

# Factors Affecting the Decomposition of Buried and Submerged Human Remains

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## Introduction

Consider a cadaver found buried in soil and a cadaver found submerged in water. There are a multitude of factors that affect decomposition in each context. In a buried setting the factors are depth, temperature, mineral in soil, arthropods and scavengers, and clothing (see Fig. 1). In a submerged setting the factors consist of depth, temperature, aquatic and non-aquatic arthropods and scavengers, current patterns, salinity and clothing (see Fig 3). These factors act upon the body causing it to either decompose or form into adipocere, a waxy, preserved mummified state. The purpose of this poster is to examine these factors and to understand how they affect the natural rates of both decomposition and preservation of both a buried and submerged human body.

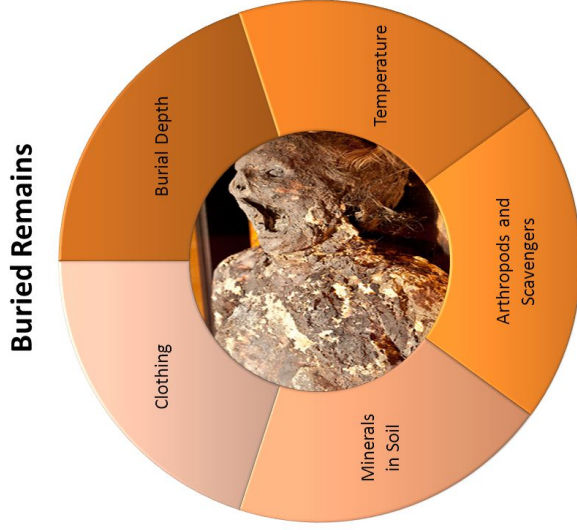
## Factors Affecting Buried Remains

Figure 1 illustrates the principle factors which impact on human remains in a buried context (Rodriguez 1997). When the depth of a burial increases, the body will decompose at a slower rate. A body that is buried at a more shallow depth will be more susceptible to surface conditions, causing it to decompose faster. Cooler temperatures lead to slower decay, while warmer temperatures serve as a catalyst for decomposition. The amount of arthropods and scavengers around the body decreases as the burial depth increases, causing a slower rate of decomposition. The closer to the surface the cadaver is buried, the more likely a scavenger will smell and dig up the body. The acidity of the soil content can cause both the soft tissue and bone of a cadaver to degrade faster. When a body is buried, adipocere formation can take approximately 12 to 18 months. (Fiedler and Graw 2003:298). The presence of moisture and lack of air bubbles in the soil can create the perfect environment for adipocere growth (See Fig. 2). Clothing can also aid in the development of adipocere, as well as slow down the rate of decomposition.

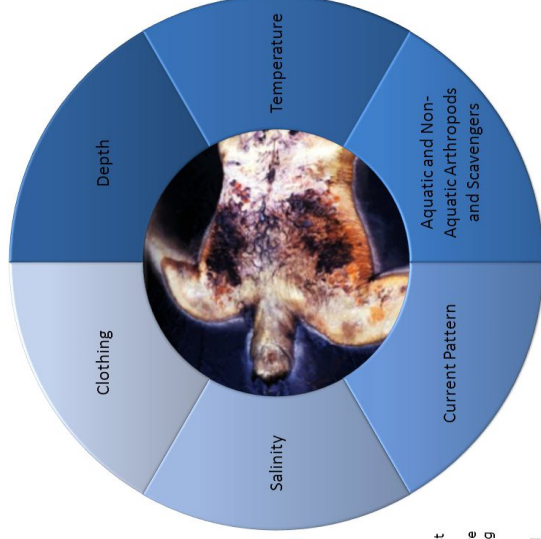
## Acknowledgments

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**Figures 1 & 2.** Chart showing the factors that affect the rate of decomposition for buried remains (Rodriguez 1997). Most important factor signified by the darker color. Figure 2 shows a photograph "the Soap Lady," a buried adipocere (Mütter Museum N.d.).



## Submerged Remains



**Figures 3 & 4.** Chart showing the factors that affect the rate of decomposition for submerged remains. Most important factor signified by the darker color. Figure 4 is a photograph showing a cadaver that has been submerged in water for seven weeks (as adapted from O'Brien et al. 2007).

## Factors Affecting Submerged Remains

Figure 3 shows the main factors that impact human remains in a submerged context (Haglund and Sorg 2001). The depth of a submerged cadaver fluctuates depending on its stage of decomposition. The body initially sinks, and then resurfaces during autolysis and putrefaction. The deeper the body is, the slower it resurfaces, thus slowing the overall rate of decomposition. In addition, bodies subject to cooler temperatures can have lower rates of decomposition, while warmer temperatures speed up the process. Depth can also protect the body from arthropods, scavengers, and other objects on the surface. If the body is floating, maggots and other animals can decompose parts of the body that are above the water line (Heo Chong Chin et al. 2008). Rough currents can separate the cadaver into multiple parts, which can increase its overall decomposition rate. Adipocere formation, in a body that is submerged in water (See Fig. 4), can take from 3 to 4 months to develop. Higher salinity levels in water will help to preserve the body. Clothing can also contribute to the formation of adipocere, thus slowing down decomposition.

## Conclusion

Overall, the factors noted by Rodriguez (1997) and Haglund and Sorg (2001), both have similar as well as varying effects on buried and submerged remains. The decomposition rate of a body buried in soil, is noticeably slower than the rate for a cadaver submerged in water, especially in regards to adipocere development (Rodriguez 1997). This information can further help to understand postmortem decay and adipocere formation of a cadaver in different environments.

## Literature Cited

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