H34 It Came Out of the Sky: Cremains as an Aerial Hazard

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The goals of this presentation are to present to forensic anthropologists and others a unique situation involving human cremains as a destructive force.

Shortly before the end of 2001 a homeowner in the city of Grand Forks, North Dakota discovered a large hole in his backyard deck. Inside the hole were a ruptured paper bag and a whitish granular material. The material was subsequently identified as human cremains. The origin of the cremains remained a mystery for several months. An attorney eventually contacted the parties involved and related that family members had arranged to have the cremains of a relative spread over the city. The family of the deceased refused to provide any information regarding the deceased or the events surrounding the "dumping" of the cremains.

A shop vacuum was used to recover the cremains from under the deck surface. In doing so a large quantity of "pea gravel" was recovered as well. This gravel was manually sorted from the cremains. The cremains were then sorted by size into three categories: large 2-17 mm, small ca 1-2 mm, and dust. Respectively these weighed 1029 grams, 332.6 grams, and 1090.8 grams, for a total weight of 2452.4 grams (5.4 lbs). Not all the cremains could be economically or practically recovered (some cremains were scattered under the deck beyond reach). A rough estimate of 10% loss places the actual weight at around 2700 grams (5.9 lbs).

Many of the larger pieces had a visible red stain. Under microscopic examination this stain had a glass-like appearance and was fused to the bone surface, an artifact of the cremation process. The larger pieces also retained an intact periosteal surface. No fragments were large enough to identify. Otherwise the cremains are unremarkable. Various non-organic items were sorted out from the cremains. These are primarily metallic and represent clothing items or fasteners associated with the box within which the body was contained during the cremation (grommets, staples, twisted wire).

The deck that was struck by the bag of cremains was of standard construction using green treated lumber, 1 x 6 decking on two foot joist centers. The deck is approximately square measuring 5.5 m (18 feet) by 6.2 m (20 feet). The opening is ovoid 30.5 cm by 60.9 cm with the long axis running parallel to decking centered between two joists.

The terminal velocity of the bag of cremains was calculated to be between 31and 49 m/s (102 - 160 f/s) which would have been attained within 3 to 5 seconds after release at a minimum distance of between 49 and 122 m (160 - 400 feet). This yielded a kinetic energy at terminal velocity of between 1297 J and 3241 J (949 - 2371lbf).

Cremains, Kinetic Energy, Forensic Anthropology

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