



NYCLAD Ammunition in Criminal Casework

Robert Berk

Illinois State Police Forensic Science Center at Chicago



NYCLAD Ammunition

Nylon coated lead bullets

Originally manufactured by Smith and Wesson

Federal purchased manufacturing rights

Intended to cut down on airborne lead particles in firing ranges

Occasionally seen in casework.



NYCLAD Exemplars

Problem

NYCLAD ammunition doesn't mark well and is difficult to identify to a specific weapon

Reference **Gunshot Wounds** by DiMaio 1985

*Rifling is impressed on this coating and not on the lead. If these bullets go through thick bone, the nylon jacketing may be shredded or stripped from the core, making bullet comparison more difficult or even impossible.



NYCLAD and copper jacketed bullets from the same firearm

Hypothesis

NYCLAD Evidence be examined as a trace evidence transfer prior to a typical firearms comparison.

Reference **The Analysis of NYCLAD Ammunition Discharge Residue** by Zonia 1996

6 varieties manufactured

1-9mm 1-.357 4-.38 special.

Polymer used is Nylon 11

Cobalt blue used as pigment

Jacket material contributes to PGSR particle composition

Cobalt present in the primer residue particles

Test Fire Sequence

Random firearm selected from reference collection

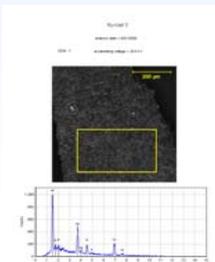
Background
6 shots copper jacketed ammunition

NYCLAD test
6 shots blue NYCLAD ammunition

Retention study
6 shots copper jacket ammunition

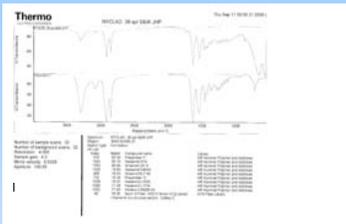
Polymer and PGSR samples examined

Analyses

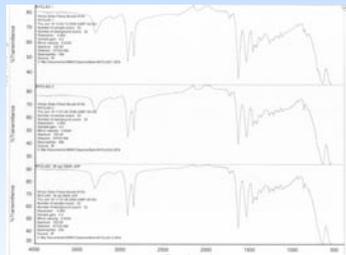


*SEM can be used to identify the pigment

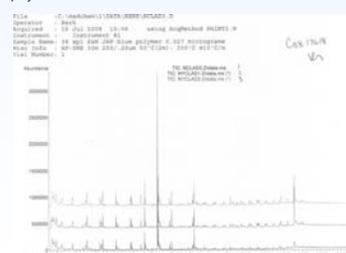
Analyses cont.



Infrared Spectroscopy can be used to identify and compare the polymer

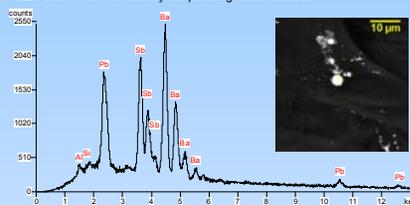


Pyrolysis Gas Chromatography can be used to compare the polymer

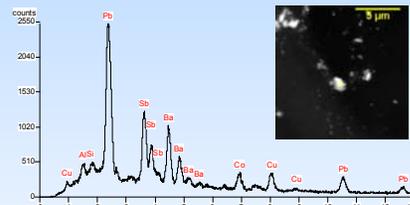


Analyses cont.

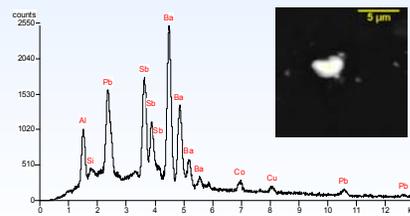
SEM can be used to identify the primer gunshot residue



Typical Pb/Ba/Sb particle from background test fire



Pb/Ba/Sb particle containing Co from NYCLAD test fire



Airbag residue particle from 1999 Volkswagen Golf

Reference **Automated SEM/EDS Analysis of Airbag Residue. II: Airbag Residue as a Source of Percussion Primer Residue Particles**
By Berk JFS Jan 2009

Conclusion

NYCLAD ammunition can be associated with a firearm based on the recovery trace evidence. The presence of the Nylon polymer and primer gunshot residue containing cobalt is indicative of a NYCLAD discharge.

The trace evidence must be collected before the weapon is test fired.

Case Study

Five killed in South Side home

April 24, 2008 Chicago Suntuimes

In one of the worst mass killings in Chicago in years, three men and two women were found shot to death Wednesday afternoon in a ransacked South Side home.

Authorities would not identify the victims, but relatives said four of the dead were Anthony Scales Jr., Donovan Richardson, Whitney Flowers and Reginald Walker. They were in their 20s. The fifth victim's name was not known.

Police are investigating whether the two-story home in the 7600 block of South Rhodes was being used as a house of ill repute, a source said.

The victims were found on the first floor of the home, police said. At least one was shot in the head.



Fired NYCLAD bullet recovered at autopsy



Revolver recovered from suspect's apartment