



Physical Evidence Bulletin

Soil Evidence

Purpose

Soil profiles are influenced by five separate yet interacting factors: parent material, climate, topography, organisms, and time. These factors can give soil profiles distinctive character.

The Physical Evidence Bulletin is a guideline intended for law enforcement agencies for the collection and submission of evidence to BFS Laboratories. Physical Evidence Bulletins are not intended to be used in lieu of training in the collection of evidence.

Analysis and results that may be obtained

The Bureau of Forensic Services (BFS) provides analytical support to law enforcement agencies through the examination of soil.

Naturally occurring soil is a complex and changing mixture of living organisms, decaying organic matter, air, water, and relatively stable rock and mineral fragments. There are many different types of soils in the state of California; specific local areas may contain relatively few of these varieties and each type may exist for a few square yards or for many square miles. The amount of variation in a single soil may be limited or great, depending on the geographical location. It is not feasible to pinpoint the origin of a particular soil sample, but it is possible to relate it to areas of occurrence.

Soil samples may also contain unusual features such as fossils or debris from human habitation and/or industrial operations, e.g. paint droplets, cinders, chemicals or fibers. These features or debris, if sufficiently varied and unique, can be valuable in individualizing a specimen and be excellent physical evidence.

The character and composition of soils vary laterally and with depth. Although the color and texture of soils may not appear to vary along the ground, the chemical composition can change sufficiently in a short distance. Therefore, several samples should be submitted to establish the normal distribution of soil of a particular type in and around a crime scene.

Precautions

Depending upon the case circumstances, other evidence may be present. An investigator may need to consider latent prints, toolmarks, broken glass, shoe/tire prints, blood stains, saliva, and other trace evidence. See the Physical Evidence Bulletins for collection and preservation of other types of physical evidence.

Collection, marking, and packaging

Do not remove soil if the soil is firmly attached to some object such as a shoe. Collect the whole object, air dry the soil, wrap the object in butcher paper then place the object into a paper bag or other appropriate container. Loose soil or sand can be swept onto a clean piece of paper which is then folded to enclose the specimen.

Comparison Samples:

Collect at least three (3) tablespoonfuls of soil from each location being investigated. Comparison samples must be representative. If the unknown soil might be from an excavation, collect specimens at several depths at the excavation site and document the depth at which each was recovered. In all other cases, collect only surface samples (top quarter inch). It is also advisable to collect samples from other locations near the crime scene so the laboratory can determine how much variation there is in the soil in that area. Record a description of the physical location where the soil was collected (e.g., ditch) and note any unusual conditions in the vicinity (e.g., close to petroleum tank).

An example of a systematic method for recovery of soil samples is attached. In the example, soil is being collected around a shoe impression. In an actual case, make a diagram of locations where the soil is collected and submit the diagram to the laboratory along with the soil samples. Always air dry damp soil samples prior to packaging or mold growth may occur. Package each soil sample in a leak proof container.

Submission of evidence to the laboratory

Label the container with the agency case number, item number, and brief description as appropriate. Tape seal the container; date and initial the seal. Submit evidence to the laboratory along with a completed Physical Evidence Submission Form (BFS-1) and, if available, a case report or case summary.

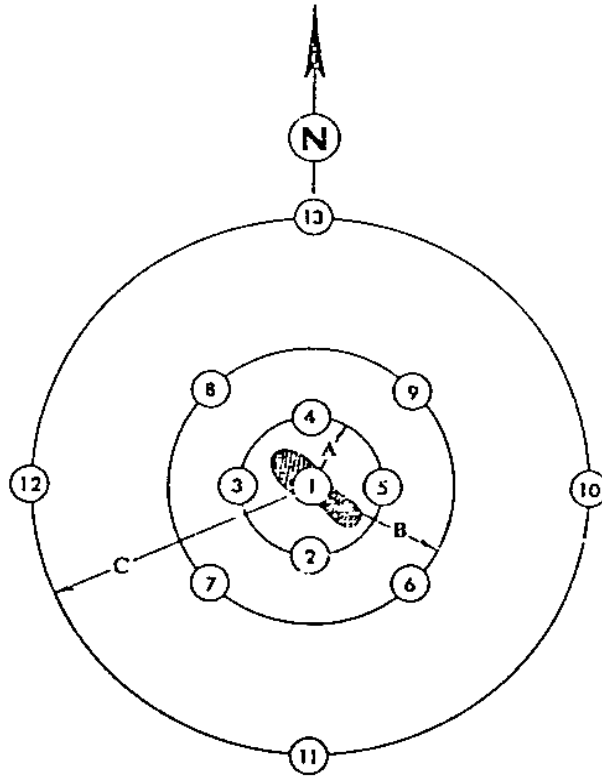
For further information and additional resources

Please contact your regional BFS laboratory with any further questions that you may have.

For a list of regional laboratories please go to:
http://ag.ca.gov/bfs/pdf/bfs_brochure.pdf or <http://ag.ca.gov/bfs/>

To locate the most current Physical Evidence Bulletins please go to:
<http://ag.ca.gov/cci/reference/reference.php#peb>

Soil Physical Evidence Bulletin Attachment



A = 10 ft.
B = 50 ft.
C = 100 ft.