



## Physical Anthropology Section - 2013

### H58 The Use of Radiocarbon Analysis in a Chilean Human Rights Commingled Case

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After attending this presentation, attendees will understand potential values of radiocarbon analysis in identifying recovered commingled remains, particularly those that date to within the radiocarbon bomb curve, such as those of human rights interests in Chile.

This presentation will impact the forensic science community by showing how radiocarbon analysis was used to determine the relationship of commingled remains to individuals missing during Chile's military dictatorship.

The period of military dictatorship in Chile between 1973 and 1990 produced 3,227 qualified fatal victims, of which 1,465 were detained and missing; from these, 364 correspond to executed without repatriation of the remains. Detention centers were distributed throughout the country. One of them, located in the north, named "Campamento de Prisioneros Pisagua" (Pisagua Prisoners Camp), was in use from September of 1973 to October of 1974, and it is estimated that it held more than 800 prisoners.

In 1990, as a result of an ongoing investigation, a mass grave situated in the vicinity of the cemetery of Pisagua was exhumed. This mass grave contained the remains of 19 individuals, who were all in a state of natural mummification due to the arid and hot conditions of the local climate. Apart from the 19 individuals, who were promptly identified, a commingled group of human remains were recovered and, at the time of the exhumation, named "Bolsa 20" (sack 20). The archaeologist in charge concluded in his report that these remains were not related to the event of the mass grave and the remains were kept in custody by the Forensic Service of Chile.

Although "Bolsa 20" was reported as being inconsistent with any human rights case being investigated, family members solicited a re-evaluation of the case. Particularly involved with the case was the family of Michel Nash Sáez. He was a 19-year-old conscript who was arrested on September 11, 1973, transported to the Campamento de Prisioneros de Pisagua, and executed on the 29<sup>th</sup> of the same month along with five other persons who were under arrest at the same center. Since three of the six bodies were found in the mass grave exhumed in 1990, the family hoped that Michel Nash might be represented in the remains contained in Bolsa 20.

A historical review of the case, including videos, medicolegal reports, and documentation was performed. Following standard anthropological analysis of the remains, it was decided to use radiocarbon analysis as a first approach and, depending on the results, genetic analysis might be attempted.

Radiocarbon analysis, especially in relation to the modern bomb curve, is particularly useful in the Chilean human rights cases since the events of human rights interest date after 1973. The elevated levels of <sup>14</sup>C in the atmosphere produced by atmospheric testing of thermonuclear devices reached a peak in 1963 and then began a gradual decline due to the termination of such testing by the United States, Great Britain, and the former Soviet Union.

A minimal number of individuals of three was established, two of them adults and one subadult. The value of "percent Modern Carbon" (pMC) for individual 1, from soft tissues, was  $97.7 \pm 0.4$ ; for individual 2, from soft tissues,  $73.5 \pm 0.3$ ; for individual 2, from bone,  $73.3 \pm 0.3$ ; and for individual 3, from bone,  $64.4 \pm 0.3$ . All of these values fall below those of the modern bomb curve and are inconsistent with those predicted if the individuals involved died in 1973.

The contents of "Bolsa 20" were excluded as belonging to any victim from the period 1973 to 1990. In fact, the remains could be dated using conventional radiocarbon dating as follows: individual 1 – 1840 to 1900 A.D.; individual 2 – 550 to 490 B.C. (from the soft tissue sample), 570 to 510 B.C. (from bone); individual 3 – 1900 to 1980 B.C.

This case constituted the first to use radiocarbon analysis in a human rights case in Chile. Subsequently, this methodology has been used in more than 50 cases.

#### **Radiocarbon Analysis, Missing, Chile**