group the list of chemicals in Figure 7.4 by their place in the manufacturing process. The chemicals required for each step of the process could have a distinct color associated with them [i.e., ephedrine, HI, and phosphorus would be in red (Step 1); lye

# 2	Ephedrine
# 17	HI Phosphorus
# 8	Lye
# 37	Freon
# 22	HCl

Figure 7.4 Simple list.

would be written in blue (Step 2), etc.]. In a different color, the exhibit number could be placed next to the corresponding chemical, indicating which chemicals were present at the lab scene. (Numbers in the left column would be written in black.)

In this situation, the expert could use the visual for more than one purpose. First, it provides a complete list of the operation's chemical requirements. Second, it lays out the sequence in which the chemicals are used. Finally, it directly relates the chemicals required to manufacture the controlled substance in question to the items that were located at the scene. The different colors distinguish the different concepts involved. Therefore, this single visual aid can be used to emphasize three separate but interrelated ideas. These two additional ideas can be presented on the original visual aid, but they are differentiated by different colors.

7.4.5 Types of Visual Aids

The types of visual aids that may be used in court are photographs, slides, flip charts, or evidence exhibits. More often than not, some combination of these is used during the trial.

7.4.5.1 Photographs

Photographs are one of the most commonly used types of visual aids. They allow the expert to show the suspected lab site in its original condition. Photographs show the items that were disposed of or otherwise unavailable for presentation at trial. They show the original containers from which evidentiary samples were taken. They can be used in court in lieu of the bulky seized items. The jury can easily handle them during testimony and review them during deliberation. They can be written on to emphasize specific

aspects of the scene the photograph represents. When placed in the proper sequence, they can be used to prompt narrative testimony, thus telling and enhancing the story of the expert's opinion of what occurred at the location.

The use of photographs has a few disadvantages. The small size prevents the jury from seeing what the chemist is talking about during his testimony, unless the photograph is poster size or each juror has a copy of the photograph being discussed. It is hard to demonstrate how two exhibits physically fit together using photographs. Photographs being handled by the jury during testimony will distract from the actual testimony.

Photographs should be a minimum of 8" × 10". This size enables the jury to minimally see the details in the photograph as the expert describes them. Preferably, the significant portion of the photograph should be marked for later jury review.

7.4.5.2 Slides

Slides have many of the same advantages as photographs. In addition, slides can be projected onto a screen, presenting a larger picture for the jury to see during the expert's testimony. This allows the expert to point out specific items of interest to be emphasized during his testimony.

Slides also have disadvantages. The room lights may have to be dimmed, thus obscuring the jury's view of the expert. If the lights are not sufficiently dimmed, the jury will not be able to see the image. Slides are hard to review in the jury room without a projector. It is hard to demonstrate how two exhibits physically fit together using slides. Photographs can be taped together or placed together on a bulletin board to demonstrate a relationship. Slides cannot. They cannot be written on to stress a point, indicate an exhibit number, or indicate a relationship to another exhibit.

7.4.5.3 Flip Charts and Overheads

Flip charts and overhead projectors can be some of the most versatile of visual aid media available to the expert. They can be made in advance using simple, easy to understand lists or diagrams. The jury can easily see them during testimony. They can show interrelationships between exhibits. One chart can be used for both general and specific explanations. They can be written on during testimony to stress points. Lightly penciled marks can be placed on them to refresh the expert's memory, as long as all of the marks are written over during the testimony in such a way as to be completely visible to the court. They can be taken into the jury room during deliberation.

7.4.5.4 Power Point Presentation

Computers have provided experts with a powerful tool that can be used in making courtroom presentations. Software packages like PowerPoint™ and

Presentation™ provide the expert the ability to present a choreographed multimedia show to the jury. Photographs can be inserted. Color can be effectively utilized. Diagrams can be presented and altered as the testimony progresses. Bells and whistles can literally be added if the expert thinks it will assist in making his point.

The downside of this technology is that it is currently expensive to implement. Many courtrooms may not possess the projectors necessary to present the show to the jury. Unless the expert brings his own computer and projector, his presentation may have to stay on the computer disc on which it was saved.

7.4.5.5 *Evidence Exhibits*

Using the actual items seized from a clandestine drug lab during the chemist's testimony is impressive. The jury can see the actual items that were seized from the lab. They can see how the items can be connected to make the reaction apparatus that was described to them.

However, there are problems with using the actual items. The actual items are generally disposed of at the scene and are unavailable for court. If the items were not disposed of, they may still pose a potential chemical hazard, again making them unavailable. The sizes of the items may prohibit their use in the courtroom.

7.4.5.6 *Combination of Visual Aids*

In the actual court presentation, the expert will use some combination of visual aids. The expert should determine which types of visual aids he prefers and devise a basic presentation concerning how and why this particular set of circumstances constitutes a clandestine lab. The presentation should be flexible enough to include or exclude any type of evidence that is available, because each case will have a different set of evidentiary items with which to work.

Once the basic explanation is established, courtroom presentations of clandestine drug lab evidence should become second nature (with a little practice). Facts concerning individual cases and exhibits used will change, but overall principles will remain the same. Working with the attorney he is testifying for, the expert should be able to mold his presentation to fit the facts of the case.

7.4.5.7 *Court Exhibits*

The expert should not get attached to his visual aids. As part of the trial process, many jurisdictions require that visual aids be placed into evidence as part of the trial record. That is, the visual aid remains with the court until the case is adjudicated, including through the appeal process. The photo-

graphs, slides, charts, graphs, and computer files used during the expert's presentation all stay in the courtroom once his testimony is completed. They may be returned once the adjudication process has been completed. However, it would be wise for the expert to take it for granted that he will not see them again and make copies for himself beforehand if he so chooses.

7.5 Summary

Courtroom presentation of forensic evidence is probably the most neglected part of the expert's job. Nowhere is it more important than in the presentation of a clandestine drug lab, for the case often hinges on the expert's opinion. If the expert makes a poor presentation, his information may be lost, and the trier of the fact will not consider it during its deliberation.

The expert's education of the attorney is essential to the successful presentation of a clandestine drug lab case. The attorney must know what made this particular situation a clandestine drug lab so that proper questions are asked. Pretrial meetings are essential for the expert and attorney to devise a script to present all of the information to the court without any surprise questions to the expert or surprise answers to the attorney.

The proper use of visual aids will make an expert's presentation more effective, because the jury will retain five times as much of what they see as opposed to what they hear. The effective presentation of forensic evidence in court is a skill the expert must develop to the same extent as his analytical technique. If the expert is not proficient in courtroom presentation, the most sophisticated evidence in the world may be ignored.