Chapter 9
Detection of Commingling in Cremated Human Remains

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Introduction

Commercial cremation of human remains, as it is currently practiced in North America and most of Western Europe, results in commingling of the cremated remains (cremains) of more than one dead body. Locard’s Principle of Exchange, also known as the theory of transfer, tells us that—in light of how cremations are performed—commingling is inevitable and will occur to some degree in every cremation. The extent of commingling is contingent upon several factors, including the specific protocol used by the cremationist and the design of the retort and processor. If commingling is expected, why has the issue of commingled cremains become an important legal issue? This chapter will discuss (1) the inevitability of commingling in cremation, (2) factors that lead to commingling, (3) how commingling becomes a legal issue, and (4) how commingling is detected and how it might be described to a jury or arbitrator, who ultimately must decide if the degree of commingling is incidental to the normal cremation process or the result of negligent cremation practice. The methodology is qualitative, focusing on a discussion of the probative value of evidence in determining if demonstrable commingling exists and to what extent. As the reader will see, experience plays a role in interpreting each piece of evidence. What might the investigator expect to find from previous cremations in the same retort? What biological and artifactual evidence might we expect to survive postprocessing of remains? What types of biological and artifactual evidence should we expect to find? Equally important, what types of evidence would we not expect to find, and what does that tell the investigator?

As cremation has become more popular, the cremation industry has inevitably become the target of civil litigation. Issues such as the commingling of the remains of more than one decedent, improper cremation practice, disputed identity of remains, and improper disposal are becoming increasingly popular courtroom subjects. Several class-action suits of note have involved literally hundreds of plaintiffs—each with potentially millions of dollars at stake (Bass and Jefferson 2003; Iverson 2001; Maples and Browning 1994). As a result, crematories and funeral homes have been placed under public scrutiny as industry standards and practices are developed and instituted. Specific legal issues, such
as establishing an “acceptable” amount of commingling, are presently being determined by the courts, and we can expect this process to continue over the next several years.

When plaintiffs have some reason to believe that the cremains in their possession are not those of their loved one, or that more than one person is represented, legal counsel will often consult with forensic experts to perform scientific analyses that might help resolve the dispute. Since cremains are principally composed of the fragmented remains of the skeleton, the expert usually takes the form of a forensic anthropologist, a specialist in skeletal anatomy, morphology, and taphonomy (literally, burial laws, but in a biological sense the processes that occur to a body after death). The anthropologist performs an examination of the cremated remains using microscopy, radiography, and other methods to find clues that might lead to identification. These clues generally come from two sources: the biological remains, consisting of osseous (bony) and dental fragments, and non-osseous artifacts. In almost every case, the evidence for identity is presumptive since positive lines of evidence such as DNA and fingerprints are lost during the cremation process (although in rare cases, an altered dental or medical appliance can be matched to antemortem radiographs, providing a positive line of identification).

Along with the anthropologist, the expertise of a forensic odontologist is warranted, especially for cases in which significant dental artifacts are found. The odontologist will recognize the types of dental artifacts within cremains and be able to better assess the antemortem dental records and radiographs than the anthropologist. In major cases, a multidisciplinary team has been retained, including an anthropologist, a pathologist, and an odontologist—each bringing a different area of expertise to bear.

The Inevitability of Commingling in Cremation

To understand the relevant findings in a forensic analysis of cremains, as well as the inevitable issue of commingling, one must have a thorough understanding of the cremation process (for a complete description of the cremation process, see Murad 1998). The process begins when the body is placed into an empty cremation retort. The body is usually within a cardboard or fiberboard container designed for cremation. The body is subjected to a direct flame and burns at temperatures ranging between 1400 °F to 1800 °F (760 °C to 982 °C) in the cremation chamber, for one to two hours. The specific protocol depends on the type of equipment, the size of the body, and whether or not the cremation is being performed in a preheated retort (i.e., whether the cremation is the first one of the day or is being performed immediately after a preceding cremation). The goal is calcination, the process of removing all water and organic matter using intense heat.