

---

# Forensic Science

## School Year 2021-2022

[jwardisiani@pths209.org](mailto:jwardisiani@pths209.org)

- Explain 5 Tools to identify time of death.
  - Rigor Mortis
  - Livor Mortis
  - Algor Mortis
- Potassium in Vitreous Humor of the eye.
  - Stages of Purification / Insect Growth.



---

# The Dirt on Crime

---

**A Lesson on Evidence From the Soil.**



---

# What Exactly Is Soil?

- **Farmers** consider soil to be the top 6 – 12 inches of the earth's crust where the plants grow.
- **Geologists** define soil as the organic and mineral matter composing the Earth.





---

# Soil and Crime

- Forensic Geologists consider soil as earth's material that has been collected accidentally or on purpose as related to the matter being investigated.
- When a crime is being investigated, all natural and artificial objects that are on or near the surface of the earth are considered part of the soil.
- This includes rocks, minerals, vegetation, glass, paint, asphalt...to name a few!
- The presence of these objects in the area helps to make that area of soil unique from other areas.



---

# Soils Vary



- Scientists agree that no two places on Earth have exactly the same soil.
  - Soil from one area will be identifiably different from the soil collected in another location.
  - The properties of soil also vary depending on the depth from which the sample was taken.
-

---

# Scientifically Speaking...



- In most **Forensic Cases**, only about ~1 cups of soil from the top layer is needed for testing.
  - The sample should be allowed to air dry to prevent further decomposition of minerals in the soil.
- 
- Once dry, it is transferred to the crime lab to compare with the soil sample that was found on the suspect or on his or her belongings.
-

# In the Lab...

- Once in the crime lab, scientist use color as their main identification technique. Before observing color, all samples are further dried to 100 degrees Celsius for 1 hour,
- Wet soil will appear as a different color that dry soil.
- The presence of certain materials in the soil can give it its characteristic color.
  - For Example, the presence of copper minerals appear green while black minerals point to the presence of Magnesium and Iron.
- Odor and texture of soils are also examined during the initial observation.





---

# Questions and Comments

