

A. Purpose/Scope:

Within this document are general guidelines that are important for maintaining the integrity and forensic defensibility of the work performed within the Controlled Substances (CS) Unit. A controlled substance is generally a drug or chemical whose manufacture, possession, or use is regulated by a government entity (e.g., illicitly used drugs or prescription medications). Evidence is usually submitted for two (2) purposes – weight and qualitative examination. Currently quantitative analyses (other than weight measurements) are not conducted within the CS Unit. Comparisons of analyte quantities within evidence, as long as numerical values are not reported, can be considered qualitative and may be performed. Such requests usually come from evidence that has been suspected of being tampered or adulterated and accompanies known exemplars for comparison purposes.

B. Responsibility:

Analysts assigned to the Controlled Substance Unit.

C. Safety:

Proper PPE must be worn whenever analyzing drug evidence. At a minimum proper ventilation (e.g., use of a powder-safe hood) will be used when potential hazards for drug exposure exist. Eye protection (e.g., safety glasses) must be worn when there is a potential for eye injury. It will be the responsibility of the employee to determine when proper eye protection will be used.

D. Procedure:

1. All analysts must work in a manner that provides safe working conditions for themselves and their co-workers.
2. Analysts shall wear lab coats and disposable gloves while analyzing evidence. Gloves will be changed in-between different items of evidence, as well as between the use of reference materials, so as to avoid contamination. Lab coats will be changed when there is an indication of contamination or when such activities warrant changing (e.g., residue analyses).
3. All evidence transfers are documented in LIMS-Plus when they occur. Personal identification numbers (PINs) are used in conjunction with staff [person-to-person] evidentiary transfers.
 - a. In the event that an aliquot of evidence is split and transferred to a second analyst, a sub-item will be created in LIMS-Plus. The chain of custody will be maintained for all portions of evidence if said evidence is to be analyzed or returned.
 - b. If an error is found within the chain of custody for a case then that information will be brought to the attention of the appropriate Lead Examiner (or higher). Certain QA actions will be taken to correct and document the issue.
4. If needed, a case may be opened, inventoried, and/or closed by analysts with the assistance of a witness.
5. Only one case should be opened and/or closed by an analyst at a time. This practice is in place to avoid mixing-up case materials.

6. All evidence sampling and transfers will include appropriate labeling (e.g., laboratory number and item identifiers).
7. Photographs may be taken of evidence, as appropriate. Photographs can be used to supplement case notes and allow analysts to minimize written notes. All photographs will be retained within appropriate storage locations (hard copy or electronic within LIMS)
8. Ink will be used for all casework documentation (Blue pens are preferred and red ink is discouraged).
9. Examination areas, surfaces, utensils, and any other such equipment will be pre-cleaned (e.g., methanol, ethanol, acetone) prior to an underlayment barrier (e.g., brown paper or equivalent) being placed down when analyzing all evidence in order to prevent contamination. Such cleaning is especially important when examining/analyzing drug residue evidence. For drug residue evidence disposable equipment (e.g., spatulas, pipettes) should be used and surfaces should be pre-tested for possible contamination prior to evidence being examined/placed down, whenever possible.
10. Evidence lockers are usually assigned to individual analysts and can contain evidence, aliquots of evidence, extracts of evidence, and other similar case materials. All such evidentiary materials will be stored under proper seal and kept locked when not being actively analyzed. . Tamper-evident tote tags should be used on the outside of evidence lockers (along with handwritten inked initials on the tags) at the end of a workday to ensure integrity of stored evidence inside a locker. Any incident where an analyst feels evidence or integrity of evidence may be of concern is required to contact the appropriate Unit Lead (and higher) for necessary QA action.
11. All non-common abbreviations used within worksheets and case notes should be defined within appropriate case documentation.
12. Significant deviations are changes in procedures which could adversely affect the results of experiments. If significant deviations from procedures are necessary then analysts must discuss the issue(s) with the appropriate Unit Lead (and higher) and obtain pre-approval using the QA process (such approval can additionally be documented in case notes). Minor deviations are changes in a procedure which do not adversely affect the results of an experiment. The analyst must document such deviations in the case file notes.
13. All supplies and reagents will be stored in a manner so as to ensure that they are suitable for use and to preserve their integrity. Manufacturer's guidelines should be followed.
14. All reagents must be properly labeled and secured in a manner so as to ensure that they are suitable for use in case analyses. Analysts will store and maintain reagents with special handling requirements in a manner that meets said requirement. Manufacturer's information (e.g., MSDS, SDS) should be consulted when analysts are unsure of storage (e.g., refrigerator, solvent cabinet), use, or potential hazards.
15. All reagents and reference materials that are used in case analyses must be validated before use with casework. In general, a reagent is deemed acceptable for casework use if the reagent gives results that are as expected whether it be for positive and negative use.

- a. When possible, a newly prepared lot of reagent will be run contemporaneously with a previously validated lot.
16. All instruments will be verified as operable and pass operating criteria prior to being used for casework.
17. Instruments should be maintained appropriately to maintain quality.
18. Instruments that do not meet daily QA requirements and which can't be corrected to meet said requirements will be marked as out of service and won't be used for casework until appropriate QA requirements are met.

General Case Flow in the CS Unit:

19. Cases are initially received from submitting agencies in the Evidence Receiving Unit (ERU) and then transferred to the CS Unit. Evidence must be under proper seal during all transfers between sections.
20. A case file and paperwork (hard copy or electronic) is prepared for each case and barcode and milestone labels are usually included.
21. Case(s) are assigned to an analyst through LIMS-Plus and analysts transfer evidence from a storage location to themselves using LIMS-Plus.
22. The inventorying of a case is documented using the appropriate Unit form(s) or electronically captured in LIMS.
23. If a discrepancy is discovered upon inventory, the Unit Lead (or higher) will be informed to confirm and the submitting agency will be notified. If the issue jeopardizes the quality of the evidence, work may be halted on the case. All communication will be recorded within case documentation. .
 - a. The verbiage "approximately"/ "approximate" will be accepted and not considered a discrepancy if the exact quantity does not match what was found upon inventory.
24. Weights are taken based on the case and following the guidance in procedures. Aliquots are taken based on case needs and following the guidance in procedures. Aliquots and evidence not actively being worked will be stored under proper seal within an evidence locker. Appropriate chain of custody will be maintained at all times.
25. Case paperwork is compiled (e.g., notes, instrument data sheets, worksheets) during analyses. Case notes describe the evidence and details of the analyst's observations and work. Pictures can be used to supplement case notes and it is acceptable to annotate case pictures with necessary information – just as long as critical information is not blocked. Case notes must be legible and can be recorded using the appropriate forms or electronically.
26. Two (2) samples are usually obtained from each piece of evidence and identifications are generally made when results from both samples are in agreement. This usually occurs when either two portions or two samples both result in the same conclusion. Findings should be recorded on appropriate forms.

27. Upon completing the analyses for a case, conclusions are made based on the compiled data. Appropriate controls will have been used to ensure quality work (reference standards will have been used for positive controls and analyte-free materials will have been used for negative controls). Findings are entered into LIMS-Plus and the case is marked, 'Draft Complete.' The draft report should be placed in the case jacket and will be reviewed after a technical reviewer is assigned in LIMS-Plus.
28. Any corrections resulting from the technical review (TR) will be noted (e.g., within the appropriate area in LIMS-Plus). If corrections warrant a continuation of the TR then the reviewer will select 'Reject Findings' within LIMS-Plus and return the case to the analyst with enough explanation as to why the case was sent back for corrections. A discussion is always recommended so adequate communication between analyst and reviewer is ensured.
29. Prior to return of evidence to the Evidence Receiving Unit the case is re-inventoried and closed (sealed) by the analyst. . Documentation of this action is recorded appropriately.
30. The evidence can be transferred into storage in the "Cases in Review" location until all the reviews have been completed.
31. After TR is successful the same process occurs with administrative review (AR) – along with the same method of communication and documentation within LIMS-Plus.
32. Anytime disagreements cannot be resolved during TR and/or AR, then an appropriate Unit Lead (or higher) will be consulted.
33. After all reviews are successful a final report is generated. The original report is maintained electronically within LIMS-Plus.
34. The analyst makes copies of the report and these copies along with the evidence can get transferred back to the Evidence Receiving Unit. One of the report copies should get a sub-item within LIMS-Plus. This is for tracking purposes when the report copy is transferred to the submitting agency from ERU.
35. A supplemental report may need to be issued when additional evidence or additional work on evidence is performed (often at the request of the submitting agency). This supplemental report will be completed and issued having the same level of technical and administrative reviews as was done with the original report. It will be clearly marked as being a supplemental report and reference will be made to the original report (e.g., date of original report). Only supplemental results should be included in the supplemental report. It is not necessary to include results from the original report.
36. A revised (aka. amended) report is used when corrections are needed within the original report. This report will be completed and issued having the same level of technical and administrative reviews as was done with the original report. It will be clearly marked as being a revised (or amended) report and reference will be made to the original report (e.g., date of the original report). The before and after changes will be included within the revised report so that the reader will adequately know what was changed from the original report.

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37. Distribution of supplemental and/or amended reports should be similar to original reports (i.e., trackable through sub-itemization in LIMS-Plus).
38. The report case file may be filed appropriately.

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APPENDIX – Abbreviations and Definitions:

ACET: Acetone
Amph: Amphetamine
APAP: Acetaminophen ; Paracetamol ; N-acetyl-para-aminophenol
BB: Borate Buffer
BBX: Borate Buffer Extraction
Benzo: Benzodiazepine
bl: Blood
BM: Botanical Material
bndl: Bundle
cap: Capsule
CBD: Cannabidiol
CFB: Cocaine Free Base
CH: Cystolithic-like Hairs
CH P/A: Cystolithic-like Hairs present or absent
CHEP: Cyproheptadine
cmpd: Compound
coc: Cocaine
cont: Containing/Container
CPB: Clear Plastic Bag
CRM: Certified Reference Material
CS: Controlled Substance(s)
CSF: Cocaine Salt Form
CZLB: Clear Zip Lockable Bag
DS: Daily Standard
DSS: Division of Scientific Services
ea: Each
ECO: Evidence Control Officer
Encl: Enclosed
env: Envelope
EPB: Evidence Plastic Bag
ETOAc ; EACT: Ethyl Acetate
EtOH: Ethanol
evid: Evidence
FA: Fatty Acid
FTIR: Fourier Transform Infrared Spectrophotometry
g: Grams
GC: Gas Chromatography
GCMS: Gas Chromatography/Mass Spectrometry
GHB: Gamma Hydroxybutyrate ; Gamma-Hydroxybutyric Acid

CS 1 General

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HPLC/MS ; LC/MS: High Performance (Pressure) Liquid Chromatography/Mass Spectrometry

HS: Heat Sealed

Insol: Insoluble

IPA ; iPrOH: Isopropanol

IR: Infrared

IS: Internal Standard

K: Kilogram

KPB: Knotted Plastic Bag

KPBC: knotted plastic bag corners

KT: knot tied

liq: liquid

LIMS-Plus ; JT ; JTRAX: JusticeTrax® laboratory information management system (LIMS) software

LSD: Lysergic Acid Diethylamide

6-MAM ; 6-AM: 6-Monoacetylmorphine

Mar: Marihuana ; Marijuana

ME: Manila-like Envelope

MeOH: Methanol

meth: Methamphetamine

mg: Milligram

mL: Milliliter

MS: Mass Spectrometry

NCS: No Controlled Substances

NDD: No Drugs Detected

Neg: Negative

NS: Not Scheduled

Num: Numerous

OCP: One Clear Plastic

op: Opioids

P1: Portion One

P2: Portion Two

p: Powder

PCP: Phencyclidine ; Phenylcyclohexylpiperidine

pdr: Powder

PE: Petroleum Ether

PKG: Package/Packaging

plb: Plastic Bag

PM: Plant Material

Pos: Positive

PPE: Personal Protective Equipment

Proc: Procedure

pwdr: Powder

PZB: Plastic Ziplockable Bag

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QAQC ; QA/QC: Quality Assurance/Quality Control

QA: Quality Assurance

QC: Quality Control

rel: Related

res: Residue

RS: Rock Substance

Sol ; Sol'n: Solution

STD: Standard

RT: Retention Time

tbt: Tablet

tab: Tablet

THC: Tetrahydrocannabinol

Total U ; TU: Total Uncertainty

TX ; tox: Toxicology

TX Bag: Toxicology Convenience Bag

Uncer ; U: Uncertainty

ur: Urine

UV: Ultra Visible

UV/VIS: Ultraviolet/Visible Spectrophotometry

vol: Volume

WE: Weighing Events

wt: Weight

ZLB ; zip: Ziplockable Bag

Visible Residue: A term used to describe an amount of a solid material that is visible within evidence and is in a quantity too small to be adequately isolated and weighed (e.g., less than a milligram of solid, a few particles of solid powder).

Non-Visible Residue: A term that can be used to describe evidence where no solid drug-like material is visible but which non-visible particles of potential analyte may be present.

Reference Standards: materials (usually pure) that are commonly purchased and which meet certain traceability requirements. Product information (e.g., purity, lot number, expiration date) are usually found on reference standard containers. These are sometimes referred to as pure standards and are commonly used to verify the identity of a detected analyte.

DEA Exempt Standard: Chemicals purchased or made in a concentration of 1mg/mL or less.

"Like" items: evidence within a case that have similar physical appearance, including packaging and contents.

Sample Selection: A process wherein evidentiary "Like" items, or portions of said items, are selected to be analyzed. There is no assumption of homogeneity – only that the "Like" items may contain the same material(s). Any reported analytical results will only be from items that were actually selected and

tested. Results are only considered related to the whole population of the submitted evidence when all of the items have been analyzed.

Sampling Plan: A process wherein evidentiary items are analyzed and their results represent the entire contents based on a statistical plan. This plan can be used with multiple item populations and can be used to determine the number of samples an analyst needs to analyze in order for an inference about the whole submission (population) to be made. The CS Unit does not currently use a sampling plan. However, in the event that a customer requires a result which represents the entire submission's population, a Bayesian statistical approach will be used (e.g., SWGDRUG Sampling Plan) and use of the plan will be documented in the case.

Analyst: a scientist who has certain authorizations, such as to handle and analyze evidence in a particular discipline or Unit. They are typically responsible for the security of the evidence they handle, analytical work they perform, and reporting of results.

Toxicology Convenience Bag: a bag or container used by the laboratory for convenience. These are labeled as "TX" to demonstrate that they were added to the case by the laboratory.

Witness: An employee or authorized analyst within the DSS laboratory that can act as a verifier of an action. Although the witness may not be responsible for analytical work, they are responsible for verifying that an activity took place (e.g., evidence was sealed, number of items of evidence were received/returned, weight value was transcribed and/or recorded correctly).