D37 Shooting Euthanized Pig Heads to Determine Penetration Capabilities of Frangible Bullets and the Impact on a Forensic Investigation

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After attending this presentation, attendees will better understand weights, velocities, and kinetic energies of bullets frequently encountered at criminal shooting incidents. The attendee will learn the differences between common lead-based bullets and frangible bullets, their intended uses, the potential loss of bullet evidence at shootings involving these bullets, and the destructive effects of shooting frangible bullets into euthanized pig heads.

This presentation will impact the forensic science community by providing a definition of frangible bullets, their uses in tactical and close quarter combat/shooting events, and their ability to penetrate tissue and bone. The presentation will also explain the complexities for the investigator and forensic firearms examiner in evaluating the frangible bullet or remnants involved in the shooting incident.

Frangible Bullet Penetration Study: What is a frangible bullet, what are they utilized for, what are their wounding capabilities on tissue and bone, and how does the use of frangible bullets affect a forensic investigation?

Many students of forensic science, forensic science practitioners, law enforcement officers, and other justice related personnel are not familiar with frangible bullets, their availability on the U.S. market, and the potentially negative evidentiary effects of a frangible bullet when involved in a criminal forensic investigation. In the United States, the majority of homicides are committed by use of a firearm. During systematic crime scene searches and postmortem examinations of victims, it is common to recover bullets or fragments of bullets. Most bullets are made of lead and normally contain a metal jacket to provide strength. These bullets and/or fragments can be examined in the forensic laboratory for class and possibly individual characteristics. These bullet characteristics may make it possible to further the investigation by linking the physical bullet evidence to a suspected shooter, a firearm in his control, a box/lot of cartridges, or a previously known firearm common to the suspect. This presentation will include the basics of bullet composition, a variety of common firearm calibers, weights of bullets, velocity of these common bullets, and the differences in kinetic energy frequently found in firearm bullets observed in shooting incidents in the United States. Frangible bullets typically do not contain lead and therefore are considered to be more environmentally friendly. From an environmental standpoint, these bullets are preferred to lead-based bullets which may pose a more significant negative impact on the environment. This presentation is the result of a graduate school study set forth to answer the question of what the impact would be of a frangible bullet on tissue and bone, and their ability to be examined after striking a target or victim. Frangible bullets are commonly used with the intent of not over-penetrating solids, such as wooden and metal doorways. This study set out to answer whether or not frangible bullets were capable of penetrating tissue and bone and whether or not they could do so without breaking apart. The study also sought to answer the question of whether or not the frangible bullet would remain intact sufficiently to establish class or individual characteristics. This presentation will help answer these questions, as well as, provide insight to the attendee on the impact on homicide or death investigations involving the frangible bullet.

Frangible Bullet, Firearms, Shooting

 ** Presenting Author*