

Sampling Procedures

1 Purpose

This document sets forth the sampling procedures for physical evidence and supplements the requirements of the FBI Laboratory *Quality Assurance Manual (QAM)* and the FBI Laboratory *Operations Manual (LOM)*. These procedures are to be used in conjunction with the Standard Operating Procedures (SOPs) for analysis of evidence.

2 Scope

These procedures apply to explosives chemistry and explosives and hazardous devices personnel who sample physical evidence that will effect the validity of forensic examinations.

3 Equipment/Materials/Reagents

Refer to the appropriate explosives analysis SOP for a list of equipment, materials, and reagents needed.

4 Procedures

Physical evidence submitted to explosives chemistry and explosives and hazardous devices personnel for analysis routinely consists of bulk materials. Bulk materials can be further categorized as either liquid or solid.

Sampling is defined as the selection of a sample for testing according to a procedure. The approach to sampling can be either non-statistical or statistical.

Non-statistical sampling may be conducted on homogenous or heterogeneous items. If an item is determined to be homogenous, the portion analyzed can be representative of the whole item. If an item is determined to be heterogeneous, a portion of each component present in the item will be analyzed to be representative of the item as a whole, as practicable.

Statistical sampling may be conducted on several items to make an inference on a larger group of items (e.g., analyzing 20 out of 100 like items). If this is done, the specific statistical sampling method will be stated and the corresponding calculations retained.

The following sampling procedures will be used to collect a sample(s) from the larger whole (a single item).

4.1 Liquid

Liquids within manufacturer-sealed containers will not be opened and analyzed unless a technical, practical, or safety reason is stated.

4.1.1 Single Layer

It is important to stir liquid samples adequately to ensure proper mixing. If the item appears to be homogeneous, remove an appropriate quantity of sample for analysis.

4.1.2 Multiple Layers

If the item appears to consist of two or more immiscible liquids, remove an appropriate quantity of each liquid and analyze the components separately.

4.2 Solid

Solids within manufacturer-sealed containers will not be opened and analyzed unless a technical, practical, or safety reason is stated.

4.2.1 Homogeneous Samples

If visual examinations (to include microscopic examinations) indicate that the item is homogenous, remove an appropriate quantity of sample for analysis.

4.2.2 Heterogeneous Samples

If visual examinations (to include microscopic examinations) indicate that the item is heterogeneous, attempt to separate and remove appropriate quantities of the individual components to analyze separately. A heterogeneous sample may also be analyzed according to specific extraction procedures. Refer to the appropriate explosives analysis SOP that best categorizes the sample to be analyzed.

When smaller amounts of a non-homogeneous, bulk material are submitted for analysis, the sample may be homogenized with a mortar and pestle, as applicable.

5 Safety

Safety protocols contained within the FBI Laboratory Safety Manual will be observed at all times.

Standard precautions will be taken for the handling of all chemicals, reagents, and standards including taking standard universal precautions for the handling of biological and potentially

hazardous materials. Refer to the FBI Laboratory Safety Manual for proper handling and disposal of all chemicals. Appropriate personal protective equipment will be used when handling any chemical and when performing any type of analysis.

The handling of explosives is potentially hazardous due to possible ignition by heat, impact, shock, friction, or electrostatic discharge. Personnel should work with minimum quantities of explosives (such as a few grams) that are appropriate for the analysis and properly store larger quantities in approved containers.

6 Limitations

If inconsistent results are obtained during the analysis of the samples, further portions may need to be analyzed. Individual component analyses of complex, heterogeneous mixtures may not be representative of the item as a whole.

7 References

FBI Laboratory Quality Assurance Manual, Federal Bureau of Investigation, Laboratory Division, latest revision.

FBI Laboratory Operations Manual, Federal Bureau of Investigation, Laboratory Division, latest revision.

FBI Laboratory Safety Manual, Federal Bureau of Investigation, Laboratory Division, latest revision.

Rev. #	Issue Date	History
2	12/16/2019	Removal of section 4.3. Title changed to sampling only. Revisions throughout for homogeneous vs. heterogeneous materials and statistical vs. non-statistical methods. Added definition of sampling to comply with LOM. Removed SAU Chief from approval lines. Separated Explosives Chemistry and Fire Debris TL signatures.
3	07/15/2020	Removed fire debris from section 2 and section 4. Removed Fire Debris Technical Leader from approval lines. Updated statistical sampling in section 4.

Approval

Redacted - Signatures on File

Explosives Chemistry
Technical Leader

Date: 07/14/2020

Explosives and Hazardous
Devices Technical Leader

Date: 07/14/2020

Explosives Unit Chief

Date: 07/14/2020

QA Approval

Quality Manager

Date: 07/14/2020