

Antimony Coats Many .22 Caliber Bullets

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In 1997, Zeichner et al. reported the presence of antimony on bullets for a number of .22 ammunitions produced by different manufacturers. Antimony was noted to be a detectable on 50% of the .22 bullets examined by Wrobel et al. (1998) in Australia. Federal, Winchester and Remington .22 bullets were observed by the author, like many of those .22 ammunitions available in Australia and Israel, to show the presence of antimony with analyses by energy dispersive X-ray spectroscopy (EDS) in the scanning electron microscope (SEM). Is this antimony on a surface layer or is it throughout the bullet? Zeichner et al. (1997) reported that the antimony for the .22 bullets they examined is found on the surface of the bullets. The purpose of this contribution is to confirm that US .22 ammunitions have bullets with surface antimony. Antimony from this source likely contributes to the antimony found in gunshot residue (GSR).

The nature of the antimony association with .22 bullets can be ascertained by a simple razor blade swipe of a bullet. The bullets were examined in the SEM with EDS on the razor blade scrapes and the undamaged bullet surface. Results on two of these bullets, Federal and the brass-coated Peters are shown in Fig. 1. It is apparent for these ammunitions and the .22 Winchester Wildcat (not shown) that the antimony is associated with a layer on these bullets. Antimony was not detectable from the X-ray samples from the razor blade scrapes. Thus, the interior of the bullets have a lower concentration (if any) of antimony than that of the surface.

Zeichner et al. (1997) report for ammunitions with lead-barium primers that “only a small percentage (not more than 2%) of the [GSR] particles containing at least lead and barium were found to have also a considerable concentration of antimony” for those ammunitions with an antimony-rich surface layer on the bullets. Wrobel et al (1998) state, “the projectile composition is probably less important than the primer...” in GSR. The latter authors did not provide supportive data. Although the results of my GSR analyses will not be furnished at this time, a future paper (Burnett, 2005) will re-examine the issue of the contribution of bullet antimony to .22 caliber GSR.

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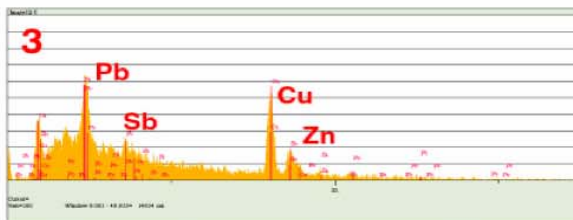
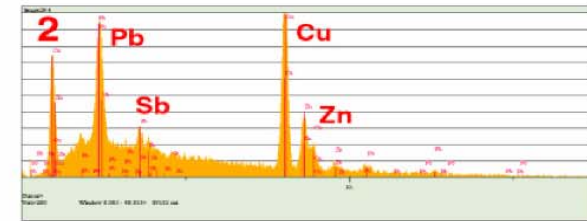
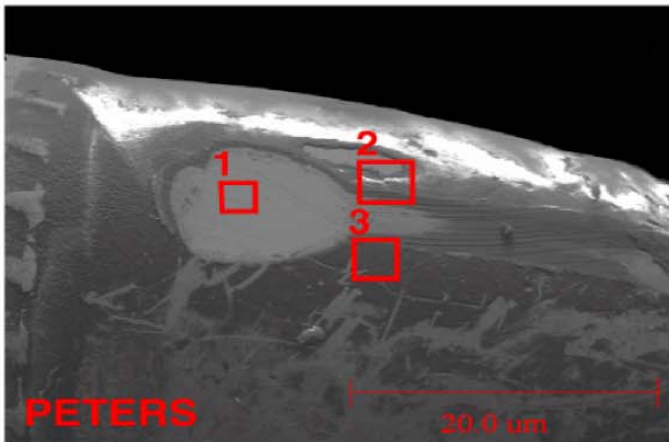
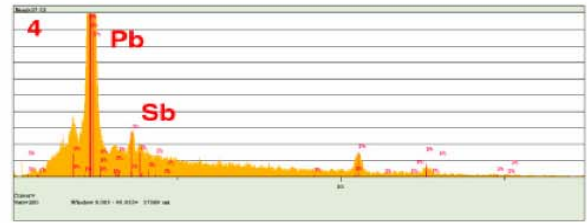
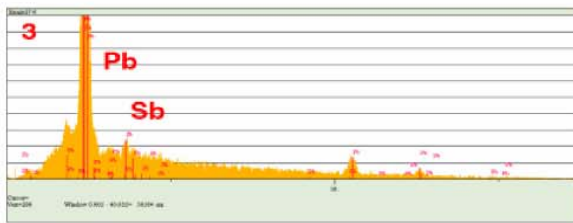
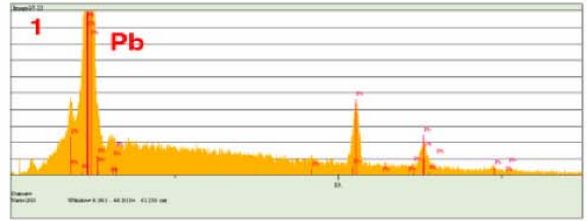
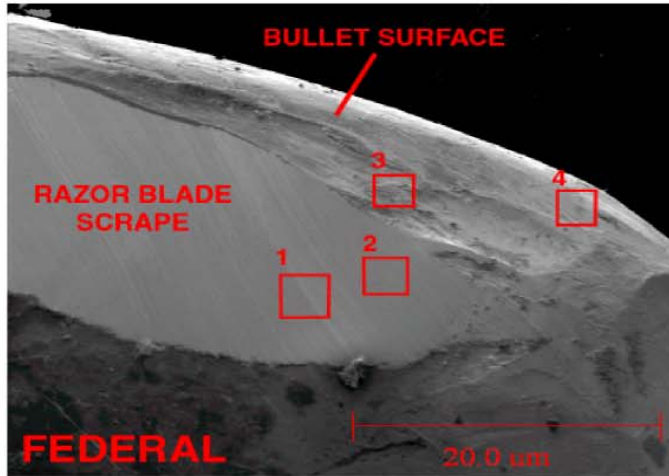


FIGURE 1