

Title: Chemical Analysis Section Training Manual

1 Introduction

Training and continuing education is of the utmost importance for developing and maintaining a qualified and competent technical staff. This document details the procedures for training and continuing education for Examiners (i.e., FSE1, FSE2, etc.) within the Chemical Analysis Section (CAS) of the Division of Scientific Services (DSS) laboratory. While full training of Examiners will be completed in less than about a year, partial training is encouraged where Examiners start casework in one discipline continue being trained in other areas.

2 Scope

This document applies to training and continuing education for all employees within the CAS. Newly hired Examiners (i.e., new-hires) will most likely have limited experience handling and analyzing evidential material, operating instruments, and conducting analyses. Such individuals will complete all of the general, non-discipline-specific training modules within the Section. Some employees may have experience from other forensic laboratories, other sections from the DSS, or from other Units within CAS. Such situations will be evaluated by management and decisions will be made whether full training or abbreviated training is necessary. All decisions will be documented and kept within Examiner's training notebooks/files.

3 Principle

Training can be either for new Examiners or for current Examiners who have already been trained within separate disciplines/Units. For the former, a more extensive training program will be needed, since the Examiner will be new to the policies and scientific procedures within the area of their work. For the latter, Examiners will be expected to already understand and follow general laboratory operating procedures and training will essentially focus on specific scientific areas/disciplines. Modules will be used to breakdown different areas of the section. Some training modules will be common for all Examiners within the different units of the section (e.g., administrative, evidence handling, general scientific knowledge). Other modules will be Unit-specific where not all Examiners will have the same training (e.g., Toxicology, Controlled Substances, Fire Debris). While it is important and commonplace for training and information-sharing to occur from experienced/qualified Examiners to trainees, it is expected that trainees will take on the majority of their training responsibility themselves, seeking additional information on their own through reading journal articles, within textbooks, watching webinars/videos, and actively participating in additional training activities not specified within this procedure or within modules.

4 Documentation

All documentation related to training of personnel within the CAS will be maintained within binders (e.g., 3-ring) within either the Assistant (or Deputy) Director's office. Electronic training files may

be stored on the laboratory's server (e.g., s-drive) under a properly formatted Section file structure for easy access and review (i.e., s:\chemical analysis section\training (personnel)). This includes memos regarding a trainee's progress, communications documenting the completion of a training module, self-driven training activities, certificates documenting completion of training courses, and any other pertinent documents.

Personnel in training will maintain a daily training log and must fulfill training requirements as outlined in their personal-training-plan (PTP). Trainees (whether new-hires or existing Examiners) will be assigned a mentor (usually the Unit's FSE2, but can be another FSE1). It is the responsibility of the trainee, as well as their mentor, to meet the requirements of the PTP through routine progress reviews.

Trainees will meet with a section Director (either Assistant Director (AD) or Deputy Director (DD)) on a monthly basis to evaluate their progress and development. Prior to meeting with a director, trainees will provide their mentors with summaries reflecting accomplishments and activities that occurred. The Unit's Lead Examiner will take the mentor's summary and will, in-turn, generate a monthly report (in 'Memo' format on Division letterhead) which will be initialed and sent to either the AD or DD. These monthly training update reports will summarize the development and progress of Examiner training and will determine whether Examiner training for particular individuals will continue or cease. Problems with training will be documented and absence of such negative comments will indicate that trainees are satisfying their PTPs, are in compliance with the section's training program, and are recommended to continue their training. Recommendations for improvement will be addressed by the director(s) and addressed accordingly (i.e., changing PTPs, changing mentors, dismissal of training). Review of these monthly reports will be documented/recorded by all relevant parties (i.e., mentors, FSE2s, directors, trainees) through initials/signatures to ensure information has been conveyed to everyone. Storage of final documents will either be by hardcopy in Examiner's training binders or electronic within appropriate training folders.

5 Training and Continuing Education

5.1 Training New Examiners

New Examiners assigned to the Chemical Analysis Section can undergo up to about one (1) year of training, but it is expected that training will be completed as expeditiously as possible. The trainee will be trained in, at a minimum but not limited to, administrative policy, safety, evidence handling, evidence processing, laboratory information management systems (LIMS/JusticeTrax), ethics, analytical instrumentation, basic chemistry/science, quality assurance/quality control, and courtroom testimony.

Each trainee will be trained within a Unit of the CAS. A mentor will be assigned to the trainee and this mentor will serve as the trainee's primary instructor. The section's training program is intended to cover most of the areas necessary to prepare the trainee to be familiar with section [and Division] policies, and to ultimately become an expert in their discipline(s). The purpose

of the training program is to produce an Examiner who has the confidence, knowledge, skills, and abilities within a field to analyze evidence, interpret results, write reports, and convey answers in an accurate and understandable manner. Incorporated in the training program are references, reviews of other Examiner's work, specialized training, and independent research.

Each new trainee will be provided with a training manual (if available) and a customized written personal-training-plan (PTP) that will outline their requirements for becoming qualified in a certain discipline. This training plan will be developed, signed, and coordinated between the Unit's lead Examiner, section director(s), and other appropriate personnel, as needed. Within PTPs there will be discrete modules (e.g., administration, evidence handling, etc.), however not all trainees will have the same modules to complete. Each module covers an important subject area. After completing the modules trainees will be tested (oral, written, or both) within thirty (30) days in order to demonstrate their comprehension and competency. These module evaluations may be either individual or combined, depending on the PTP that has been developed.

Trainees will eventually receive training samples (e.g., proficiency test samples, simulated evidence, or past evidentiary samples). Examiners-in-training will not be given actual evidence which can impact casework for training purposes. Examples of evidence allowed for training includes, but is not limited to, extract samples that would normally be discarded and evidence that has been adjudicated.

Final practical competency test(s) will be given and passed in order for Examiner's PTPs to be considered complete and before Examiners are recommended to be authorized to analyze evidence in casework. Some trainees may need to fulfil competency tests in more than one area if multiple disciplines are involved (e.g., volatile, immunoassay, fire debris, primer-gunshot residue). Successful completion of practical competency tests will be determined by whether trainees obtained expected results. Written test evaluations can be combined (e.g., multiple modules at one time) and all written tests will have point values assigned to questions, with a total score being one-hundred (100) points. Successful completion of written competency evaluations will be a grade of eighty (80) or higher. If oral exams are given, at least two (2) evaluators must be present and scoring on evaluations must be documented. Scoring for oral examinations will be similar to written evaluations with a perfect grade being one-hundred (100) points. Evaluation documents will have names of all person's involved, along with signatures and dates, and will be stored within appropriate training binders/files. The Deputy director has the final decision regarding scoring, discrepancies within training program evaluations, and recommendations regarding Examiner authorization recommendations.

5.2 New Training of Experienced Examiners

As the needs of the Section change it is sometimes necessary for an experienced Examiner to undergo training in a new discipline. When this occurs, the training program will follow the basic design of the program established for new Examiners, however, the personal-training-

plan (PTP) will be modified to avoid duplication of training topics. The experienced Examiner will be provided with a written PTP developed, signed, and coordinated between the Unit's lead Examiner, section director(s), and other appropriate personnel, as needed.

Experienced Examiner trainees may need to be qualified outside of their designated units. Such Examiners will receive supplemental materials and training specific for the desired discipline that they are to be considered authorized. This type of training is considered less time-consuming and will not take as long as New Examiner training.

A mentor will be assigned to the trainee and this mentor will serve as the trainee's primary instructor. The training program in the section is intended to cover most of the areas necessary to prepare the trainee to become familiar, and ultimately an expert, in their discipline(s). The purpose of the training program is to expand already-qualified Examiner's abilities to encompass new areas/disciplines, and so that they may become experts and have the confidence, knowledge, skills, and abilities to analyze evidence, interpret results, write reports, and convey answers in an accurate and understandable manner. Since these Examiner-trainees are already familiar with the training process, they will be expected to provide more independent studying/learning and less mentor-driven instruction than new Examiners.

Examiners will receive training samples (e.g., proficiency test samples, simulated evidence, or past evidentiary samples) which will not be actual evidence that impacts casework. Examples of evidence allowed for training includes, but is not limited to, extract samples that would normally be discarded and evidence that has been adjudicated.

Final practical competency test(s) will be given and passed in order for Examiner's PTP to be considered complete and before Examiners are recommended to be authorized to analyze evidence in casework. Written test evaluations can be combined (e.g., multiple modules at one time), will have point values assigned to questions, and will have a total score of one-hundred (100) points. Successful completion of written competency evaluations will be a grade of eighty (80) or higher. Oral exams can be given in lieu of written exams. At least two (2) evaluators must be present during oral testing of which one of them must be qualified in the discipline of interest. Scoring on evaluations must be documented. Scoring for oral examinations will be similar to written evaluations with a perfect grade being one-hundred (100) points and a successful completion being eighty (80) or greater. Evaluation documents will have names of all person's involved, along with signatures and dates, and will be stored within appropriate training binders/files. The Deputy director has the final decision regarding scoring, discrepancies within training program evaluations, and recommendations regarding Examiner authorization recommendations.

5.3 Re-Familiarization or Re-Training of Experienced Examiners

Examiners who were once qualified within a discipline may become absent from working within that area for a variety of reasons (e.g., extended leave, movement to another discipline) and then return to that discipline after a certain time period. If an Examiner has been absent from a particular discipline for less than one (1) year (i.e., 365 calendar days) and they have

not lapsed in required proficiency testing within that discipline during that time period, then only re-familiarization (no formal training nor testing) will be necessary. It is at the discretion of the appropriate Unit lead and section supervisors to determine what training will be necessary and at what point the Examiner is ready to resume their duties in casework. In lieu of a personal training plan and a mentor, a summary of Examiner training along with justifications and reasons for re-authorization within the discipline will be included in a recommendation memo to the Director.

When a once-qualified (or similar) Examiner has been absent for one (1) year or more from performing duties within a discipline and has not successfully passed a required proficiency test within the discipline of interest during that absence then that Examiner will be considered un-authorized in that discipline and re-training (including written and practical competency tests) will be necessary. It should be noted that work as a reviewer within a discipline does fulfill the 'participation of duties' aspect. It should also be noted that an Examiner in a similar situation as a once-qualified Examiner would be one that possesses significant experience from a previous agency within Connecticut and has been participating in duties as previously described (e.g., once-authorized scientist from the CT-Office of the Chief Medical Examiner (OCME)). In such cases the re-training will follow the basic design of the training program established for new Examiners, however the personal-training-plan (PTP) can be modified to avoid duplication of training topics and unnecessary work. The Examiner will be provided with a written PTP that has been developed, signed, and coordinated between the Examiner, the Unit's lead Examiner, section supervisors, and other appropriate personnel, as needed. Upon request they will receive specific supplemental materials and training. This type of training is considered less time-consuming, more self-driven, and will not take as long as New Examiner training/new discipline training to complete. A mentor will not be assigned to the trainee because the returning Examiner has already been qualified in the discipline. However, co-workers and other personnel will be made available to the Examiner if assistance is needed. The Unit Lead and section supervisors will ensure the Examiner will have all the resources necessary to finish their refresher-training in a timely fashion. Monthly meetings between section supervisor(s), the Examiner, and the Deputy Director (or designee) will occur to ensure that re-training is occurring without any problems or delays.

The creation and analysis of training samples will be the responsibility of the Examiner. Training samples can be from proficiency test samples, simulated evidence, or past evidentiary samples (which will not be actual evidence that impact casework). Examples of evidence allowed for training include, but are not limited to, extract samples that would normally be discarded and evidence that has been adjudicated. Both written and practical competency tests will be given and passed before Examiners are recommended to be re-authorized. Written test evaluations can be combined (e.g., multiple modules at one time), will have point values assigned to questions, and will have a total score of one-hundred (100) points. Successful completion of written competency evaluations will be a grade of eighty (80) or higher. Oral exams can be given in lieu of written exams. At least two (2) evaluators must be present

during oral testing of which one of them must be qualified in the discipline of interest. Scoring on evaluations must be documented. Scoring for oral examinations will be similar to written evaluations with a perfect grade being one-hundred (100) points and a successful completion being eighty (80) or greater. Evaluation documents will have names of all person's involved, along with signatures and dates, and will be stored within appropriate training binders/files. The Deputy Director has the final decision regarding scoring, discrepancies within training program evaluations, and recommendations regarding Examiner re-authorization recommendations.

5.4 Continuing Education (CE) for Examiners

The Chemical Analysis Section encourages individual Examiner development. Under this procedure, each employee within the section is required to take a minimum of five (5) hours of relevant continuing education each calendar year. This training will be documented on the Section's *Continuing Education Certification Form*. Within the Chemical Analysis Section a director (AD/DD) will evaluate each Examiner's forms after they complete their training for appropriateness. Once approved by a director (initial/date), Examiners will place their forms either in their training binders or electronically within their training folder. Examiners will then update the CE information within a summary file found on the server within the appropriate section folder (i.e., in a database or spreadsheet).

Continuing education training topics and courses in the Section are chosen by the Examiner and can be reviewed for appropriateness by a Unit lead prior to being taken. Acceptable topics of training must directly relate to the employee's current job requirements and should focus on maintaining skills and expertise in their subject discipline(s). For example, these topics may include instrumental courses, relevant workshops at scientific meetings, or management courses. The evaluation of the CE portion of this procedure will begin on January 01, 2020.

5.5 Remedial Training for Examiner-Trainees

At times, it may be necessary to provide remedial training for Examiners (e.g., failed proficiency tests, improper use of a validated protocols, failed PTPs). In these instances a Corrective Action Request will be issued and a remedial training plan will be developed (by a director or designee). This plan will try to ensure that the Examiner-trainee receives the proper level of understanding of the issue at hand.

For Examiner-trainees (both new and experienced), failure of three (3) written/oral competency evaluations will result in dismissal of the training process. Administrative action (e.g., Oral reprimand, OCRW) will be necessary to document the need for improvement in performance and will accompany each failure event. Failure of two (2) practical competency tests will also constitute dismissal of an Examiner within the training process. The decision as to whether Examiners can be reinstated into the training program will be at the discretion of the Deputy Director. Reinstatement means Examiners will have to be given a new PTP and start all failed appropriate modules over. Each subsequent failure will result in additional administrative action.

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6 Responsibilities

6.1 Trainee

- Follow personalized training program (PTP)
- Learn through mentorship or by self-study
- Take initiative to answer all questions on own prior to asking for guidance
- Obtain all necessary Unit procedures, reference articles, outside lab procedures, journal articles, and any other documents for knowledge to become an expert in the discipline.
- Read and thoroughly understand all documents
- Become proficient and master practical skills necessary for evidentiary analyses.
- Demonstrate competency in all disciplines relevant to the PTP.
- Maintain a daily training log
- Provide a monthly summary of training to their mentor
- Meet with a section Director on a monthly basis
- Organize and maintain all documents within a training binder (or electronically store documents within appropriate personal folder on server).
- Pass all oral/written competency exams
- Pass all practical competency exams

6.2 Mentor

- Primary instructor for the trainee
- Mentors the trainee
- Provides trainee with answers and information to all relevant procedures and literature
- Acts as a resource
- Guides the trainee through their training
- Updates FSE2 as to training progress
- Provides trainee's monthly summary to the Lead Examiner
- Ensures trainee's training binder/server folder is complete (including signed/initialed monthly reports)

6.3 Unit Lead Examiner (i.e., FSE2)

- Assign an evidence locker for the trainee (if available)

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- Assign a mentor for the trainee
- Ensure that training progresses as expected throughout the training process
- Provide the trainee with access to all needed procedures (Qualtrax), LIMS access, and other literature references
- Allow trainee adequate time for training events (e.g., reading, researching, observing, practicing)
- Generate a monthly report (in 'Memo' format on Division letterhead) summarizing Examiner training, identify problems, provide recommendations, obtain initials of all relevant parties, and give to appropriate director (AD/DD) prior to their monthly meeting with trainee

6.4 Assistant/Deputy Director

- Review monthly training memo from Lead Examiners
- Meet monthly with trainee(s)
- Address problems as necessary (e.g., changes in plan, changes in mentors, oral counseling)
- Decide whether training will continue or remediation is necessary (Deputy Director)
- Review recommendations and determine if an authorization request is to be sent to the Quality Manager and Director (Deputy Director)

*Approved by Director: Dr. Guy Vallaro***Rev. #****History**

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| 1 | New procedure for training Examiners within the Section. |
| 2 | Added title section at beginning of document. Added section about retraining of experienced (once-qualified) Examiners within a discipline after an absence. Updated New Training of Experienced Examiners section by clarifying success of an oral examination. |

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