



Anthropology Section - 2015

A22 Decomposition in Concrete: Los Angeles Style

Elizabeth A. Miller, PhD*, CSULA, Dept of Anthropology, 5151 State University Drive, Los Angeles, CA 90032; and Margaret A. Kaleuati, MS, 1104 N Mission Road, Los Angeles, CA 90033

After attending this presentation, attendees will understand how concrete impacts the decomposition process and the importance of a multidisciplinary team for investigation of concrete “burials.”

This presentation will impact the forensic science community by serving as an instructional guide to assisting in the determination of Postmortem Interval (PMI) for bodies recovered from concrete.

Disposal of human remains in concrete is a rare occurrence in Los Angeles County; however, interpretation of remains from such contexts may lead to significant information in homicide investigations. One of the important aspects of investigation is the determination of PMI. As with any estimation of PMI, many intrinsic and extrinsic factors must be taken into consideration. Despite these factors, an analysis of three cases recovered by the Los Angeles County Department of Medical Examiner/Coroner illustrates commonalities between bodies recovered from concrete.

Four commonalities were documented: (1) bodies, even when dismembered, are generally complete; (2) the concrete is generally poorly-mixed; (3) the bodies are secreted in a secondary fashion as well; and, (4) concrete may act as a preservative of both remains and identifying features.

Case 1 was an adult recovered from a sandy soil in the yard of a residence. The remains were buried in a shallow grave adjacent to the dwelling, clothed but without additional wrapping. A thin layer of poorly-mixed concrete was poured over the remains, but did not cover the entire decedent. Soil was placed over the concrete. The decedent was discovered approximately 13 years postmortem and was completely skeletonized, with excellent preservation of bone. The concrete preserved a mold of the face and one hand; from these preserved molds casts were made and fingerprints were obtained for positive identification of the decedent.

Case 2 was a child approximately four years old, wrapped in a plastic garbage bag, and encased in concrete in a cardboard box. The decedent was moderately decomposed, having been kept in a bathtub for four days, stored for a time in an ice chest over ice, then encased in concrete. The decedent was recovered from a car trunk approximately six months postmortem. The decedent was dismembered and showed skin and hair slippage, body fat liquefaction, and softening of the tissues, but was remarkably well preserved.

Case 3 was an infant recovered in a plastic bin wrapped in a plastic sheet and buried in a shaded area on public land. Scavengers had attempted to uncover the remains, but were prevented from doing so by heavy plastic sheeting. The decedent was clothed and in a disposable diaper, wrapped in a fleece blanket, placed on a folded second fleece blanket in the container, covered with a towel, and then covered with approximately seven inches of poorly mixed concrete. The container was sealed before the concrete fully set, leaving a moist, anaerobic environment for decomposition. The remains were recovered approximately one month after they were placed in the container and buried. The infant showed advanced decomposition changes in the area of the abdomen, with hard adipocere formation across the remainder of the body.

Based on these case studies, a preliminary hypothesis that concrete encasement slows the decomposition process was formed. Los Angeles County contains a minimum of five microclimate zones, including coastal, valley, mountain, high desert, and low desert. Temperature variations between the microclimates can be as much as 30°F and humidity differentials are dramatic between the coastal and desert areas. This leads to differences in the rates of decomposition between these microclimate zones. In general, decomposition studies conducted at California State University, Los Angeles in thesis research and personal experience demonstrate that, with the exception of the high desert and mountain zones during the winter months or in cases where mummification occurs, infants and children decompose rapidly, reaching skeletonization in as little as one week in some cases and rarely exceeding three months.

As these three cases illustrate, PMI for bodies in concrete is difficult to decipher because of the many extrinsic and intrinsic factors inherent in the decomposition process. It is hypothesized that the anaerobic environment and lack of insect access slow the decomposition process in concrete-encased bodies regardless of the state of decomposition when they are placed in the concrete. Additional research is currently underway to test the phenomenon of decomposition delay in concrete.

Decomposition, Concrete, Adipocere