Ch. 16—Soil Evidence

Dust & Dirt
- This type of evidence can reveal _____ a person has been, _____ they live, _____ they work, and if they have pets.
- Alibi soil samples are taken in many criminal investigations with most _____ samples taken from the _____ surface of the soil in _____ amounts.

How is soil useful?
- Soil is a _____ mixture of _____ and _____ materials.
- Great _____ of these combinations leads some to believe that soil has a _____ composition in any given area and changes detectably every few feet.

Soil Formation
- Soil forms from the breakdown or _____ of _____ rock.
- **Parent rock**—an area of _____ that is the source for an area of soil
- Mechanical (_____) and chemical (_____) weathering help in this process as well as the influence of _____ and _____.

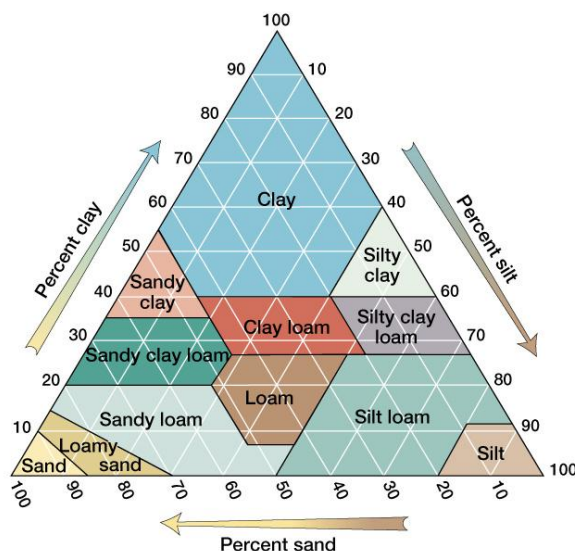**Information obtained from soils**
- Texture and color
  - T_____:
    - Soil is separated into _____ major texture categories, based upon particle size within it: S_____, C_____, S_____.
    - Use texture triangle to identify soil type
  - C_____:
    - _____ soils = _____ logged . . . No oxidation
    - Orange/red soils = influenced by _____
    - Dark _____ soils = _____ rich, lots of decomposed dead organic matter (_____)

Key =
- Forensic scientists can analyze soil composition to place soil with particular _____ . . . match often found due to noting _____ and _____ of an area.

Soil Texture Triangle

Ch. 18: Forensic Footwear Evidence

❖ Forms of footwear impressions
- 3-D impressions = those that remain after a shoe has _____ _____ a surface
  - Example surfaces: _____
- 2-D impressions = those _____ or _____ prints left on non-giving surfaces
  - Example surfaces: _____
  - Note: Very often the _____ visible impressions actually retain _____ detail than those that result from heavier deposits of residue, dust, or blood.

❖ Information from footwear impressions
1. _____ID of footwear
   --Proving a suspect's _____ at a crime and thus possible _____ in the crime
2. _____ of footwear
   --Based o _____ characteristics . . .. changes in or absence of random _____ characteristics are normally not used to _____ a shoe
3. _____ of impression and _____ with other evidence
   --Can help lead to uncovering other impressions or _____ evidence
4. Rebuttal or Confirmation of a suspect's _____
5. _____ of shoe brand/manufacturer
   --Aided by use of _____ footwear _____ that includes _____ of shoe designs
6. Determination of shoe _____
   --Recording _____ of impressions can allow for general _____ of shoe size
7. _____ characteristics
   --Refers to how someone _____
   --Measurements from impressions include _____, step width, and walking pace
   --Note: _____ reliably used as a means of personal _____
8. _____ of crime scenes
   --_____ can store footwear impressions recovered from scenes and can be used to find a matches or links between different crimes (helpful with _____ crimes like burglaries)
9. _____ of perpetrators and participation in crime
   --More than one print design found can _____ the # of people who _____ committed the crime
10. _____
    --Observing impression series that can result in following the path of an individual (_____ aliens, _____ children)

❖ Location and recovery of footwear impressions
- Important to _____ crime scenes as _____ as possible to _____ other impressions being _____ _____ the evidence
- Location:
  - Some impressions _____ located (i.e. _____ or _____)

- Most require more _____ to _____
    - Use _____ light source or _____ lifting device
    - Use _____ in _____ as a place to look (i.e. _____ and exit points, and _____, magazines, or glass on floor which often hold _____ prints in good _____)

- Recovery
    - _____ with _____ and _____ (# cards in photo)
    - Take _____ prints to _____
    - Prints that _____ be moved and may need to be _____....
        - _____ quality _____
            - _____ over print
            - 35 mm _____
            - _____ in picture
            - _____/UV/_____ lighting for _____
            - possible use of _____ to enhance*** before photo
        - Lifting _____prints
            - _____—used for _____origin impression
            - _____ powder
        - Casting _____ prints
            - Use _____ stone, a _____ product _____ than plasters and provided _____ and _____ recovery

- ***Enhancement Methods
    - Physical Method
        - Latent powder, _____
    - Chemical Method
        - Leuco crystal violet, _____, or _____
    - Photography
        - Oblique, _____, _____, etc.
    - Digital Method
        - Software such as _____ or _____

- Recovery Print Analysis
    - Need to have _____ shoes and _____ to compare against
        - Footwear from _____ person—_____ footwear is seized
        - _____ _____ impressions= Examiner will make impressions of known footwear and _____ them with suspected footwear impression to insure _____ samples are _____ detailed, and have _____ characteristics of shoes
        - _____ _____= Footwear worn by _____, medical personnel should be _____ _____ when considering impressions left at scene