



February 29, 2026

The Honorable Brian Feldman

Chairman, Senate Education, Energy & Environment Committee

2 West Miller Senate Office Building

Annapolis, MD 21401

Re: SB 181 – Lead Ammunition – Phase-Out – FAVORABLE

Dear Chairman Feldman and Members of the Committee:

My name is Jim Keen, and I am a veterinarian and Director of Veterinary Science with the non-profit Center for a Humane Economy. I am writing in strong support of SB 181, the phase-out of lead ammunition for hunting, for the following reasons:

- *Lead is harmful* - Lead poisoning happens when lead builds up in the body over time. Thus leads toxic effects are insidious and slow in onset. Lead can affect every organ system and is particularly harmful to young children and women of childbearing age. There is no safe level of lead exposure. While lead exposure does not cause immediate or obvious symptoms, it can still cause lasting damage. In children, lead exposure is linked to lower IQ, learning difficulties, attention problems, and increased behavioral issues. In adults, lead can contribute to high blood pressure, kidney disease, reproductive problems, nerve damage, and other serious conditions. Once lead enters the body, it does not break down or go away. It can be stored in bones and teeth for decades and can be released back into the bloodstream later in life, including during pregnancy, exposing unborn children. The good news is that lead exposure is preventable.
- *Lead ammunition contaminates meat* - Most modern rifle bullets used for deer hunting are designed to expand when they hit the animal. When lead bullets strike bone, they often break apart into hundreds, or even thousands, of tiny fragments. Many of these pieces are microscopic and cannot be seen, felt, or removed during meat processing. Studies using X-rays and chemical testing have shown that lead fragments can spread several inches away from the bullet's path and contaminate surrounding meat. Ground venison is especially likely to contain lead fragments because meat from multiple areas is mixed. Shotgun ammunition can also leave behind lead pellets or slug fragments in meat. Scientific studies have repeatedly shown that people who eat venison harvested with lead ammunition often have higher blood lead levels than those who do not. Importantly, health authorities do not recognize any safe amount of lead in meat. While no one has documented an acute illness immediately caused by swallowing a visible lead fragment, the concern is long-term, repeated exposure, especially

for families who eat wild game regularly and for food pantry recipients who may rely on donated venison.

- *Lead ammunition toxicity is a shared human, animal, and environmental risk* - Lead ammunition is not just a human health issue. It affects wildlife and the environment as well. Scavengers such as eagles, hawks, and other birds can be poisoned when they feed on gut piles or carcasses left in the field. Mammals can also ingest lead fragments while feeding. Over time, lead accumulates in soil and ecosystems, where it can persist for decades. This is what public health professionals call a “[One Health](#)” issue, meaning that the health of people, animals, and the environment are closely connected. Lead ammunition harms all three.
- *Donated venison is frequently contaminated with lead fragments* - Maryland is among the 44 U.S. states with a program to donate venison to food banks and food pantries. However, since 2007, [multiple studies](#) and reports have detected lead in donated venison, most recently in [New York state](#). Due to the high frequency of lead contamination in donated venison in Minnesota, the Minnesota Department of Agriculture banned ground venison for food banks and has X-ray screened all donated whole venison cuts since 2008. On average over the past 17 years, 7.1% of donated venison packages have been contaminated with lead from bullet or shot fragments and discarded.
 - Minnesota hunters averaged 195,010 deer shot/year from 2011 to 2021. An average of 37 lb. of meat per deer = 7,215,000 lb. of venison. Using Minn Dept of Ag’s 7.1% tainted average means state hunters have consumed up 512,291 lb. (256 tons!) of lead-tainted meat/year.
 - Maryland hunters kill about 80,000 deer each year. If each deer yields 37 lb. of venison, this produces 2,960,000 lb. of venison. If 7.1% of deer venison is lead contaminated (as in Minnesota), then Maryland hunters, their families and friends are consuming (2,960,000 x 0.071 =) 210,160 lb. (105 tons!) of lead-contaminated venison each year.
 - About 40,000 lb. of venison is donated to food banks each year in Maryland from the National Park Service, Farmers & Hunters Feeding the Hungry, & Families Eating Donated Deer. If 7.1% of this venison is contaminated with lead, then (40,000 x 0.071=) then 2,840 lbs. (1.42 tons!) of lead tainted meat is consumed by Maryland food pantry clients each year.
 - Donated venison is exceptionally risky because recipients of donated venison are often low-income pregnant women and children, the groups most vulnerable to lead toxicity. This brief 10-minute video from 2023 by lead ammunition researcher Samantha Totoni provides an excellent overview of the public health problem of lead in donated venison: <https://www.youtube.com/watch?v=V5ObqMrF3Ng>
- *Conclusion* - No ethical or responsible hunter wants to poison their family, their community, or wildlife. Many hunters who continue to use lead ammunition do so simply because they are unaware of the risks, not because they are indifferent to conservation or public health. The good news is that effective, affordable non-lead ammunition alternatives already exist.

These alternatives perform just as well as lead ammunition and dramatically reduce the risk of lead exposure. We have already decided, as a society, that lead does not belong in our gasoline, our homes, our water, or our food. The same common-sense reasoning should apply to hunting ammunition. At this point, science evidence of the risks from lead ammunition are clear. What remains is a policy decision. By supporting SB 181, Maryland can take a practical step to protect hunters, families, food bank recipients, wildlife, and the environment, without compromising hunting traditions or effectiveness

I have included as an addendum of some image of lead ammunition contamination.

I respectfully urge the Committee to issue a favorable report on SB 181.

Thank you for your consideration.

Sincerely,

Jim Keen, DVM, PhD

Director of Veterinary Science

The Center for a Humane Economy

Wessington Springs, South Dakota

ADDENDUM



In 2021, at least five bald eagles in Manchester, Maryland were poisoned after scavenging on hunter-killed deer carcass. <https://www.annapoliscreative.com/multiple-bald-eagles-poisoned-after-scavenging-on-deer-carcass-in-manchester-md/>

X-rays of deer carcasses shot with lead bullet & copper bullet.



White tailed deer, lead bullet



Sika deer, copper bullet

- Bright white spots = lead fragments
- Spread throughout animal's body
- Contaminate meat & environment

30 caliber Winchester magnum lead core w/ copper jacket

- Highly toxic
- Hundreds of fragments

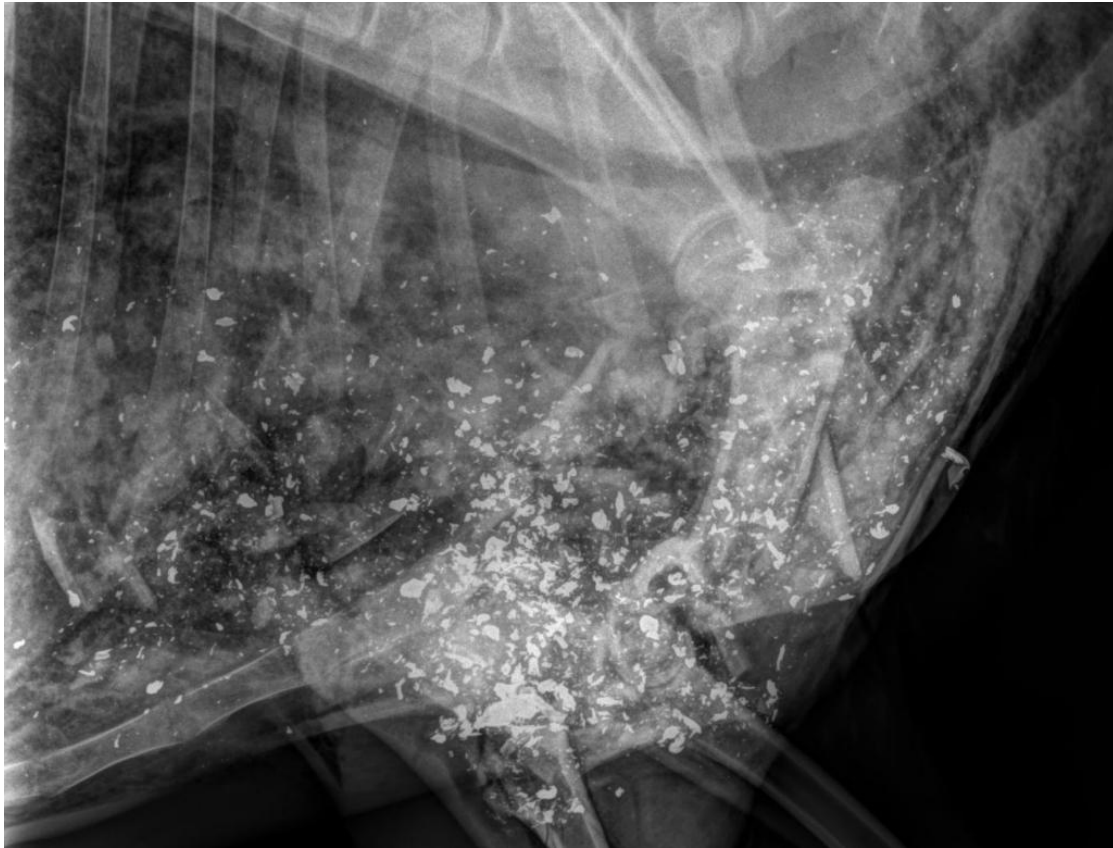


- No copper bullet fragments

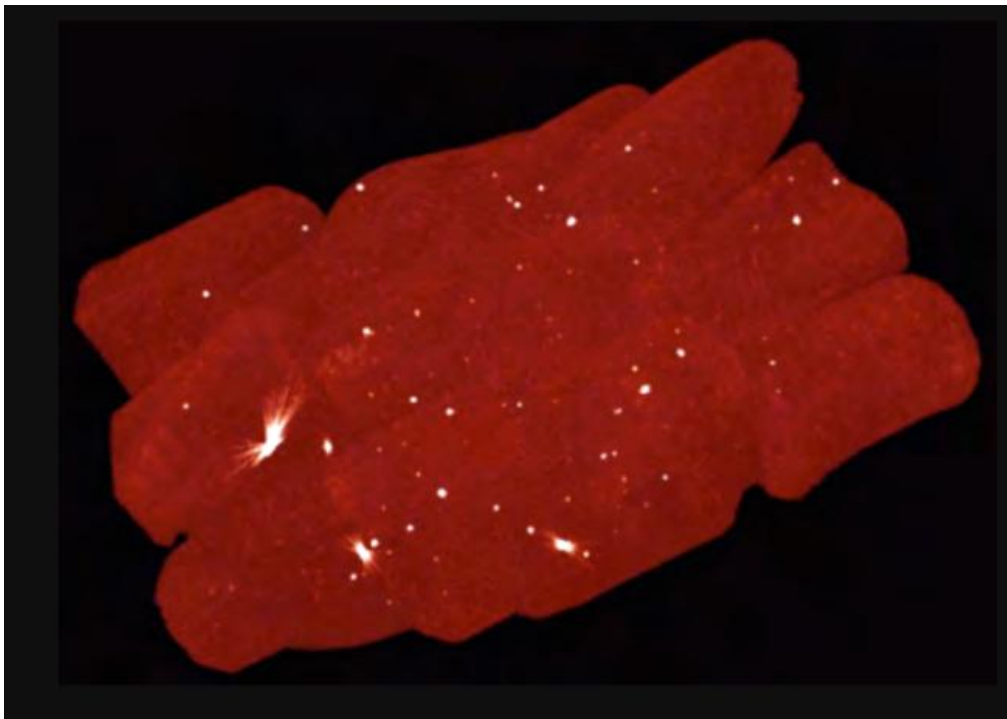
30 caliber Winchester magnum solid copper bullet

- Non-toxic
- No fragmentation

Sources: <https://www.gma.vic.gov.au/hunting/caring-for-the-environment/environmental-and-health-risks-of-lead-bullets-for-deer-hunting>; <https://www.usgs.gov/media/images/coppeand-lead-ammunition-comparison>



X-ray of lead and bone fragments in chest of Sika Deer shot w/ lead bullet; Lead fragments found up to 18 inches from the wound channel



High-definition computed tomography (CT) image of 20 one-pound ground venison packages. Bright spots are metal lead fragments embedded in the meat. This image is from the first report in 2007 of lead contamination of donated venison in North Dakota ([Cornatzer et al 2009](#)).



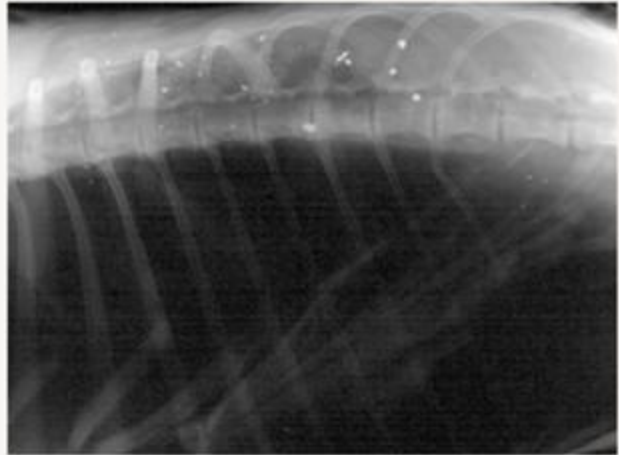
Traditional lead bullet fragmentation on entry



Copper bullet on entry showing zero fragmentation



An assortment of lead bullets showing shot fracturing next to similar fired copper variants



X-ray showing presence of lead bullet fragments in deer backstrap.

Images from:
<https://huntingwithnonlead.org/>

The most common hunting bullet is a lead core with a copper jacket. When an animal is shot, millions of sub-microscopic bullet fragments are dispersed throughout the carcass. This fragmentation occurs regardless of where the animal is shot, but there is more lead fragmentation if the bullet strikes a hard material such as bone. Pb particles with small surface areas increase bioavailability and make detection more difficult.

About 95 percent of the 10 billion to 13 billion rounds of ammunition purchased every year in the United States contain lead, which primarily comes from recycled car batteries, according to industry estimates. These bullets are often jacketed with a harder metal like copper or steel.

(<https://www.pulse.ng/story/poisoned-wildlife-and-tainted-meat-why-hunters-are-moving-away-from-lead-bullets-2024080102520677987>)