**Unit 2: Time of Death**

Meaning of Death: End of life where an “irreversible cessation of circulation of blood” occurs and brain activity stopped.

Manner of Death: Means by which they died

* Natural
* Accidental
* Suicidal
* Homicidal
* Undetermined

Cause of Death: Reason they died

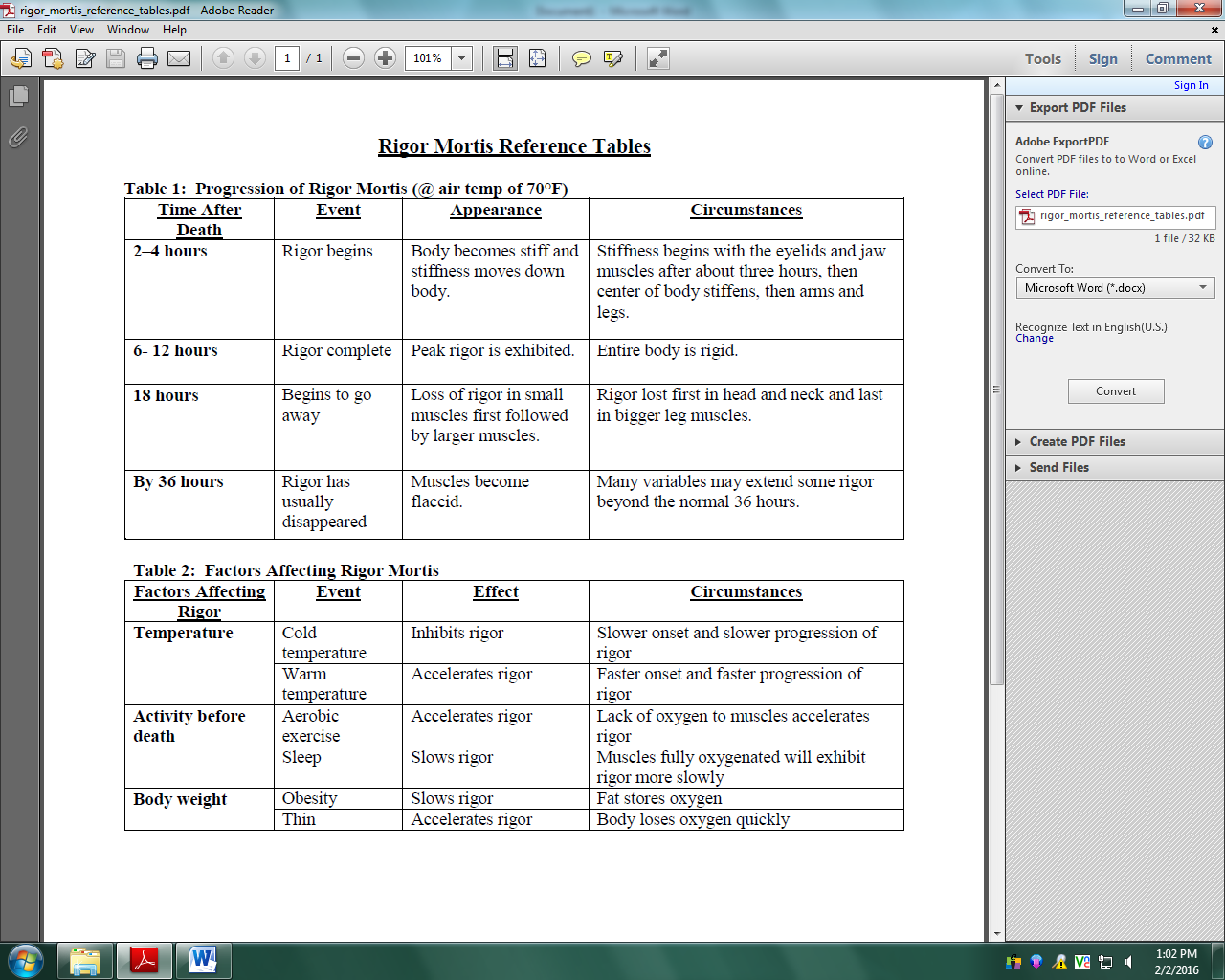
* Ex. Natural
  + Heart attack
  + Stroke
  + Respiratory failure
* Ex. Homicide/Suicide
  + Hanging
  + Drowning
  + Asphyxiation
  + Poison
  + Gunshot wound
    - Stippling (powder burns) indicating gun was a few inches away
    - Starring indicating barrel touching skin
  + Strangulation
    - Petechial hemorrhage as a result of strangulation

Mechanism of death: is the specific change in the body that brought about the end of life

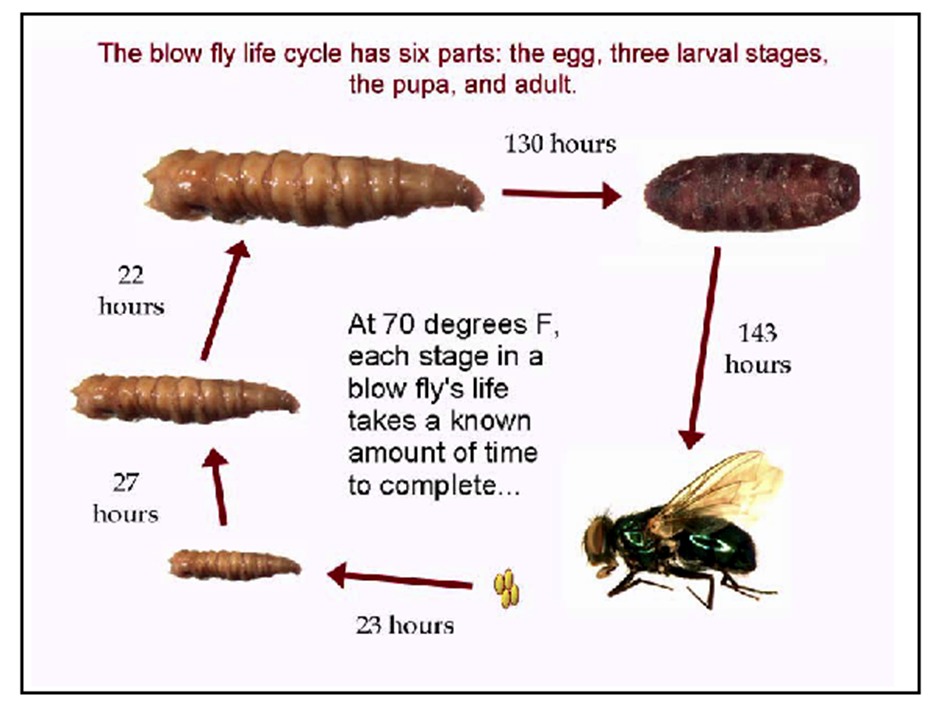
* Cause: Shooting Mechanism: Loss of blood

Time of Death: When they died. Examples:

* **Livor Mortis**: pooling of blood in tissues after death (lividity)
  + Can determine if body was moved
  + Begins 1-2 hrs. after death
  + 2-8 hrs.: color disappears when skin is pressed
  + >8 hrs.: permanent discoloration
  + Factors affecting Livor Mortis
    - Hot day/area– blood pools faster
    - Cool day/area: slower process
* **Rigor Mortis**: stiffening of skeletal muscles after death
  + Cause: no oxygen to cells  calcium buildup  muscle fibers remain contracted
  + Starts 1-2 hrs. after death
  + Starts at head, travels to legs
  + 12 hrs: most rigid
  + Stiffness disappears after 24-48 hrs.
  + Factors affecting rigor mortis:
    - Ambient temperature
    - Person’s weight
    - Type of clothing
    - Illness
    - Level of physical activity shortly before death
    - Sun exposure



* **Algor Mortis**: cooling of body after death
  + Temperature loss in a corpse
  + Thermometer inserted in liver
  + 1 hr. after death: cools 1.4°F per hour
  + After 1st 12 hrs: cools 0.7°F per hour until it reaches surrounding temp.
  + Factors affecting algor mortis:
    - Cooler environment – lose heat faster
    - Windy – fast heat loss
    - Excess body fat – slows heat loss
    - Clothing – slows heat loss
  + Rule of thumb: 1°F per hour
* **Stomach and intestinal contents**:
  + 0-2 hours after last meal: undigested stomach contents present
  + 4-6 hours after meal: stomach empty, food in S.I.
  + 12+ hours after meal: S.I. empty, wastes in L.I.
* **Changes of the eye:**
  + Thin film on eye surface:
    - 2-3 hours (eyes open)
    - 24 hours (eyes closed)
* **Insects** (forensic entomology)
  + Flies and maggots also provide an approximate time of death, very useful for cases where the body has been long dead.
  + Only certain insects will feed and lay eggs on a dead corpse and forensic entomologists study these insects, their larvae cycles and thereafter can determine whether a body has been dead for just one day or up to 3 or 4 weeks.



* 0-3 days: Proteins and carbohydrates in the Blowflies: Bluebottle flies, deceased body begin to break down. Syrphidae flies
* 4-7 days: Body is starting to decay and causes the Fly larvae and beetle

abdomen to inflate because of the gases inside.

* 8-18 days: Decay is well and truly setting in; the Ants, cockroaches, beetles and flies

abdomen wall begins to break down.

* 19-30 days: The decaying body enters a stage know Beetles and mites, Acari

as 'post-decay'; in wet, humid conditions, Nematocera, Brachycera

the body is sticky and wet; in hot dry conditions,

the body is dried out.

* 31 and over days: The bones, skin and hair that remain no   
  longer give off a powerful stench and smell   
  just like the soil surrounding it.
* **Stages of Decomposition**
  + 0-2 Days: Green, purplish stains. Skin: marbled appearance. Face discolored. Flies lay eggs on corpse
  + 4 Days: Skin blisters. Abdomen swells (CO2 gas released by bacteria in intestines). Maggots on corpse
  + 6-10 Days: Corpse bloats with CO2, chest and abdomen burst and collapse. Fluids leaks from body openings. Eyeballs and other tissues liquefy. Skin sloughs off. More eggs, maggots, flies, beetles
  + 10-20 Days: Bloated body collapses. Flattened body, creamy flesh. Strong smell of decay. Fluids drain and seep