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Testimony for the Record
Submitted to the
Education, Energy, and the Environment Committee
for the Hearing
SB 181 "Hunting - Lead and Lead-Based Ammunition - Phase-Out"
February 3, 2026
Aisha S. Dickerson, PhD, MSPH
Associate Professor of Epidemiology

Chairman Feldman, Vice Chair Kagan and Members of the Committee:

Thank you for inviting me to participate in today's hearing and for your attention to a topic that is of significance not only to residents of Maryland, but to the nation.

My name is Aisha S. Dickerson. I am an Associate Professor of Epidemiology and have spent over 6 years at the Johns Hopkins Bloomberg School of Public Health, where I am Director of the Environmental Epidemiology track and lead several studies on the hazardous impacts of toxic metals, including lead. Before joining Hopkins, I completed one year of postdoctoral training in human health risk assessment at the U.S. Environmental Protection Agency and three years of postdoctoral training in environmental epidemiology at the Harvard T.H. Chan School of Public Health. I hold a PhD in Epidemiology from the University of Texas Health Science Center at Houston and an MSPH in Epidemiology and BS in Biology from the University of Alabama at Birmingham. I would like to state for the record that the opinions expressed herein are my own and do not necessarily reflect the views or positions of Johns Hopkins University, the Johns Hopkins Bloomberg School of Public Health or the Johns Hopkins Health System.

In my research, I have seen the detrimental health impacts of toxic lead exposures with respect to neurodevelopment and neurodegeneration.[1,2] Lead is a well-known toxicant that can cause a number of adverse health outcomes throughout life, including cognitive impairment,[3-5] mental health symptoms,[6] kidney damage,[7] cardiovascular disease,[8] and earlier age of death.[9,10] Lead not only produces health impacts after short, acute exposures, but can accumulate in bone over the lifetime.[11] These lead deposits can be released into the blood stream as bone metabolizes during pregnancy and lactation,[12] exposing unborn children and infants during critical periods of development. Furthermore, these same bone deposits can metabolize as bones age, increasing the risk of cognitive decline in older adults.[13,14]

My colleagues have demonstrated via animal studies that carnivorous wildlife that consume carcasses of animals killed with lead-based ammunition have higher blood and bone lead concentrations.[15,16] Similar to the issues with bone density and nervous function seen in these animals, humans who consume game meat are at a higher risk of fragile bones and neurologic issues. As a native Alabamian raised in a family of hunters, I am keenly aware of the amount of game meat, particularly venison, that is consumed by hunting families. I only became aware of the composition of the ammunition, the distribution of lead fragments in the carcass, and the risks of consuming contaminated meat during my postdoctoral studies, and I have been successful in encouraging my family to consider alternatives. Thus, I am confident that implementing the proposed bill will is feasible.

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While policymakers have acknowledged the risk of lead ingestion from leaded paint and contaminated drinking water from municipal piping, many of these now notable hazards evaded recognition until there was a documented population-level crisis such as elevated blood lead levels of children in Flint, MI.[17] However, these mass public health catastrophes can be avoided through implementing barriers to hazardous lead exposures in advance of a crisis. I am pleased that this Senate is taking a step to address the risk imposed on Maryland residents, particularly children, by lead ammunition. Removing this source of a notoriously dangerous toxicant will ensure the health and longevity of hunting families and those who acquire game meats from local food banks. I urge the committee to approve Maryland Senate Bill 181 to phase out the use of lead ammunition for all game and hunting activities. Thank you for the opportunity to testify, and I would be pleased to answer any questions you may have.

Sincerely,

Aisha S. Dickerson, PhD
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Lead Ammo Phase out support SB181.docx.pdf
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SUPPORT for SB181

1/28/2026

Chair Feldman, Vice Chair Kagan, and Honorable Members of the EEE Committee:

My name is Benjamin Ford, and I serve as the Miles-Wye Riverkeeper for ShoreRivers. Thank you for the opportunity to testify in strong support of Senate Bill 181, the Lead and Lead-Based Ammunition Phase-Out Act.

ShoreRivers works to protect and restore the rivers, creeks, and wetlands of Maryland's Eastern Shore. Our mission is rooted in science, public health, and stewardship. From submerged aquatic vegetation to oyster reefs to drinking water sources, we see every day how contaminants move through ecosystems and into people's lives. Lead is one of the most persistent and damaging of these contaminants.

Scientific evidence shows that lead ammunition fragments widely upon impact and remains in harvested game and in the environment. A federal public health assessment found that "the quantified presence of lead bullet fragments in venison intended for human consumption indicates that a completed exposure pathway exists" and that "even at the lowest exposure scenario, there is predicted risk of elevated lead levels in blood among children consuming venison" . This is not a theoretical concern. It is a documented pathway for exposure affecting families, food pantries, and rural communities.

The same report recommends transitioning to non-lead ammunition as "the simplest and most effective solution" to prevent poisoning in both humans and wildlife . Importantly, the Centers for Disease Control and Prevention has made clear that "there is no safe level of lead for humans, especially for children". Any avoidable introduction of lead into our environment carries long-term neurological, developmental, and economic costs.

Peer-reviewed research reinforces these conclusions. A comprehensive review published in Environmental Health documents how spent lead ammunition contaminates soil and water, poisons scavenging birds and mammals, and exposes people through meat consumption and environmental pathways. Raptors, waterfowl, and other wildlife on the Eastern Shore are particularly vulnerable, and their decline signals broader ecosystem harm.

SB 181 represents a practical, phased, and responsible response. Non-lead alternatives are widely available, effective, and already in use across much of the country. This bill does not undermine hunting traditions. Instead, it supports ethical, science-based stewardship that protects hunters, their families, and the landscapes they care about.

ShoreRivers
Isabel Hardesty, Executive Director
Annie Richards, Chester Riverkeeper | Matt Pluta, Choptank Riverkeeper
Ben Ford, Miles Wye Riverkeeper | Zack Kelleher, Sassafras Riverkeeper

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Maryland has long been a leader in Chesapeake Bay restoration. Allowing avoidable lead contamination to persist undermines that investment. By passing SB 181, the General Assembly can reduce preventable health risks, protect wildlife, and safeguard our rivers for future generations.

On behalf of ShoreRivers and the communities we serve, I respectfully urge a favorable report on SB 181. Thank you for your consideration.

Sincerely,

Benjamin Ford, Miles-Wye Riverkeeper, on behalf of ShoreRivers

Brian Millsap testimony.pdf
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February 28, 2026

The Honorable Brian Feldman, Chair
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 Brian Millsap, and I am a Senior Research Scientist writing in strong support of SB 181, the phase-out of lead ammunition for hunting.

I believe I am qualified to provide meaningful testimony in support of this bill given my background and experience. I have a Bachelor of Science degree in Wildlife Biology, and Masters of Science and PhD degrees in Biology. I have been employed as a wildlife biologist in state and federal natural resource management agencies for 46 years, and currently am employed as a Senior Research Scientist in the Department of Fish, Wildlife, and Conservation Ecology at New Mexico State University. In my current position and in my last twelve years as an agency wildlife biologist I focused on the study and conservation of birds of prey, in particular bald and golden eagles. I have published over 100 peer-reviewed scientific papers.

In 2022 I was one of the lead authors of a study published in the peer-reviewed journal Science that provide an overview of the extent of lead poisoning in bald and golden eagles in North America, as well as an assessment of population-level impacts of lead poisoning on eagles[1]. In this analysis, we examined blood- and bone-lead levels in over 1200 bald and golden eagles and found evidence of chronic lead exposure in nearly half of the eagles tested and acute levels of lead in up to 35% of the eagles sampled. We were able to predict population-level fatality rates from lead poisoning from these data, and we concluded that mortality from lead poisoning was depressing the bald eagle population growth rate by about 3% nationwide. We determined that the population growth rate for golden eagles was depressed by lead poisoning by about 1% nationwide, which while lower is more biologically significant because golden eagles are in a range-wide population decline in North America due to excessive human-caused mortality[2].

There is strong scientific evidence that the primary source of lead exposure in eagles in North America today is ingestion of bullet fragments in the remains of hunter-killed game animals left in the field after field dressing[3,4]. This evidence comes both from the fact that the frequency of encounters of eagles suffering from acute lead poisoning peaks at the end and immediately following the gun-hunting seasons, as well as from an analysis of the stable isotope signatures of the lead found in eagles suffering or having died from lead toxicosis. Wildlife managers and regulators have long sought an effective means of reducing or eliminating this threat, but the politically charged nature of the issue has made implementing an effective solution challenging. There is no better example of this than with respect to attempts to reduce lead poisoning in the critically endangered California condor in California, Arizona, and Utah. Lead poisoning is the primary obstacle to recovery of the California condor, and for many years voluntary lead ammunition exchange programs were employed in an attempt to reduce lead exposure and condor deaths. Despite high hunter compliance with use of non-lead ammunition in the target distribution zones and some local evidence of success, lead-levels in condors remained high, as did deaths, likely because the wide-ranging behavior of condors exposed them to lead in other areas of their annual range[5]. In contrast, California implemented a ban on the use of lead ammunition for most hunting activity in the range of the California condor in 2008, and that action resulted in an immediate reduction in blood lead levels in two California condor surrogates, the turkey vulture and golden eagle.[6] Over time, this action has also resulted in declines in blood-lead levels in condors as well[6].

Maryland supports important populations of both bald and golden eagles, so the fate of Senate Bill 181 has important implications for conservation and well-being of both species of eagle in the state. While Maryland's bald eagle population is large and healthy, it is still likely compromised by lead poisoning, just as we found elsewhere in North America. For golden eagles, however, Maryland's coastal plain and interior mountains provide important wintering habitat for a small and potentially imperiled eastern North American population of golden eagles that originates from breeding grounds in eastern Canada.[7] This population of golden eagles relies heavily on scavenging the remains of hunter-killed white-tailed deer during the winter. Lead poisoning is thus a matter of great conservation concern for the eastern North American population of golden eagles.

There is no scientific doubt that SB 181 would provide important conservation benefits to Maryland's bald and golden eagle populations. I hope you will take this information into account as you debate this important piece of legislation.

I urge a favorable report on SB 181.

Brian A. Millsap, PhD

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January 26, 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 Bruce Lanphear, MD, MPH. I am a physician-epidemiologist and Professor of Health Sciences at Simon Fraser University, and I have spent more than three decades studying the health effects of lead poisoning. I am the lead author of a recent review on lead poisoning published in the *New England Journal of Medicine*. Based on the scientific evidence, I strongly support SB 181, the phase-out of lead ammunition.

Several points are critical:

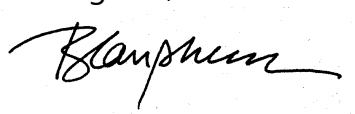
- **There is no safe level of lead exposure.** Decades of epidemiologic research show that even very low blood lead levels—well below those once considered "acceptable"—cause irreversible harm. In children, low-level exposure is associated with reduced IQ, attention problems, and behavioral difficulties. These effects are permanent and carry lifelong consequences.
- **The largest burden of lead toxicity today is cardiovascular disease in adults.** Evidence reviewed in the *New England Journal of Medicine* shows that low-level lead exposure raises blood pressure, accelerates atherosclerosis, and increases the risk of heart attacks. Most of this risk occurs at blood lead levels previously thought to be harmless.
- **Lead is a cumulative toxicant.** It accumulates in bone and is slowly released back into the bloodstream over decades, prolonging exposure and risk. Because there is no effective treatment to reverse lead's damage, prevention is essential.
- **Lead ammunition is a preventable source of human exposure.** Fired bullets and shot fragment into microscopic lead particles that contaminate game meat. These particles cannot be reliably removed through trimming or cooking, creating an avoidable pathway of exposure for hunters and their families.

Phasing out lead ammunition is a practical, evidence-based primary-prevention measure. Safe and effective non-lead alternatives already exist and are widely available. Eliminating this source of exposure would reduce preventable harm without compromising hunting.

By passing SB 181, Maryland would protect public health and demonstrate leadership by acting on clear scientific evidence. This is precisely the kind of upstream intervention that has historically produced the greatest gains in population health.

Thank you for your consideration of this important legislation.

Best regards,



Bruce P. Lanphear, MD, MPH
Professor, Faculty of Health Sciences, Simon Fraser University

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Hunting License Comparison Between California & Maryland – 12 Year Period (2013-2025)

Data from the U.S. Fish & Wildlife Service

*- Covid Years

Conclusions: Maryland and California had the same number of years of decline in hunting, even with the Lead Ammo Phase-Out in California with final implementation in 2019. There is no correlation to any declines in hunting due to lead ammunition phase-out. The Covid years showed logical declines in hunting participation. The economic downturn causing unemployment during those years and supply-chain interruptions are the substantial reasons for the declines, plus a renewed sensitivity to humane animal husbandry and other alternatives to control animal populations.

YEAR	MARYLAND	% Incr./Decr.	# Incr./Decr.	CALIFORNIA	% Incr./Decr.	# Incr./ Decr.
2013	120,321			281,472		
2014	118,997	(1.10)	(1,324)	283,539	.073	2,076
2015	124,187	4.17	5,190	283,539	0	0
2016	129,376	4.01	5,189	287,147	1.25	3,608
2017	123,883	(4.43)	(5,493)	284,069	(1.08)	(3,078)
2018	120,334	(2.93)	(3,549)	280,967	(1.10)	(3,102)
2019	120,814	0.39	480	279,248	(0.61)	(1,719)
2020 *	119,202	(1.35)	(1612)	267,170	(4.52)	12,078
2021 *	116,702	(2.14)	(2,500)	262,009	(1.96)	5,161
2022 *	115,461	(1.07)	(1241)	250,441	(4.61)	11,568
2023	116,422	0.82	961	278,210	9.80	27,269
2024	113,460	(2.60)	(2,960)	260,359	(6.85)	17,851
2025	113,137	(0.28)	(323)	251,792	(3.40)	8,567

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February 3, 2026

The Honorable Brian J. Feldman
Chair, Senate Education, Energy, and the Environment Committee
Maryland General Assembly
Annapolis, MD 21401

RE: SB 181 – Lead Ammunition Phase-Out - SUPPORT

Dear Chairman Feldman and Members of the Committee:

My name is Dan Ashe. I am a lifelong hunter – small game; birds; big game; waterfowl; especially waterfowl. It has been a passion for as long as I can remember. I have been a Maryland resident, and resident hunter, for 43 years.

I am a lifelong conservationist. Trained as a biologist, I made a professional career in the U.S. Fish and Wildlife Service and was privileged to serve in many capacities, including Chief of the National Wildlife Refuge System (the world's largest system of protected lands and waters), Science Advisor to the Director, Deputy Director, and for nearly six years, as the agency Director (2011-2017). In that latter position, I was nominated by the President and confirmed, unanimously, by the U.S. Senate.

Currently, I am honored to serve as President and CEO of the Association of Zoos and Aquariums, whose accredited members include the Maryland Zoo in Baltimore, and Baltimore's National Aquarium. Each year, AZA-accredited members are contributing an average of more than $340 million in direct support for wildlife conservation, so collectively, they are among the world's largest conservation organizations.

I want to thank Senator Karen Lewis-Young for her leadership in introducing SB 181 and making this hearing and this dialog possible.

I am going to focus my testimony on **what we know to be true**.

We know that wildlife and biodiversity, here in Maryland and across the globe, are in decline. https://www.birds.cornell.edu/home/bring-birds-back/ "Staggering losses among birds in every biome." https://livingplanet.panda.org/en-US/ "Nature is disappearing: The average size of wildlife populations has fallen by a staggering 73 percent since 1970."

The main causes of these "staggering" losses are very difficult to readily control, especially in the near term – climate change, habitat loss, pollution, poaching and trafficking. However, some are well within our grasp, like getting lead out of hunting ammunition. It is readily achievable, easily implemented, and directly impactful.

We know that lead is toxic to animal life – human and non-human. And **we know** that there is no safe level of lead in any animal – human or non-human.
https://www.cdc.gov/biomonitoring/lead_factsheet.html "No safe blood lead level has been identified."
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6675766/ "Lead is a toxic non-essential metal that has no compensatory beneficial effects in living organisms."

We know that lead-based ammunition fragments when it impacts an animal, like a white-tailed deer, creating dozens to hundreds of tiny, toxic tidbits.
https://www.usgs.gov/media/images/copper-and-lead-ammunition-comparison "Non-lead ammunition, such as those made from copper, tend to remain intact after impact with their target, while lead ammunition can fragment into many small pieces."

We know that these lead fragments contaminate game meat, and they cannot be effectively removed.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6675795/ "Under normal … hunting conditions, lead-based bullets commonly contaminate the harvested carcass on a large scale, as well as the viscera."
https://www.dnr.state.mn.us/hunting/ammo/lead-short-summary.html "fragments were found so far from the exit wound … as far away as 18 inches … routine trimming likely will not remove all of the fragments."

We know that the Maryland DNR acknowledges lead ammunition as a health risk to hunters and their families and friends. This warning is included on page 28 of the Maryland 2025-2026 Guide to Hunting and Trapping:

HUNTERS SHOULD BE AWARE OF LEAD POISONING RISKS WHEN USING LEAD PROJECTILES Even small amounts of lead can cause serious health problems. Young children and pregnant women are particularly susceptible to lead poisoning. Meat from game animals taken with lead fragmenting bullets and shot is a lead poisoning risk. (emphasis added) Avoid the use of meat from possibly contaminated wound channels, especially in ground meat. Inspection for and removal of fragments and shot is recommended. To avoid lead contamination further from the impact area, careful shot placement to avoid large bone masses and bullet fragmentation is also recommended. Finally, hunters are encouraged to investigate and use non-lead ammunition alternatives. Many non-lead centerfire rifle calibers are now available that are proven to be as effective as lead versions. Likewise, steel and non-lead shotgun shells are also readily available for small game and turkey hunting.
We know that there is a significant inequity in the risk calculation of using lead ammunition and consuming contaminated game meat. DNR data show that Maryland hunters are overwhelmingly male (95 percent), with an average age of 46.7 years. And as shown in the health advisory quoted above, it is young children and pregnant women who face the greatest risk. Therefore, the people choosing the ammunition face the lowest risk.

We know that lead fragments in the gut piles of field dressed animals, and in wounded and un-retrieved animals is poisoning and killing non-target animals that scavenge on those remains and carcasses, including bald and golden eagles, hawks, owls, vultures, crows, ravens, blue jays, and foxes. https://cwhl.vet.cornell.edu/article/what-you-leave-behind "Ammunition choice makes a difference." https://science.peregrinefund.org/legacy-sites/conference-lead/PDF/0307%20Tranel.pdf "The literature documents over 130 species of wildlife that have ingested lead shot, bullets, or bullet fragments."

We know that the use of lead ammunition in hunting is poisoning almost one-half of the entire continental population of bald eagles, and **we know** that this poisoning is suppressing growth in the continental populations of both bald and golden eagles. https://www.science.org/content/article/nearly-half-bald-eagles-have-lead-poisoning "Nearly half of the birds showed signs of chronic lead poisoning—46% of bald and 47% of golden eagles." https://www.science.org/doi/10.1126/science.abj3068 "poisoning at this level suppresses population growth rates for bald eagles by 3.8% and for golden eagles by 0.8%."

We know that the nationwide ban on lead shot for waterfowl hunting (implemented in 1991) has been an unmitigated success, for waterfowl and for waterfowl hunters. https://www.jstor.org/stable/3802755 "... an estimated 1.4 million ducks in the fall 1997 continental flight … were sparred from fatal lead poisoning." https://www.fws.gov/sites/default/files/documents/WaterfowlPopulationStatusReport21.pdf Mallard populations had effectively doubled from 1991 to 2019.

And **we know** that the same arguments being used against SB 181, were used in opposing that 1991 regulatory measure, and were proven wrong, including that additional costs and potential issues with availability of non-toxic ammunition would be a barrier to hunting participation, and that non-toxic ammunition was less effective.

We know that the California ban on lead ammunition that was fully implemented in 2019, has not suppressed hunting participation. In fact, hunting participation increased from 2019 to 2020. https://angeles.sierraclub.org/news_conservation/blog/2021/05/hunters_in_california_ditch_the_lead_and_keep_the_conservation "According to California Department of Fish and Wildlife, nearly 300,000 hunting licenses were issued in the state, a 9% increase from 2019."

We know that non-toxic, non-lead ammunition is available and affordable. https://vtfishandwildlife.com/hunt/hunting-and-trapping-opportunities/choose-non-lead-ammunition "Non-lead bullets are factory loaded by most manufacturers in most popular big game hunting calibers." https://huntingwithnonlead.org/ "With the increase in demand for non-lead ammunition, more manufacturers are producing more options, in more calibers than ever before. Currently, Barnes, Federal, Hornady, Remington, Winchester, and many others offer non-lead factory cartridges." https://ammoseek.com/ Searching for ammunition using ammoseek.com, I found non-toxic rifle ammunition readily available in every popular deer hunting cartridge (.240, .308, 30-06, and 30-30) and at roughly equivalent prices to bonded lead ammunition. For example, I found 30-06/180 grain ammunition in copper and bonded lead, both at $1.45 per cartridge. Non-toxic ammunition for shotguns

is also readily available, although generally more expensive ($1.50-$2.00 per round). Again, however, even considering shotgun ammunition used to “sight-in” and practice, it is insignificant to the total cost of hunting.

We know that there is no evidence to support claims that modest increase in the price of ammunition will affect hunting participation. In fact, all evidence suggests that hunting participation is price inelastic. In 2024, the cost of a Maryland hunting license increased nearly 43 percent ($24.50 to $35.00). There is no indication that this price increase affected participation. Gasoline is a much bigger cost for most hunters than ammunition. In 2022, gas prices averaged around $4.50 per gallon. Today, they are averaging less than $3.00 per gallon. Again, there has been no increase in hunting participation because gasoline is significantly cheaper.

Hunting is a passion. I am a hunter. I love hunting, and I love the people with whom I have had the privilege of spending days afield. **We know** that hunting participation is declining, in terms of the absolute number of people hunting, and as a proportion of the U.S. population. Hunting participation peaked around 1982, when nearly 17 million Americans participated, representing about six percent of the nation’s population. Today, participation is about 13 million, representing less than four percent of the population.

If we want more people to hunt, or to support hunting even if they don’t hunt themselves, then we need to carefully guard its reputation as an ethical and responsible pastime. Using ammunition that is poisoning and killing innocent bystanders – like eagles, hawks, owls, and condors – and feeding lead contaminated food to families and friends, is the opposite of ethical and responsible.

I’ve always been proud of my hunting heritage. But frankly, seeing the resistance, within the hunting community, to scientifically and ethically compelling issues like this, causes me to wonder if this is a pastime and a community that I want to introduce to my four grandchildren, all of whom live in Maryland. Fortunately, they are all six years old, or younger, so I have time to consider the question.

Please protect hunting. Protect the families and friends who consume game meat. Protect eagles and the innocent bystanders of the wildlife world that are being poisoned by the completely unnecessary use of lead ammunition in hunting.

Distinguish Maryland as a leader.

Vote to support SB 181.

Thank you.

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Debra Merskin testimony.pdf
Uploaded by: Debra Merskin
Position: FAV

February 3, 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 Debra Merskin, and I am a wildlife rehabilitation volunteer and a professor. I am writing in strong support of SB 181, the phase-out of lead ammunition for hunting, for the following reasons:

- There is no safe level of lead. It is a powerful neurotoxin that bioaccumulates in the central nervous system of humans and wildlife
- Those who consume game animals killed with lead ammunition consume virtually undetectable, but physiologically potent amounts of lead. Research demonstrates the impact this has on health, particularly that of children and pregnant women.
- I have seen firsthand what a lead-poisoned eagle (and other raptors) looks like. They cannot stand, are emaciated, and are neurologic. They can rarely be saved. This will result in fewer birds available to reproduce (a reminder of what nearly happened to the California Condor).

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

Thank you for your consideration.

Sincerely,

Debra Merskin, PhD
University of Oregon

Myra Finkelstein testimony.pdf
Uploaded by: Donald Smith
Position: FAV

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

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DEPARTMENT OF MICROBIOLOGY AND ENVIRONMENTAL TOXICLOGY
DIVISION OF NATURAL SCIENCE
1156 HIGH ST
SANTA CRUZ, CALIFORNIA

The Honorable Brian Feldman 01/28/26
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:

We, Dr. Donald Smith and Dr. Myra Finkelstein are renowned experts in the fields of human, wildlife, and environmental health with over 50 years of combined experience and over 150 peer-reviewed published research papers related to lead exposure and toxicity. Further, our work was instrumental in informing and supporting the passage of two legislative bills in California (AB 821 and AB 711) that led to the partial and subsequent full banning of lead-based ammunition for hunting in California.

We strongly support SB 181, Hunting - Lead and Lead-Based Ammunition - Phase-Out, under current consideration by the Maryland Senate Education, Energy & Environment Committee.

We applaud the effort to increase the use of non-lead ammunition for hunting, knowing that this will lead to a decrease in the risk of lead exposure to humans and wildlife because:

- The discharge of lead-based ammunition and accumulation of spent lead-based ammunition in the environment poses significant health risks to humans and wildlife.
- The discharge of lead into the environment, via the use of lead-based ammunition for hunting, remains one of the most significant and largely unregulated sources of lead contamination.
- Lead is among the most well-studied anthropogenic toxins, and there is overwhelming scientific evidence that demonstrates lead is toxic to multiple physiological systems in vertebrate organisms, including the central and peripheral nervous, renal, cardiovascular, reproductive, immune, and hematologic systems.

In particular, our research has shown that:

- Avian wildlife scavengers (e.g., Bald Eagles, California Condors, New Zealand Kea) are poisoned from ingestion of lead-based ammunition from feeding on contaminated carcasses and remains discarded in the environment. Other studies have shown a similar lead exposure pathway to additional species of wildlife, including mountain lions, due to the use of lead-based ammunition in hunting.
- The lead ammunition bans in California (AB 821, AB 711) have reduced California Condor lead poisoning risk, demonstrating the efficacy of legislation requiring non-lead ammunition for hunting to protect wildlife health.

Thus, we respectfully urge the Committee to issue a favorable report on SB 181.

Thank you for your consideration.

Sincerely,

Donald Smith, PhD
Emeritus Distinguished Professor of Microbiology and Environmental Toxicology
University of California
Santa Cruz, CA 95064

Myra Finkelstein, PhD
Adjunct Professor of Microbiology and Environmental Toxicology
University of California
Santa Cruz, CA 95064

PEER Testimony

Uploaded by: Dorje Wu

Position: FAV

Testimony on Maryland Senate Bill 181

Good afternoon. My name is Dorje Wu, and I am a Law Clerk with Public Employees for Environmental Responsibility, or PEER for short. Thank you for this opportunity to be heard on Senate Bill 181. I am here today to strongly support Senator Young's effort to phase out the use of lead and lead-based ammunition for hunting in Maryland.

PEER is a nonprofit, nonpartisan organization headquartered in Silver Spring, MD that supports current and former public employees who seek a higher standard of environmental ethics and scientific integrity within their agencies. The effects of lead ammunition on wildlife and human health are a major concern of the current and retired wildlife officials we work with nationally and in Maryland.

The science is settled: there is no safe level of lead in the human body. Lead is a metabolic poison that attacks many different organs and body systems, including the blood-forming, nervous, urinary, and reproductive systems. For humans and animals alike, studies show that cumulative lead exposure over time can cause adverse health impacts, while high, limited exposure to lead can be lethal. Based on the abundant scientific literature

about lead's toxicity, our government contacts are concerned about the pathways of lead exposure to humans and wildlife.

Spent shot pellets expose birds to lead, and scavenging animals can consume bullet fragments in discarded animal remains.

Humans are exposed in several ways, including the ingestion of lead in harvested meat and the inhalation of lead dust during ammunition reloading.

Although lead has been banned from many industries, lead based ammunition is one of the few remaining sources for new lead being introduced into the environment.

Scientific integrity is currently under threat at the federal level; it is more important than ever that states enact policies grounded in science for public health and safety. Maryland should protect its residents and public lands from a known toxic substance. For these reasons, this Committee should vote in support of Senate Bill 181.

Thank you.

Jim Keen testimony page 2.pdf
Uploaded by: Dr. Jim Keen
Position: FAV

animal wellness action

CENTER FOR A HUMANE ECONOMY

Lead Ammunition Imperils Wildlife, Hunting Families

Use of alternative forms of ammunition will remediate widespread lead poisoning problem.

DECEMBER 2025

Topline Concerns

- Millions of birds and mammals, especially scavengers and predators, suffer and die from lead poisoning after feeding on carcasses or gut piles left by hunters that are impregnated with toxic lead fragments
- Lead bullet fragments contaminate game carcasses and gut piles, posing health risks to hunters, their families, and food-insecure individuals who rely on soup kitchens and food pantries. Children and pregnant women are at the greatest risk from neurological, cardiovascular, and developmental damage by lead ammunition residues in game meat.
- Non-lead ammunition (including copper, steel, bismuth, tungsten, and metal alloys) provides strong ballistic performance and delivers equal or superior killing power at only marginal additional cost. This shields nontarget species, reduces human health risks from lead exposure, and aligns with conservation and public health goals.

I. Why is lead ammunition an issue?

Lead bullets, slugs, and shot for hunting manmals and birds have been used since the invention of firearms in the early 15th century. The popularity of lead ammunition is due to its historical use, low cost, and its ballistic properties as a soft but dense metal. However, lead (Pb) is a heavy metal with no safe level of exposure. Lead is toxic to all animals, including humans. Lead is even toxic to plants. Lead mining and manufacturing is a small industry that generates enormous harm. Lead impairs the growth, development, and reproduction of microbes, insects, plants, and animals.

Lead does not break down or biodegrade. The ingestion of even small quantities of lead can deliver a range of adverse health impacts to people, especially children, pregnant women, and unborn children.

- Lead is particularly damaging to the brain and the rest of nervous system. Lead can quickly reach the bloodstream when inhaled as dust, ingested, or consumed in water. Unlike most toxicants and pathogens, it can pass into the brain through the blood-brain barrier.
- Lead mimics calcium's properties so that it accumulates in bone and teeth and interrupts metabolic processes.
- In humans, lead reduces IQs and increases the risk of heart disease, kidney failure, and premature death. Women and children are particularly vulnerable as lead exposure can cause miscarriage, premature birth, and low birth weight.

As evidence of lead toxicity has accumulated over the past century, efforts have been made to limit anthropogenic sources of Pb in the environment. Some of these efforts were successful. For example, in most developed countries, lead was banned from gasoline, paint, water pipes, and various household items (such as children's toys and pottery).

The U.S. Fish and Wildlife Service banned lead shot for waterfowl hunting in 1991. Despite this conservation triumph and the rapid transition by waterfowl hunters to non-toxic ammunition, hunters pursuing other game, from squirrels to rabbits to deer, moose, elk, and black bears, still use lead ammunition nearly 35 years later.

Unlike lead in batteries or other in industrial uses, lead ammunition is used as projectiles and expelled directly into ecosystems, posing risks to wildlife and humans. Lead ammunition is now the greatest, unregulated source of lead that is knowingly discharged into our environment. The U.S. annually produces billions of rounds of ammunition, including rimfire and centerfire cartridges and shotshells. Hunters and target shooters annually discharges at least 50,000 tons of lead into our nation's environment. This is equivalent to about 9 billion .22 caliber bullets or ~180 million car batteries worth of lead. In fact, most lead ammunition is manufactured from recycled lead batteries.

For millions of Americans, game meat, especially from deer and elk, is an important source of animal protein. There are about 12 million deer hunters in the U.S., and their families, friends, and neighbors consume more than 6 million deer annually, according to the National Deer Association. While the exact percentage of deer killed with lead ammunition is not known, available research and agency reports suggest that more than 90% of deer in the U.S. killed by firearms are shot with lead-based bullets.

II. Lead ammo & human health: venison with a side of lead

Lead ammunition widely used in deer hunting across the United States poses significant threats to human health. When a lead bullet strikes an animal, it often fragments into hundreds to thousands of tiny particles that can disperse well beyond the wound channel. These fragments may remain in the meat, even after standard butchering and trimming. They are often small enough to be unknowingly ingested.

Studies have found elevated blood lead levels in people who frequently consume wild game harvested with lead ammunition, particularly children and pregnant women, for whom even low doses can impair neurological development, lower IQ, and cause long-term cognitive and behavioral deficits. For adults, chronic lead exposure increases the risk of cardiovascular disease, kidney damage, and reproductive problems. The U.S. Food and Drug Administration does not recognize a safe limit for lead in meat. Because there is no safe level of lead exposure, these risks are a public health concern wherever lead-based hunting ammunition is common.

Most rifle bullets used for large game hunting expand upon impact to ensure maximum deadly effect. Expanding high-velocity lead bullets fragment upon impact, producing large to microscopic fragments, especially in larger game animals. A single round can shatter into millions of smaller fragments up to 18 inches away from the bullet's trajectory, especially when it strikes bone in deer and elk. Many of the fragments in the animal's tissues are tiny microparticles that are too small to see with the naked eye or to feel or otherwise sense when eating. These fragments scatter into the muscle and entrails of hunted animals. For a venison consumer, these particles bioaccumulate over time and contribute to rising lead levels, with the attendant and well-documented array of neurological and other health risks. Although the FDA does not recognize a safe limit for the amount of lead in meat, the European Commission set maximum levels at 0.1 parts per million (ppm). Lead concentrations more than 100 times this limit have been detected in the meat of lead-shot carcasses as far as six inches from the entry wound.

Scientists have used X-rays, CT scans, and other imaging technologies to visualize and count sometimes hundreds of minute lead particles in hunted meat. Chemical analysis has also detected high concentrations of lead in hunted carcasses. Most lead shards are too small to be seen with the naked eye, and minuscule fragments (nanoparticles) are not detectable even by X-rays. The lead shards can also dissolve during digestion, poisoning the surrounding tissues. Both the fragments and the contaminated meat are poisonous when consumed. Recent research found that in deer and grouse samples, lead micro- and nanoparticles too small to be detected by standard medical radiography exceeded levels set by the U.S. Centers for Disease Control and Prevention for protection of human health.

A strong body of scientific research demonstrates that lead-based ammunition frequently contaminates hunted meat and increases blood lead levels of humans and animals who consume it.

- In 2008, the Minnesota Department of Natural Resources experimentally shot 80 deer and sheep carcasses and evaluated the presence of lead in each. High-velocity ballistic tip bullets left an average of 141 fragments in a mean of eleven inches from the wound channel; some were farther. Some fragments were too small to see with anything but a sensitive X-ray image. Lead ammunition fired from high-powered rifles contaminated carcasses more than slower-moving lead slugs fired from shotguns.

- A 2009 study of 30 deer harvested with lead bullets in Wyoming and processed by 22 different meat processors found an average of 136 lead fragments per deer; 32% of the burger packages had at least one metal fragment. Twenty percent of the packages had only one fragment, 7% had two fragments, and 5% had 3 to 8 fragments. Burger packages always have more lead fragments than steaks and roasts.
- The Minnesota Department of Agriculture tested 1,029 commercially ground burger packages using X-rays and found lead fragments in 26%. Lead was also found in 2% of 209 packages containing whole cuts of meat. (Ground meat is far more likely to show detectable fragments than intact cuts because fragments mix through the batch during grinding, so that more samples for testing will test positive for lead.) Also, the cuts that are ground are usually the shoulder and neck musculature, which are much more likely to be near the point of bullet impact than the loins and rumps, which are considered the primal cuts.
- In a 2008 Wisconsin study, researchers collected 183 packages of venison burgers from hunters' freezers, food pantries, and meat processors. They found that 15% of commercially processed burgers and 8% of hunter-ground packages were contaminated with lead.
- Ground venison packets from shotgun- and archery-harvested white-tailed deer in Illinois in 2013 and 2014 were analyzed for metal contamination. Radiographs indicated that 48% of twenty-seven ground venison packets from ten shotgun-harvested deer contained lead metal fragments, while none of the fifteen packets from three archery-harvested deer contained fragments.
- Multiple studies have found a direct link between game harvested with lead ammunition and spikes in blood lead. For example, in a 2009 North Dakota study with 736 participants, those who consumed wild game had higher blood lead levels than those who did not.

The 2025 PhD thesis of Annina Haase, "Food safety implications of metals from bullet fragments in game meat: An investigation of bullet composition, bullet fragmentation and gastrointestinal solubility," cites 308 references on lead fragments in game meat, the most comprehensive literature review of this topic ever published. The thesis highlights the need for greater policy consideration of the biological hazards from lead ammunition and fragmentation for game meat food safety, i.e., a regulatory focus beyond the environmental impacts of lead ammunition.

Not surprisingly, venison donated to food banks can also be contaminated with lead fragments from lead-based ammunition. Over 40 states operate game meat donation programs associated with food banks, facilitating the distribution of roughly 1 million kilograms (1,100 tons) of game meat annually (Buenz et al 2024). Most donated game meat is ground deer meat (venison), as well as wild hog and goose.

The proportion of donated ground venison packages containing detectable lead fragments is typically 10-25%. For example, the U.S. Department of Health and Human Services found that 15% of donated one-pound ground venison packages sampled from Wisconsin food banks contained visible lead fragments. From 2014 to 2019, the Minnesota Department of Agriculture found and discarded 9% of donated venison because of lead contamination observed via X-ray. This prevented more than 4,243 lb. of lead-adulterated venison from reaching Minnesota food banks. Donations of hunted meat from archery season and from animals killed with non-lead ammunition have extremely low levels of lead contamination.

Venison donation programs provide millions of meals to food banks across the country. States with venison donation programs include those that also harvest the most deer: Texas, Michigan, Pennsylvania, Wisconsin, and Georgia. None

of these five states require X-ray inspection of meat for lead contamination. Minnesota is the only state with mandatory screening of donated hunted meat for lead contamination. Some states, such as Iowa and South Dakota, put warning labels on donated venison stating that lead fragments may be present. This underlying lack of food safety standards for adulterated donated food increases risks to low-income recipients who are already disproportionately affected by elevated blood lead levels (BLLs).

III. Lead-linked losses: wildlife casualties in the wake of the hunt

Lead-based ammunition poses serious threats to wildlife, especially birds, and particularly avian or mammalian scavengers and predators that feed on carcasses or gut piles left in the field or directly ingest environmental spent lead bullets. Lead poisoning from ammunition also creates important global conservation problems for many wildlife species, especially raptors, including the highly endangered California condor. An estimated ten million to twenty million birds and other animals die each year from lead poisoning in the United States after ingesting lead left behind by hunters.

Lead poisoning is a leading cause of death in some raptor populations, causing paralysis, emaciation, reproductive failure, and death. A lead fragment the size of a grain of rice is lethal to a mature bald eagle, meaning that a standard 150-grain lead bullet can poison ten eagles. The deadly metal bioaccumulates in an eagle's system throughout their lives, causing long-term harm even at low exposure levels. Just as in humans, there is no safe amount of lead exposure. For this reason, lead is often called "the silent killer."

Slabe et al (2022) looked at lead levels in samples collected from 1,210 bald and golden eagles from 38 U.S. states across North America. They found that almost half of all animals sampled had chronic, toxic levels of lead (as measured in bone), and about a third of bald and golden eagles had acute Pb poisoning, as measured in liver, blood, and feathers. Demographic modeling suggested that these levels are high enough to suppress population growth in both species.

Mammalian predator scavengers, including foxes, coyotes, and bears, are similarly at risk from lead in spent ammunition, as are waterfowl who ingest spent lead shot from the ground or sediments. The problem is widespread and well-documented, with numerous studies showing that seasonal spikes in wildlife lead poisoning follow hunting seasons. Domestic animals, such as dogs and cattle, are also exposed to Pb through ammunition. Coyotes, wolves, and foxes are less likely to die from lead poisoning (as they pass Pb fragments more quickly through their digestive tract as compared to birds), but they can still suffer sublethal effects such as organ damage, neurological impairment, and immune suppression. Hunting dogs fed trimmings from lead-shot game have also been poisoned.

The ecosystem impacts of lead ammunition extend beyond individual wild animal deaths. The loss of top predators and scavengers can disrupt ecological balance, leading to cascading effects including increased carcass persistence, prey population changes, and altered nutrient cycling. In aquatic systems, lead bullets and shot can persist in sediments for decades, leaching into water and posing ongoing hazards to fish, amphibians, and aquatic invertebrates. Because lead is a persistent, bio-accumulative toxin, it can move up the food chain, magnifying exposure risks for both wildlife and humans who rely on hunting and fishing for subsistence.

IV. Lead-free ammunition is available and in wide use

Lead-free ammunition, including steel, copper, bismuth, and tungsten, is widely available and increasingly effective from both cost and lethality perspectives. Copper and copper-alloy bullets, for example, retain their weight, mushroom predictably on impact, and do not fragment into toxic particles, thereby eliminating the primary source of contamination.

Advances in bullet design have ensured that non-lead ammunition can approach or match the accuracy and lethality of lead rounds for deer hunting. The lethality of copper usually exceeds that of lead bullets in larger game. In a survey of manufacturers who produce both lead and non-lead ammunition in the same caliber, the non-lead rounds are usually 25-50% more expensive. That sounds like a lot, but so few rounds are fired on most hunting trips that the cost difference is negligible. Transition programs in several states and tribal areas have shown that voluntary or mandated shifts to non-lead ammunition can significantly reduce Pb exposure in both humans and wildlife within just a few hunting seasons.

Given the known health risks, the proven ecological harm, and the availability of safe, effective alternatives, phasing out lead ammunition in deer hunting is a practical and scientifically supported step toward protecting public health and sustaining healthy ecosystems. The reasons for switching to non-lead are numerous: excellent weight retention and penetration, consistent expansion, and less risk of lead fragments ending up on dinner plates and in the bellies of scavengers.

Hunters have touted the lethality of non-lead bullets for decades. Even the April 10, 2010, issue of the National Rifle Association's (NRA's) American Hunter Magazine wrote:

> "Every now and then a new bullet comes along that redefines what we think we know about hunting projectiles. The Barnes all-copper X-Bullet was one of those, and it has become the most imitated big-game bullet on the market. It was introduced in 1989, and ever since, the Barnes X has been a favorite of serious big game hunters wherever men take rifles into wild places."

Just as non-toxic alternatives have been available for waterfowl hunters for decades, there are readily available alternatives for big game hunting. Copper or brass bullets are available in virtually every rifle and handgun caliber. Copper or brass bullets' ballistics are similar to lead, while weight retention during penetration is usually superior. In fact, the U.S. military is transitioning to non-lead small arms ammunition under its "green ammunition" initiative.

Copper vs Lead Bullets

30 caliber Winchester magnum lead core with copper jacket
- Highly toxic
- Hundreds of fragments

30 caliber Winchester magnum solid copper bullet
- Non-toxic
- No fragmentation

https://www.usgs.gov/media/images/copper-and-lead-ammunition-comparison

V. Banning lead ammunition for hunting protects people and wildlife

In public health, primary prevention refers to actions taken before a disease or injury occurs to prevent it from happening in the first place. The successful American history of banning lead from paint (1977), plumbing for drinking water (1986), and gasoline (1996) in reducing lead levels in humans demonstrates the utility of the primary lead prevention approach. For example, following the lead ban from gasoline, blood lead levels in U.S. children decreased from 15.2 µg/dL in the late 1970s to 0.83 µg/dL by 2016. This reduction is associated with an average increase of 4-5 IQ points across the population.

Similarly, the nationwide ban on lead shot for waterfowl hunting in the United States, implemented in 1991, shows the benefits of banning lead ammunition. Prior to the lead ban for waterfowl hunting, an estimated 2,700 tons of shot were deposited in wetlands each year. This policy reduced lead ingestion among waterfowl by approximately 50%, preventing an estimated 1.4 million duck deaths annually.

A strong, multi-line evidence base shows that restricting or banning lead ammunition produces measurable wildlife and human-health benefits. These include:

- Large, measurable reductions in waterfowl lead poisoning and crippling occurred after lead-shot bans in 1991, as described above. Crippling (wounding) occurs when a hunter shoots an animal, but the animal is wounded and not immediately killed, allowing it to escape and die a slow and painful death from starvation, predation, or exposure. Whenever hunters are asked to transition away from the use of lead ammunition to mitigate lead's known risks to wildlife and people, hunters frequently cite concerns about the effectiveness of non-lead ammunition and how it will result in greater crippling rates and associated animal welfare costs. However, recent studies have found no differences in crippling rates using lead and steel ammunition. An Illinois study evaluated 37 years of waterfowl harvest data overlapping the mandated federal transition to non-lead shot for waterfowl hunting to assess how crippling rates changed following the ban. The authors (Ellis and Miller, 2022) reported, "The average crippling rate prior to the lead shot ban was 23% for both ducks and geese and reduced to an average of 15% and 11% for ducks and geese (respectively) following the ban. In addition, the annual trend in the proportion of ducks and geese crippled reversed following the ban, from a significant annually increasing to a significant annually decreasing trend."
- The recovery of the California condor from near extinction after lead ammunition was banned from its range shows that restricting lead ammunition reduces the pathways that poison scavengers and predators. Golden eagles and turkey vultures have also shown decreased lead exposure, indicating broader ecological benefits. Opponents of California's lead ammunition ban acknowledge that lead poisoning has historically hindered the recovery of the California condor. However, they argue that the species' resurgence can be attributed to intensive management efforts, such as captive breeding and veterinary care, rather than the elimination of lead ammunition.
- Human biomonitoring in Europe and North America links game consumption to higher blood lead, especially in frequent game meat consumers, so reducing ammunition-derived contamination reduces human exposure

and risk. Switching to non-lead bullets meaningfully lowers lead residues in edible tissues of game meat, reducing lead exposure in humans who consume it. There is some evidence that lead exposure from lead bullets may pose a higher risk of lead poisoning in humans compared to lead shot, primarily due to the greater fragmentation of lead bullets upon impact. Lead shot, commonly used in shotgun ammunition, consists of small pellets that are less likely to fragment into numerous tiny particles upon impact. However, the ingestion of even a single lead pellet can be harmful, particularly to children and pregnant individuals. If ingested with food, lead shot can become lodged in the appendix and release lead over time, commonly observed in people who regularly eat meat from wild fowl killed using lead shot.

- Regulation and policy: when governments require non-lead ammunition, benefits to human health and wildlife are expected. For example, California's lead ammunition ban has led to measurable health improvements in wildlife, particularly scavenger species like the California condor, and has reduced human exposure to lead through game meat consumption.

Several states have specific lead regulations beyond the federal waterfowl restrictions, many requiring non-toxic shot on certain management units or statewide. Waterfowl Production Areas and U.S. Fish and Wildlife Service refuges generally require non-toxic shot for hunting upland bird species because these areas are managed primarily for waterfowl and often contain numerous wetlands.

As of September 2025, California is the only U.S. state that has fully implemented a ban on lead ammunition for all hunting. This statewide prohibition began in 2019 and was phased in over several years, starting with restrictions in the California condor's range in 2007. Lawmakers in Maryland, Minnesota, New York, Maine, Oregon, and Washington have introduced legislation in recent years to prohibit the use of lead ammunition for hunting purposes or in certain areas, but these proposals have not been enacted into law.

At the federal level, while the U.S. Fish and Wildlife Service has announced plans to phase out the use of lead ammunition and/or fishing tackle on half a dozen national wildlife refuges by 2026, the agency continues to allow lead ammunition and tackle on the vast majority of refuges, even though the agency recognizes the adverse effects of lead on wildlife.

At certain other refuges, the U.S. Fish and Wildlife Service has initiated a voluntary lead-free pilot program. This project, extended for the 2025-2026 hunting season, offers rebates to hunters who voluntarily use lead-free ammunition on 13 national wildlife refuges across 11 states. The initiative aims to encourage the adoption of nonlead ammunition and reduce the risk of lead exposure to wildlife. Unfortunately, voluntary lead-free ammunition programs have shown limited effectiveness in reducing lead exposure among wildlife and humans. While they can foster collaboration and reduce conflict among stakeholders, their impact on hunting behavior and wildlife health has been minimal. They usually fail to achieve widespread compliance.

For example, a 2025 United Kingdom study found that 99% of pheasants and 100% of red grouse sampled were still killed with lead ammunition, despite a voluntary pledge by the UK's nine leading game shooting and rural organizations to phase out lead shot by 2025. "Because so many raptors were dying of plumbism (lead poisoning), Audubon of Kansas offered varminters nontoxic copper ammo at the same cost as cheaper lead bullets," wrote award-winning hunting writer Ted Williams in an essay describing large-scale target shooting of prairie dogs in the Sunflower State. "After four years, it didn't have a single taker. Varminters resist copper for no other reason than they've always used lead." In contrast, California's mandatory lead ammunition ban has led to measurable reductions in lead exposure among wildlife, such as California condors, golden eagles, and turkey vultures.

One reason for this failure to implement a hunting ammunition lead ban is the opposition from the firearms and ammunition interest groups and manufacturers. This includes the National Rifle Association (NRA), Gun Owners of America (GOA), Safari Club International (SCI), Congressional Sportsmen's Foundation (CSF), National Shooting Sports Foundation (NSSF), and firearm and ammunition manufacturers.

VI. Congress debates lead ammunition policy

In November 2025, U.S. Rep. Ted Lieu, D-Calif., introduced the Lead Endangers Animals Daily (LEAD) Act (H.R.6268) to phase out the use of lead ammunition on lands and waters under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Senator Tammy Duckworth, D-Ill., previously introduced a similar bill, S.3852, in the 118th Congress. The bills aim to mitigate the risks of lead toxicosis in people and wildlife, including federally listed threatened and endangered species, particularly scavengers like bald eagles and California condors. The bills have not yet passed either chamber of Congress.

There is also an effort in Congress by lawmakers allied with the NRA to block federal agencies from restricting the use of lead ammunition on our federal lands. The Protecting Access for Hunters and Anglers Act of 2025, S.537 and H.R.556, introduced by Sen. Steve Daines, R-Mont., and Rep. Rob Wittman, R-Virg., aims to prevent federal agencies from banning lead ammunition or fishing tackle on federal lands unless there is unit-specific scientific evidence showing harm to wildlife populations and the regulation is approved by the relevant state. This legislation prioritizes recreational access and affordability for hunters and anglers, asserting that blanket federal bans are unnecessary and burdensome. Together, these bills reflect opposing philosophies and a sharp divide in federal policy approaches: one prioritizes environmental protection, the other emphasizes recreational access and state control.

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

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

- No copper bullet fragments

VII. Evolving USFWS views of lead ammunition for hunting on National Wildlife Refuges

The FWS operates hunting and sport fishing programs on wildlife refuges to implement Congressional directives to facilitate refuge-compatible priority wildlife-dependent recreational opportunities, including fishing and hunting. The recently (re)-introduced Lead Endangers Animals Daily (LEAD) Act (H.R.6268) proposes to phase out the use of lead ammunition on lands and waters under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Specifically, the bill would "require the Secretary of the Interior to prohibit the use of lead ammunition on United States Fish and Wildlife Service lands."

The National Wildlife Refuge System of the USFWS manages 573 national wildlife refuges across all 50 U.S. states and territories. The FWS formally acknowledged in 2022 that "… the best available science and sound professional judgement … indicates that lead ammunition and tackle have negative impacts on both wildlife and human health." The agency further stated, "We disagree with the notion that there is insufficient scientific evidence to support regulatory requirements for hunters to use lead-free ammunition."

"While the Service continues to evaluate the future of lead use in hunting and fishing on Service lands and waters, we will work with stakeholders and the public to evaluate lead use through the annual rulemaking process. In the interim, the Service does not intend to allow opportunities increasing or authorizing the new use of lead on Service lands and waters."

Regarding the use or non-use of lead ammunition and fishing tackle, the USFWS utilized a dual approach: (1) applying lead restrictions on certain refuges (via station-specific rules) and (2) voluntary incentive-based programs to use non-lead ammo and tackle on others.

(1) *Refuge-by-refuge regulatory action for public use:* Instead of a comprehensive lead ammo or tackle system ban, the Service has been addressing lead use by the public on a refuge-specific basis through the annual station-specific hunting and sport-fishing rulemakings and signaling that broader lead-free adoption is a long-term goal. For example, the Service has put in place a lead-free ammunition requirement for newly opened elk hunting at four refuges in North Dakota.

(2) *Voluntary/incentive program approach:* USFWS is also running and expanding voluntary lead-free ammunition incentive pilots (rebates/outreach) at selected refuges as a non-regulatory pathway to reduce lead use while gathering data and stakeholder input. The program was piloted in 2024 and expanded for 2025-26. See U.S. Fish and Wildlife Service.

VIII. Conclusions

Lead ammunition remains one of the last widely tolerated sources of intentional lead release into the environment, despite overwhelming evidence of harm to wildlife, domestic animals, ecosystems, and human health. As this report demonstrates, lead-based hunting ammunition contaminates game meat, poisons scavengers and predators, disrupts ecological processes, and exposes millions of American hunters, their families, and food-insecure non-hunting communities who consume donated venison to unnecessary health risks. These impacts are well documented across multiple scientific disciplines and mirror the historical harms that led the United States to ban lead from gasoline, paint, plumbing, and other consumer products.

Conservation-minded hunters who are using lead ammunition or improperly disposing of animal remains may be uninformed about this issue, rather than indifferent to the deleterious impacts lead ammunition can have on non-target organisms. On the other hand, lead ammunition use continues among some hunters who are dismissive, unconvinced, or mistrustful of lead's dangers or who believe that non-lead ammunition campaigns are part of an anti-hunting agenda.

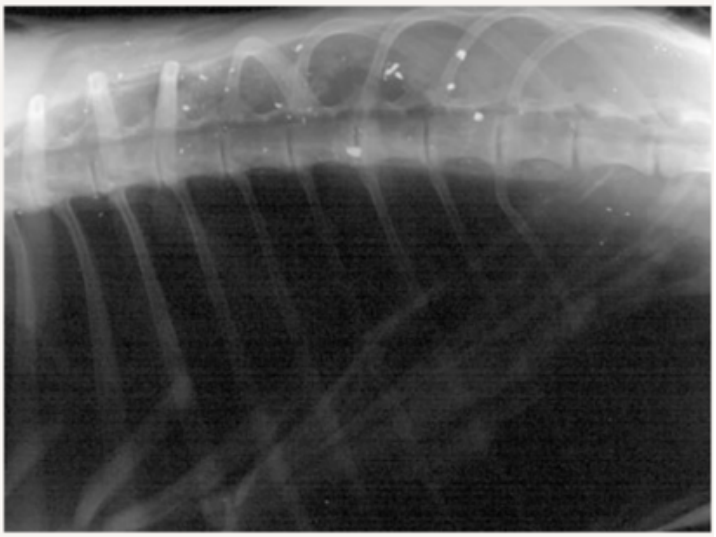
Crucially, these plumbism harms from lead ammunition are now avoidable. Safe, effective, and widely available non-lead ammunition alternatives now exist for virtually all hunting applications, offering comparable ballistic performance at modest additional cost. Where mandatory or well-designed transition programs have been implemented, reductions in lead exposure among wildlife and humans have followed within just a few hunting seasons. The continued use of lead ammunition is therefore not a technological necessity, but a policy and awareness failure.

Phasing out lead ammunition for hunting represents a clear opportunity for primary prevention by protecting wildlife, safeguarding public health, and sustaining ecosystems without compromising hunting effectiveness or tradition. Given the strength and consistency of the evidence, the continued discharge of lead into the environment through hunting is neither scientifically defensible nor ethically justified. Replacing lead ammunition with non-toxic alternatives is a practical, proven, and overdue step toward healthier humans, resilient wildlife populations, and functioning ecosystems. Given the failure of voluntary attempts to reduce hunting lead ammunition use, policies and laws tightly regulating and eventually banning lead ammunition at the state and federal levels will most likely result in the best health outcomes for hunters and their families, animals, and ecosystems.

Addendum of images

Traditional lead bullet fragmentation on entry

Copper bullet on entry showing zero fragmentation



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

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

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.

According to industry estimates, 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. These bullets are often jacketed by a harder metal like copper or steel (Urbina 2018).

Radiograph (X-ray) showing bullet fragmentation in a deer carcass. The “white spots” are bullet fragments. Many lead fragments are microscopic and are undetectable during butchering or when the venison is eaten.

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Figure from: Arnemo JM, 2022. “Lead ammunition used by hunters has us all in its sights.” Outreach, Inland Norway University of Applied Sciences.

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"There is an urgent need to end a major source of lead for animals and humans: spent lead bullets and shotgun pellets. Notably, production of lead-based ammunition in the United States accounted for >69,000 metric tons consumed in 2012; this is second only to the amount of lead used to manufacture storage batteries. However, there are few regulations regarding the release of lead into the environment through discharge of lead-based ammunition. For other major categories of lead consumption, such as lead batteries and sheet lead/lead pipes, environmental discharge and disposal are regulated. Therefore, lead-based ammunition is the greatest largely unregulated source of lead that is knowingly discharged into the environment in the United States."

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"Copper bullets fly plenty flat enough for the ranges most hunters actually shoot and perform wonderfully. If you have a choice, shoot 'em if you like 'em. If you don't have a choice, just understand how they work and why they're different from our traditional lead-core bullets.

Either way, you can use them with confidence — but not always with the exact same shots you'd consider for cup-and-core (copper jacketed lead) bullets."

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" No rational deliberation about the use of lead-based ammunition can ignore the overwhelming evidence for the toxic effects of lead, or that the discharge of lead bullets and shot into the environment poses significant risks of lead exposure to humans and wildlife. Given the availability of non-lead ammunition for shooting and hunting, the use of lead-based ammunition that introduces lead into the environment can be reduced and eventually eliminated. This seems to be a reasonable and equitable action to protect the health of humans and wildlife."

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"Now, over 30 years after the first copper bullets began spiraling down rifle bores, hunters can find non-lead projectiles that will topple animals from prairie dogs to cape buffalo. Some bullets even deliver bone-shattering performance to 600 yards and beyond … The reasons for switching to non-lead are numerous: excellent weight retention and penetration, consistent expansion, and less risk of lead fragments ending up on dinner plates and in the bellies of scavengers. … Making the switch makes changing ammunition sound like a bigger deal than it usually is. For most hunters who shoot typical distances with a common cartridge, it's as simple as buying a box of non-lead ammunition, sighting in, and then going hunting. … The cost of non-lead has come down in recent years as the overall cost of ammunition has gone up."

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Discusses the human health risks from hunted game meat donated to food banks across the United States

Author:
Jim Keen D.V.M., Ph.D.
Animal Wellness Action director of veterinary sciences

animalwellnessaction.org • centerforahumaneeconomy.org

Jim Keen testimony.pdf
Uploaded by: Dr. Jim Keen
Position: FAV

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 detect 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=V50bqMrF3Ng
- *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.

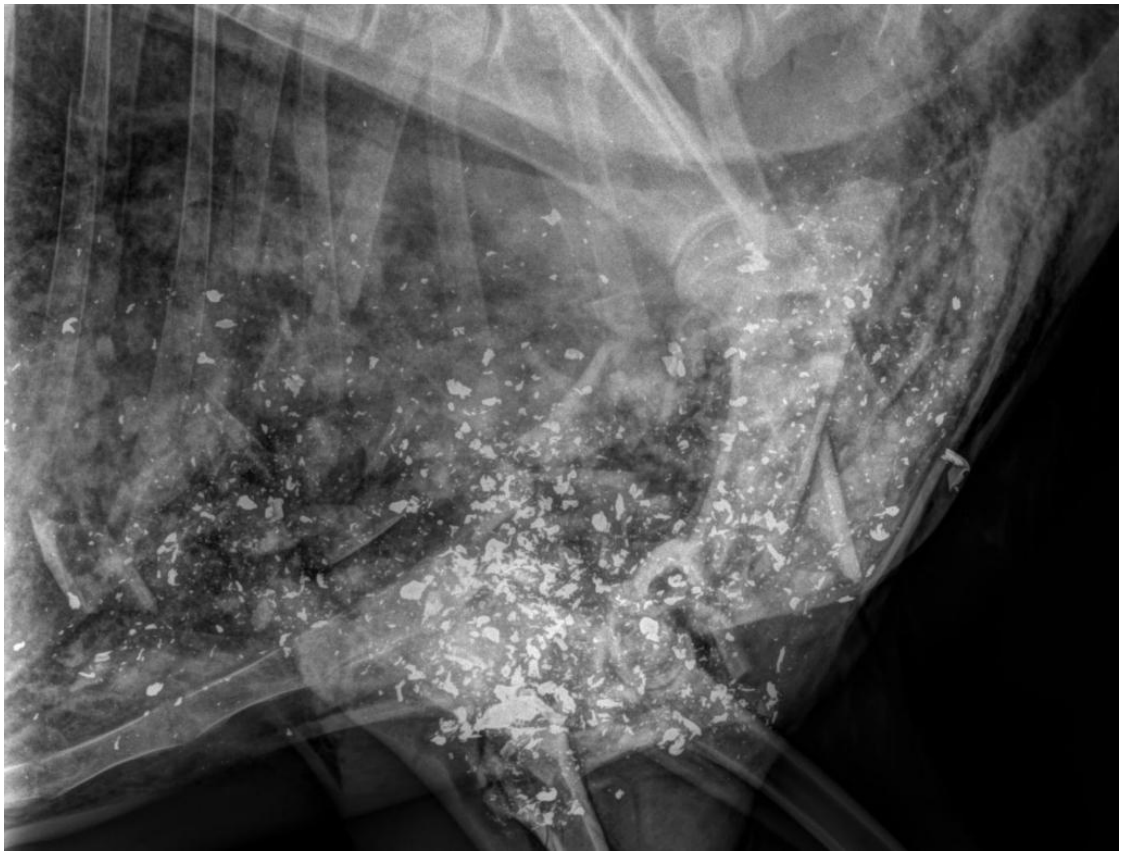
- **Bright white spots = lead fragments**
- **Spread throughout animal's body**
- **Contaminate meat & environment**

30 caliber Winchester magnum lead core w/ copper jacket
- **Highly toxic**
- **Hundreds of fragments**

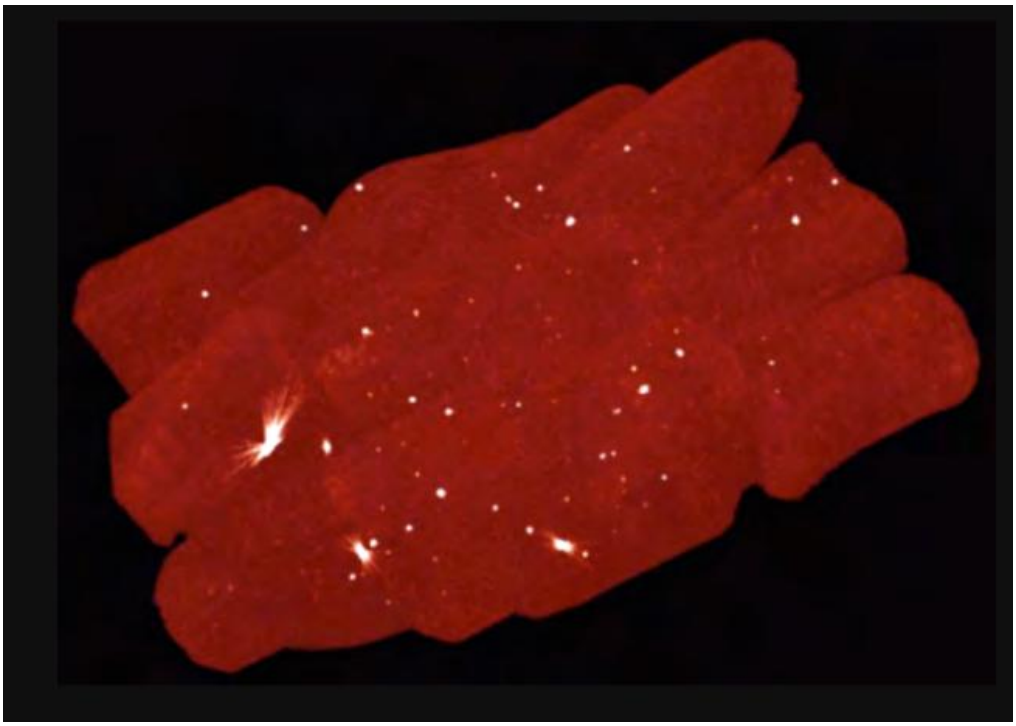
- **No copper bullet fragments**

30 caliber Winchester magnum solid copper bullet
- **Non-toxic**
- **No fragmentation**

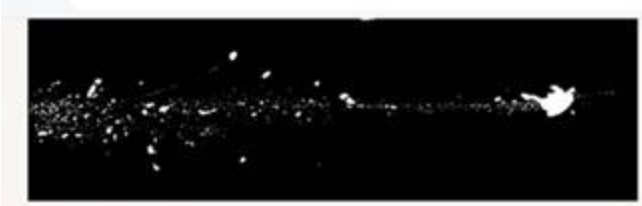
Sources: https://www.gma.vic.gov.au/hunting/caring-for-the-environment/environmental-and-health-risks-of-lead-bullets-for-deer-hunting; https://www.usgs.gov/media/images/coppeand-lead-ammunition-comparison



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

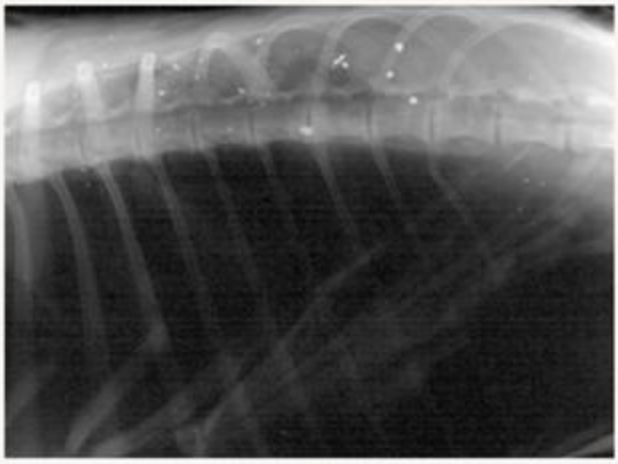


High-definition computed tomography (CT) image of 20 one-pound ground venison packages. Bright spots are metal lead fragments embedded in the meat. This image is from the first report in 2007 of lead contamination of donated venison in North Dakota (Cornatzer et al 2009).



Traditional lead bullet fragmentation on entry

Copper bullet on entry showing zero fragmentation



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

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

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-202408010252067798 7)

Written Elaine Leslie Testimony 2026.pdf
Uploaded by: Elaine Leslie
Position: FAV

Written Testimony

MD SB 181 – Lead Ammunition Phase-Out

February 3, 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:

I am Elaine Leslie, an Executive Member of the Coalition to Protect America's National Parks (the Coalition). The Coalition is made up of over 4,700 members, all of whom are current, former, and retired employees and volunteers of the National Park Service (NPS). Together, they have accumulated over 50,000 years of experience caring for America's most valuable natural and cultural resources. In my career, I have worked as the NPS Agency Chief of Biological Resources. I am also an experience wildlife biologist for over 45 years. I have been working on the impacts of lead to wildlife since the mid 90's. I have worked in collaboration on this issue with scientists, researchers, and state and federal agencies on species from California condors to bald and golden eagles from the west coast, to Midwest to the Atlantic coast.

I am submitting both written and oral comments. The Coalition is in strong support of SB 181, the phase-out of lead ammunition for hunting. See discussion points below.

We have all now heard of the threat of lead to public health: the U.S. removed lead from toys to furniture to house paint to gasoline. With safer, affordable, and high-performance ammunition alternatives available, it's time to embrace superior forms of ammunition for all sport hunting activities in Maryland and the nation.

Our collective concern is certainly Maryland's wildlife but also the human risk factor. There is so much we may not know about what humans are facing from meat ingestion of spent lead in hunted game carcasses. But there is definitive science and a plethora of peer-reviewed publications on the impacts to wildlife.

- For humans and wildlife and the environment, no amount of lead is safe. We do know that.
- Use of lead in hunting violates and compromises conservation and wildlife management principles, including the North American Model for Wildlife Conservation.
- Lead phase-out efforts can work, and alternative ammunition is available and cost-effective. This is a solid first step.

US Fish and Wildlife Service banned lead shot for waterfowl hunting in 1991. California phased out all lead ammunition with documented beneficial effects on wildlife and little or no disruption in hunting participation. Nationwide, millions of hunters already use alternative forms of ammunition. I think its evident we would not have species such as trumpeter swans, loons (albeit still under assault from lead) and the diversity of waterfowl we have today without that 1991 ban.

Maryland can take a big step forward in stopping the ongoing accumulation of toxic lead in the environment and help ensure the long-term conservation of our national natural heritage for this and future generations to come. The state of Maryland, its hunters, and the hunting community, can lead turning conservation concepts into actions and results.

All of us working diligently to make conservation strides recognize that progress does not fit within today's short attention spans. Restoring habitats, recovering species, and protecting species, often requires generations to achieve. To be successful, Maryland can filter out the noise and focus on the long game. The long game can mean aligning your efforts to achieve larger, more meaningful results that take time. This requires strategic thinking as presented in this bill. The path that the state of Maryland is on is the only path that will produce the durability that lasting conservation requires. Maryland will be demonstrating responsible, humane, ethical, and meaningful conservation actions and leadership in the state, and be a model for the nation.

It's not perfect. No conservation system or policies are. But by passing this bill, Maryland is moving forward, intentionally, with an eye on its natural resource conservation future.

I respectfully urge the Committee to issue a favorable report on SB 181.
Thank you for your consideration.

Sincerely,

Elaine F. Leslie, National Park Service, Retired

Coalition to Protect America's National Parks

SB_181_Audubon_Fav_EEE_2.3.2026.pdf
Uploaded by: Jim Brown
Position: FAV

Maryland Office
2901 E. Baltimore St
Baltimore, MD 21214

January 30, 2026

To: Chair Feldman, Vice-Chair Kagan and members of the Maryland Senate Committee on Education, Energy and the Environment

From: Jim Brown, Policy Director, Audubon Mid-Atlantic

Subject: Favorable Testimony for Maryland SB 181 – Hunting – Lead and Lead–Based Ammunition – Phase–Out

Audubon Mid-Atlantic submits this testimony in support of Senate Bill 181, phasing out the use of lead ammunition in hunting in Maryland. Audubon Mid-Atlantic is the regional office of National Audubon Society, representing over 35,000 Marylanders who advocate for the protection of birds, bird habitat, and policies aiming to protect both birds and human communities in the face of increasing environmental challenges, habitat loss, pollution, and climate change. We work with partner organizations, government agencies, and local communities to protect birds and the places they need to survive now, and into the future. SB 181 will protect birds across Maryland, with co-benefits offering better health outcomes for other species, including people.

We know that no amount of lead is safe for public health. For these reasons, The U.S. Government removed lead from toys, furniture, house paint and gasoline. Safer, affordable, lead-free ammunition alternatives are available. It is time to embrace lead-free ammunition for hunting in Maryland. From our Atlantic shoreline and Chesapeake Bay marshes to our western Maryland mountains, birds in Maryland are under threat. They all travel through or live in areas where hunting is permitted, and as such face serious threats from the effects of lead in ammunition. SB 181 will create the groundwork for reducing these threats and it will hold Mayland up as a leader in conservation planning.

Threats to Bald and Golden Eagles

Lead toxicity has been shown to have population-level impacts on Bald Eagles. Bald Eagle population growth is estimated to experience 4.8% suppression from lead toxicity alone, and Golden Eagle population growth is suppressed 0.8. (1) Other studies have shown that lead reduces the overall resilience of Bald Eagle populations,(2) increases susceptibility to other environmental toxins like mercury,(3) and impairs motor and immune function.(4) Bald Eagles were only recently delisted from endangered status and many wildlife experts feel Eastern Golden Eagles warrant stronger protections due to declining populations in the United States.(5) Both species are protected under the Bald and Golden Eagle Protection Act which mandates Eagles not suffer take, meaning no one is permitted to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb [Bald and Golden Eagles]."(6) Despite this, Eagles are being poisoned by contaminated game which was killed with or ingested lead ammunition.

Threats to Avian Scavengers and Upland Game Birds

Avian scavengers such as vultures, and corvids are also victims of lead poisoning. Acute and chronic exposure to lead causes lethal and sub-lethal outcomes for numerous species.(7) Organ failure, immune

suppression, and impaired reproduction are all potential outcomes of lead exposure on the aforementioned species. Upland game birds such as Mourning Doves are also heavily impacted. Like some waterfowl, Mourning Doves and other upland game birds such as Ring-necked pheasants, Northern Bobwhite Quail, and Wild Turkeys have all been reported ingesting spent lead shot.(8) A study on Mourning Doves found that the doves ingested both steel and lead shot; the birds which ingested non-lead shot were found to have much lower bone lead concentrations, indicating greater overall health and fewer potential negative side effects.(9)

Threats to Waterbirds

Discarded lead fishing tackle is also a major threat to wildlife. Lead fishing tackle is easily mistaken for grit or stones which may be ingested by waterbirds. When the lead is exposed to the digestive acids in gizzards and stomachs, it begins to dissolve and absorbs into the bloodstream where it can cause behavioral and physiological changes.(10) A single lead sinker or jig is toxic enough to kill a loon when ingested,(11) with as many as 25% of adult loon deaths in some states due to lead ingestion.(12,13) Swans are also at risk, ingesting lead sinkers and jigs in shallow water, or ingesting lead fragments and ammunition when feeding in upland habitat.

Lead ammunition violates conservation and wildlife management principles. For humans or wildlife, no amount of lead in our environment is safe. The impact to birds and other wildlife is a serious conservation matter. Lead phase-outs work, and alternative ammo is available and cost-effective. For these reasons, Audubon Mid-Atlantic respectfully urges a favorable review of this legislation.

Thank you,

Jim Brown,
Audubon Mid-Atlantic

Sources:

1. Slabe et al. (2022. Demographic implications of lead poisoning for eagles across North America. Science, 375. Pp. 779-782.
2. 2Hanley, B. J. et al. (2021). Environmental lead reduces the resilience of bald eagle populations. The Journal of Wildlife Management, 86(22177).
3. Watson, J.W., and Davies, R.W. (2015). Lead, Mercury, and DDE in the Blood of Nesting Golden Eagles in the Columbia Basin, Washington. The Journal of Raptor Research, 49(2). Pp.217-221.
4. Golden, N.H., Warner, S.E., and Coffey, M.J. (2016). A Review and Assessment of Spent Lead Ammunition and Its Exposure and Effects to Scavenging Birds in the United States. Reviews of Environmental Contamination and Toxicology, 237. Pp. 123-191.
5. Hunt, W. G et al. (2017). Quantifying the demographic cost of human-related mortality to a raptor population. PLoS One 12:e0172232.
6. https://www.govinfo.gov/content/pkg/USCODE-2010-title16/pdf/USCODE-2010-title16-chap5A-subchapII.pdf
7. Palmer, A.G. et al. (2022). Blood Lead Concentrations of Free-ranging North Florida Raptors: 2008-2017. Journal of Wildlife Diseases, 58(2).
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9. Franson, J.C., Hansen, S.P., and Schulz, J.H. (2009). Ingested shot and tissue lead concentrations in mourning doves. Ingestion of Spent Lead Ammunition: Implications for Wildlife and Humans (chapter). Peregrine Fund. Pp. 175-186.
10. Michael, P. (2006). Fish and Wildlife Issues Related to the Use of Lead Fishing Gear. Washington Department of Fish and Wildlife: Fish Program.
11. Grade, T.G., Pokras, M., et al. (2019). Lead poisoning from ingestion of fishing gear: A review. Ambio, 48(0). Pp. 1023-1038.
12. https://wildlife.onlinelibrary.wiley.com/doi/full/10.1002/jwmg.21348 17 https://www.pca.state.mn.us/air-water-land-climate/getting-lead-out-of-fishing-tackle

Hunting - Lead and Lead-Based Ammunition - Phase-O
Uploaded by: Lisa Radov
Position: FAV

MARYLAND VOTES FOR ANIMALS

PO BOX 10411
BALTIMORE, MD 21209

February 3, 2026

To: Senate Education, Energy, and the Environment Committee
From: Lisa Radov, President and Chair, Maryland Votes for Animals, Inc.
Re: Hunting - Lead and Lead-Based Ammunition - Phase-Out– SB 181-Support

Chair Feldman, Vice - Chair Kagan, members of the Education, Energy, and the Environment Committee, thank you for the opportunity to testify before you today. My name is Lisa Radov. I am the President and Chair of Maryland Votes for Animals. We champion humane legislation to improve the lives of animals in Maryland. Speaking for Maryland Votes for Animals, our Board of Directors, and our members across Maryland, I respectfully request that the Education, Energy, and the Environment Committee vote favorably for Hunting - Lead and Lead-Based Ammunition - Phase-Out – SB 181.

Lead and lead-based ammunition have been studied extensively for over 100 years because of lead's negative impacts on wildlife and humans. Numerous species of wildlife that are found in Maryland are poisoned by lead bullets and shells including hawks, ravens, turkey vultures, eagles, and grizzly bears.

Lead causes widespread damage to cells and organs when it is ingested, inhaled, or absorbed in surprisingly small quantities. Lead fragments have been found in wild game meat processed for human consumption. Even if a hunter attempts to remove the largest remaining pieces of the bullet from the dead animal, tiny fragments of lead, enough to poison both humans and wildlife, remain in both the meat and parts that are left behind.

Hunters can use alternatives to lead in shot and rifle bullets. These include steel, copper, bismuth, and tungsten. Research has shown that they are as effective as lead but with the significant advantage that they are not toxic. We must factor in the environmental impacts of using lead ammunition and transition to safer alternatives.

It's time to get the lead out!

In closing, I would like to thank Senator Lewis Young for her sponsorship of SB 181 and ask the committee for a favorable report.

Updated Mark Pokras testimony.pdf
Uploaded by: Mark Pokras
Position: FAV

Tufts UNIVERSITY | Cummings School of Veterinary Medicine

29 January 2026

The Honorable Brian J. Feldman, Chair
Education, Energy, and the Environment Committee
2 West Miller Senate Office Building
Annapolis, MD 21401

Re: SB 181 – Hunting – Lead and Lead-Based Ammunition–Phase Out, **FAVORABLE**

Dear Chairman Feldman, Vice Chair Kagan, and Members of the Committee:

I am submitting testimony today wearing several hats. One is that of a lifelong outdoorsman. One is in my role as a health professional. And one is my role as a scientist who has spent over 50 years in environmental conservation; most of those years studying health and disease in wildlife. I am an Emeritus Associate Professor of Wildlife Medicine at The Cummings Veterinary School, Tufts University, and former director of both Tufts Wildlife Clinic, and Tufts Center for Conservation Medicine.

Since 1987 my students and I have performed necropsies (post-mortem examinations) on thousands of wild birds from all over the eastern United States. Our work has documented a wide variety of causes of death including disease, predators, human caused problems (including gunshot, entanglement, oil spills, etc.). But I can unequivocally say that a very significant cause of death in many wild birds is lead poisoning. We continue to exhaustively document lead toxicosis from ingested bullet fragments and shotgun ammunition in a wide variety of species including bald and golden eagles. It is discouraging how common this poisoning is. And the problem is not going away. As an example, I've been involved in investigating several cases of wildlife lead poisoning in just the last week.

As a life-long outdoors person, I deeply appreciate that sportsmen (and women) have a long and distinguished history as committed conservationists. Hunters and anglers play important roles in protecting the biodiversity and health of our natural ecosystems. I say this, because it is very important to understand that the large majority of proponents of this bill are NOT anti-sportsmen and are not trying to eliminate hunting. But we are asking hunters, and anyone involved in the shooting sports, as concerned conservationists, to help eliminate the use of toxic lead ammunition. I would ask them to join in taking this important step in adapting their practices and equipment for the good of protecting the environment, human health, and the species we all cherish.

Over 30 years ago, waterfowl hunters took a similar step when they changed from using toxic lead shot to non-toxic products. At that time, concerns were expressed about the cost and performance of the non-toxic alternatives, but hunters all over the U.S. successfully made the change. Now we're asking others to take a similar step.

As a health professional I feel that it is important to emphasize that for both human and veterinary medicine, there is overwhelming scientific consensus that lead is profoundly toxic. **NO** level of exposure is considered safe for people, domestic animals, or wildlife species. Whether the lead comes from paint, gasoline, mining, industrial processes, or sporting goods, this metal is toxic and cumulative in us and other species. The websites and publications of such agencies as the CDC, OSHA, US EPA, US Fish & Wildlife Service, USGS and many others emphasize the toxicity of lead. Shouldn't we ask ourselves if there's ANY reason to put large amounts of such a long-acting, persistent poison into our bodies and the environment?

Traditionally, wildlife managers have primarily been concerned about threats to animal health in two circumstances. First, if such threats are shown to have population level effects on the species in question, and second, if these threats may serve a sentinel function to protect human health. There is no doubt that both of these are good reasons to replace lead in ammunition with non-toxic alternatives.

But I would be remiss if I did not point out the significant benefits to individual animals of switching to non-toxic ammunition. Hunters have long been some of our most ardent conservationists and traditionally abhor the unnecessary killing of non-target animals. Even if lead poisoning is not having a population level effect on a particular species, it is killing large numbers of animals in a manner that is prolonged, painful, and cruel. This flies in the face of two of the historic central tenets of sporting traditions: first, that we should avoid harm to non-target species, and second, that wild animals being taken for food or sport should, whenever possible, be afforded a quick death.

Lead poisoning is inhumane and causes unnecessary stress, pain, and suffering in a wide variety of species including people, dogs, horses, ruminants, and birds. There is abundant literature over many years to demonstrate acute abdominal pain, peripheral muscle pain and weakness, incoordination, seizures, anemia, gout, and other clinical problems seen in many species. It is worth the small economic cost to eliminate this poison from our outdoors activities to save large health care costs treating animals and humans from debilitating illness or even death.

Eliminating lead from ammunition and other sporting goods also directly benefits human health. The medical and public health literature is abundantly clear in stating that damage from lead poisoning has the greatest impacts on several groups of people: children (including in utero), women of childbearing age, and post-menopausal women.

In the process of making and using ammunition, people are exposed to lead in many ways. Mining, smelting, manufacturing, and use of lead products, including ammunition, contaminates people and the environment. Meat taken from animals shot with lead projectiles regularly contains small lead particles, and an increasing number of agencies and organizations caution that there are real risks to eating meat harvested with lead bullets or shot. In most of the U.S., few food assistance programs screen donated game meat for lead. And even when screened, it's been shown that review of butchering practices or even x-raying of meat does not adequately protect consumers from ingesting significant quantities of lead. To add to the problem, many of "the needy" who obtain game meat from food pantries often have other significant sources of

lead in their lives — including paint and solder in old housing stock, drinking water, or occupational exposures.

Conclusion

From our years of work, I can categorically state that lead toxicosis from ingested ammunition is a serious problem for eagles and other wildlife in Maryland, the U.S., and around the world. It can also pose a worrisome health risk to people who consume wild game shot with lead projectiles. I am in frequent contact with biologists studying eagles throughout the country, and can testify to the consistency of their findings and ours over time. In wildlife, it is especially serious that much of the mortality is in breeding, adult animals, a critical group from the standpoint of population stability – especially as we consider the other threats that face eagles and other wildlife in our changing world.

I would strongly recommend that committee members as well as anyone interested issues of lead poisoning take the time to examine the following publications, available full text on the internet as well as some other documents I've appended to this testimony. Let's work together to protect the health of people, wildlife, and the environment from this toxic threat. The time has come.

1. Proceedings of an international meeting, 2008. **Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans.**
https://science.peregrinefund.org/legacy-sites/conference-lead/2008PbConf_Proceedings.htm

2. Ambio 48 (9), Sept. 2019 -- **Special Issue: Lead in Hunting Ammunition: Persistent Problems and Solutions**. https://link.springer.com/journal/13280/volumes-and-issues/48-9

3. Kanstrup, N. 2024. **The transition to non-lead ammunition: an essential and feasible prerequisite for sustainable hunting in modern society**. Aarhus University, Department of Ecoscience. https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Eksterne_udgivelser/BlyBog.pdf

Thank you for your attention. I would be happy to provide any additional information that the committee might need.

Mark A. Pokras, B.S., D.V.M.
Associate Professor Emeritus
Wildlife Clinic & Center for Conservation Medicine
Cummings School of Veterinary Medicine, Tufts University
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email: mark.pokras@tufts.edu

home:
Scarborough, ME 04074

Enclosed Attachments:

Buenz, EJ, et al. 2024. X-ray screening of donated wild game is insufficient to protect children from lead exposure. Discover Food 4, 31.

Katzner, TE, et al. 2024. Lead poisoning of raptors: state of the science and cross-discipline mitigation options for a global problem. Biol Rev, Camb Philos Soc. 99:1672-1699.

Pokras, MA and MR Kneeland. 2008. Lead poisoning: using transdisciplinary approaches to solve an ancient problem. EcoHealth 5(3): 379-385.

Totoni S, et al. 2022. Biting the bullet: a call for action on lead-contaminated meat in food banks. Am J Public Health. 112(S7):S651–4.

Michael Soukup testimony.pdf
Uploaded by: Mike Soukup
Position: FAV

MD SB 181 – Lead Ammunition Phase-Out

February 3, 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:

I am Michael Soukup. I am a retired federal scientist, with numerous lifetime achievement awards for interpreting and applying science to large scale environmental issues. In my career I worked as an ecological research scientist, as Regional Chief Scientist for the northeast, Research Director at Everglades National Park, and Chief Scientist for National Parks. Upon retirement I served as President and CEO at the Schoodic Institute in mid-coast Maine. I am writing to support SB 181.

I am also writing as someone who grew up hunting along Chesapeake shores. That experience shaped my lifelong love of wildlife and the idea that we must pass our wondrous natural heritage along--to our children and the next generation in perpetuity.

As Chief Scientist for national parks, I learned that prevention of environmental problems whenever possible was vastly easier (and cheaper) than repair and restoration. SB 101 works in that direction.

I believe the facts are clear. Lead persists, and it cycles and accumulates in our wildlife. For example, more than 130 wildlife species in national parks suffer from lead exposure. Restoration of condors in national parks was a necessary but expensive proposition, yet those few still living today still have blood levels indicating lead exposure. Half of our Bald (and Golden) eagles, according to the U.S. Geological Survey, are suffering from acute or chronic lead poisoning. Modern wildlife management dictates protecting predators and scavengers—their roles in nature are essential. Hence, lead from firearms should no longer find its way into coastal and upland food chains. Prevention now will be for the immense good of today's and tomorrow's Marylanders, and all those who treasure the outdoors and healthy wild life--especially hunters, hikers, and birders.

There is ample evidence for moving forward given the feasible and high-performance alternatives to lead in ammunition. Phasing out lead-based ammunition is a compromise that is far less difficult to accommodate and afford than most investments in environmental safeguards (like lead in toys, house paint, and gasoline), and most all restoration efforts. And it is a solid investment in long-term public health, especially for responsible hunters who eat what they kill.

I believe that the State of Maryland is poised to take decisive, leadership action by passing SB 181 to phase-out of lead ammunition for hunting on Maryland on state lands. I hope you will do it. It is the right thing to do, and something each Maryland legislator will look back on and be proud of. As will future generations.

Thank you for the opportunity to submit this written testimony.

Michael Soukup, Ph.D.

National Park Service, Retired

Natalie Ahwesh testimony page 2.pdf
Uploaded by: Natalie Ahwesh
Position: FAV

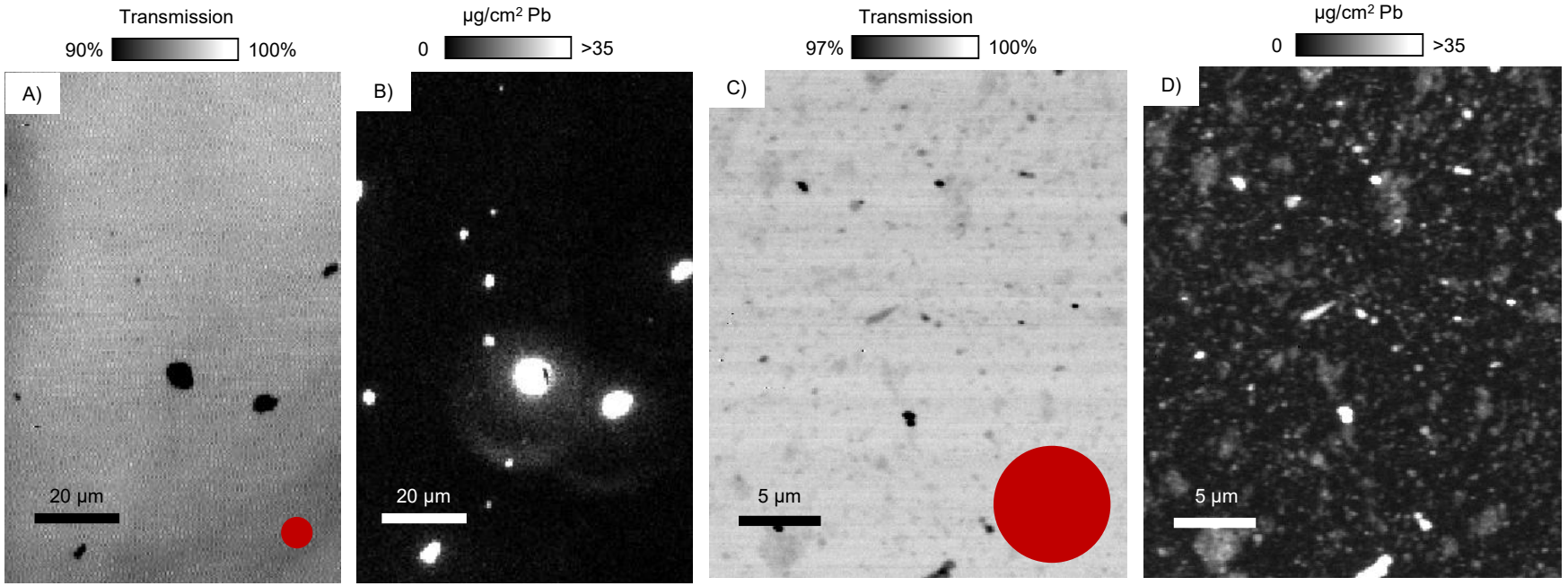

Figure Description

Tiny lead fragments, some smaller than a red blood cell. These are ultra-high-resolution X-ray microscope images of tissue (left pair) and a tissue-like gel (right pair) after impact from lead ammunition. The grayscale images show the material structure, while the “Pb” images light up for the lead: each bright speck is a lead fragment. The red dots are added for scale and represent the diameter of a red blood cell (7 micrometers). The scale bars show just how small these particles are: 20 micrometers (about 2–3 red blood cells wide) and 5 micrometers (smaller than a red blood cell). This is why the fragments can be essentially “lead dust,” far too small to see with standard medical X-rays. For perspective, these lead particles are up to 500 times smaller than the tip of a 25-gauge flu shot needle. *(image source: Leontowich, A.F.G., Panahifar, A., Chen, S. et al. Lead micro- and nanoparticles directly observed within gunshot wounds in hunted game meat. Sci Rep **15**, 36364 (2025). https://doi.org/10.1038/s41598-025-20285-2)*

Natalie Ahwesh testimony page1.pdf
Uploaded by: Natalie Ahwesh
Position: FAV

Canadian Light Source | Centre canadien de rayonnement synchrotron

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P (306) 657-3500
lightsource.ca

January 8, 2026

Center for a Humane Economy
611 Pennsylvania Avenue., S.E. #136
Washington, D.C. 20003
United States of America

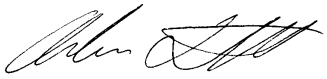
To whom it may concern,

My name is Adam Leontowich and I'm a Scientist at the Canadian Light Source (CLS), a national research facility of the University of Saskatchewan. I'm a PhD chemist, a hunter, and a gun owner. I've published peer reviewed scientific articles in 2022 and 2025 on the topic of lead ammunition fragments in game meat. In these two studies, we applied a new and powerful technique, synchrotron X-ray imaging, that no one had ever applied to this topic before.

Using synchrotron X-ray imaging techniques at the CLS and at the Advanced Photon Source located near Chicago, Illinois, we directly observed ultra-small lead fragments embedded within tissues of game animals struck by traditional lead-based ammunition. Lead fragments down to the size of red blood cells were found in edible tissues of a white-tailed deer struck by a .308 Winchester round at 100 meters, and a sharp-tailed grouse struck by several #6 pellets from a 12-gauge shotgun at 20 meters. The lead fragments we observed in game meat were 1000× smaller than previously shown, literally lead "dust". We also found that the quantities within the micro- and nanoscale fragments exceeded US Centers for Disease Control and Prevention benchmarks for lead exposure from food. These tiny fragments are invisible using standard medical X-ray systems at hospitals. Therefore, scanning hunted game meat with medical X-ray systems is not an effective method to screen for concerning levels of lead. In addition, the tiny lead fragments could possibly be pumped throughout the animal via the circulatory system in its final moments, so trimming may not be 100% effective to avoid lead exposure.

As a scientist, our results agree with dozens and dozens of previous peer reviewed studies on this topic: the most effective method to avoid lead exposure from game meat is to use non-lead ammunition for hunting. As a hunter, in my experience non-lead ammunition was compatible and accurate with my existing hunting rifles and shotguns, and it is commercially available in my area. I find no significant increase in cost for hunting, considering the gear and expenses involved for even a one-day hunting trip. Most importantly, I find it to be equally effective to do the job of hunting. These personal experiences are again in agreement with dozens of previous peer reviewed studies.

Sincerely,



Adam Leontowich

Peter Winch testimony.pdf
Uploaded by: Peter Winch
Position: FAV

JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Monday, January 26, 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 Peter Winch, and I am a Professor in the Department of International Health, Johns Hopkins Bloomberg School of Public Health, and Co-Chair of the Johns Hopkins Sustainability Leadership Council. I am active in efforts to reduce exposure to lead in Bangladesh, and globally.

I am writing in strong support of SB 181, the phase-out of lead ammunition for hunting, for the following reasons:

- The harmful effects of lead on both human and animal health are indisputable. In humans, the harmful effects of lead extend to multiple body systems and organs, and frequently are irreversible. Globally, there are an estimated 5·5 million premature adult deaths from cardiovascular disease alone.
- Once lead and other heavy metals are in the environment, the effects persist, lasting many generations. Lead is a notable contributor to poor health of people living near long-abandoned mines, and long-abandoned industrial sites.
- Hunting can be practiced without lead in ammunition. The phase-out of lead ammunition will not adversely affect hunters.

I respectfully urge the Committee to issue a favorable report on SB 181. Thank you for your consideration.

Sincerely,

Peter Winch MD MPH (he/his)
Professor, Social and Behavioral Interventions Program, Department of International Health
Co-Chair, Johns Hopkins University, Sustainability Leadership Council
- https://sustainability.jhu.edu/who-we-are/slc/

Peter Winch MD MPH (he/his), Professor, Department of International Health, Social and Behavioral Interventions Program, and Co-Chair, Johns Hopkins University, Sustainability Leadership Council
615 North Wolfe Street, Rm E5608, Baltimore MD 21205-2179 USA, Cell/WhatsApp 667 2287259, pwinch@jhu.edu

Testimony in support of SB0181 - Hunting - Lead an
Uploaded by: Richard KAP Kaplowitz
Position: FAV

SB0181_RichardKaplowitz_FAV

02/03/2026

Richard Keith Kaplowitz
Frederick, MD 21703

TESTIMONY ON SB#/0181- POSITION: FAVORABLE

Hunting - Lead and Lead-Based Ammunition - Phase-Out

TO: Chair Feldman, Vice Chair Kagan, and members of the Education, Energy and the Environment Committee
FROM: Richard Keith Kaplowitz

My name is Richard Keith Kaplowitz. I am a resident of District 3, Frederick County. I am submitting this testimony in support of SB#/0181, Hunting - Lead and Lead-Based Ammunition - Phase-Out

As reported by the Center for a Humane Economy, *The Scientific Debate Is Settled: Dispersed Lead Ammunition Is a Menace to Wildlife and People* [1]

> Millions of animals and millions of Americans — kids, pregnant women, and the needy — are at risk from an element known to be deadly, irreducible for 2,000 years

In recognizing this problem this bill will take positive action to ameliorate the problem in Maryland. It will require the Department of Natural Resources to require, through a certain phasing-out process, the use of nonlead ammunition for the hunting of all game species on or before July 1, 2029; and requiring the Department to authorize the use of lead ammunition for muzzleloaders, handguns, rifles, and shotguns if nonlead ammunition is not commercially available for the specific weapon.

A letter to the editor of the Baltimore Banner on March 3, 2024 from a hunter makes clear that this problem is known in the hunting community and is recognized as such. [2] This bill is a response to both the science identifying the problem and the general response of the hunting community that favors the phase out of lead ammunition. This is an environmental protection measure.

I respectfully urge this committee to return a favorable report on SB#/0181.

[1] https://centerforahumaneeconomy.org/dispersed-lead-ammunition-is-menace-to-wildlife-people/
[2] https://www.thebanner.com/opinion/community-voices/lead-ammunition-hunting-legislation-poisoning-KCTEGUF5JRGFJA6WYQG7SWCPWI/

GHHI SB181 Written Testimony.pdf
Uploaded by: Riley Roshong
Position: FAV

Green & Healthy Homes Initiative®

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www.ghhi.org

January 30, 2026

Senator Brian J. Feldman
Senate Education, Energy and Environment Committee
2 West Miller Senate Office Building
Annapolis, Maryland 21401

RE: **SB181 – FAVORABLE** – Hunting - Lead and Lead-Based Ammunition - Phase Out

Dear Chairman Feldman and Members of the Committee:

The Green & Healthy Homes Initiative (GHHI) writes in support of Senate Bill 181. GHHI has been at the frontline of lead poisoning prevention for over three decades by helping to elevate Maryland as a national leader and working to reduce childhood lead poisoning by 99% in our state. GHHI also provides tenants' rights assistance, rental property owner compliance assistance and legal representation of tenants statewide for the repair of lead hazards and other hazardous conditions in homes throughout Maryland. Furthermore, in addition to serving as the President and CEO of GHHI, I also serve as the Chair of the Maryland Lead Poisoning Prevention Commission and lead nationwide efforts on combatting the harmful effects of lead in housing and in our environment.

Senate Bill 181 focusses on an often-overlooked issue that requires attention – lead in ammunition as a source of lead exposure. Anyone that consumes hunted game meat can be exposed to lead from hunters using leaded ammunition. Hunters themselves can also be exposed to lead vapors and residue through using lead ammunition in their firearms. Leaded ammunition can also end up in the food chain from being fired in the wild by polluting soil and or by being eaten by animals which are later consumed by humans or other animals.

Lead shot can make its way into our public water systems, or more acutely, into well water in individual homes that may become contaminated. Lead from ammunition is a direct threat to wildlife, especially birds and other animals, that ingest lead shot when they mistake it for a food source or when they consume an animal that has been shot with lead ammunition. This lead direct ingestion in animals can cause dramatic harmful health effects up to and including death.

Hunters are also not the only Marylanders at risk of lead exposure. A 2022 study by Totoni et al. found that families relying on food banks in the U.S. that receive donated hunted game meat are at a higher risk for elevated blood lead levels.[1] This is because most donated hunted game meat

[1] Samantha Totoni et al., *Biting the Bullet: A Call for Action on Lead-Contaminated Meat in Food Banks*, 112 Am. J. Pub. Health S651 (2022), https://doi.org/10.2105/AJPH.2022.307069.

is not inspected to discard packages containing ammunition-derived lead fragments. Given that initiatives such as the NRA *Hunters for Hungry* initiative have resulted in over millions of pounds of game meat being donated to food banks annually,[2] this is also a real concern for Marylanders who rely on these programs.

Current CDC guidance says that there is no safe level of lead in the blood.[3] Lead poisoning contributes to permanent issues in childhood brain development, resulting in lower levels of success in school and ultimately leading to higher levels of dropouts and juvenile delinquencies. This issue disproportionately affects overburdened and underserved communities, hindering the ability of children to thrive and increasing costs associated with criminal justice and education accommodations. For adults, lead poisoning can cause high blood pressure, cardiovascular disease, reproductive harm, heightened risk to pregnant women, and more.

Lead-free alternatives exist for ammunition including steel, copper, bismuth, and tungsten. Maryland should lead the way phasing out a highly preventable source of lead. California passed Assembly Bill 711, banning the use of lead ammunition for all hunting starting in 2019. Maryland must follow to achieve the over-arching goal of ending lead poisoning.

We ask for a Favorable Report on SB181.

Sincerely,

Signed by:
6171EFD32CD49A...
Ruth Ann Norton
President and CEO

[2] NRA Hunters' Leadership Forum, *Hunters for the Hungry organizations provided almost 1.6 million pounds of game meat in 2022*, NRA Family (July 6, 2023), https://www.nrafamily.org/content/nra-hunters-leadership-forum-supports-hunters-for-the-hungry-programs-in-2023.
[3] Centers for Disease Control & Prevention, *About Childhood Lead Poisoning Prevention* (Aug. 21, 2025), https://www.cdc.gov/lead-prevention/about/index.html.

Robin Todd testimony.pdf
Uploaded by: Robin Todd
Position: FAV

MARYLAND ORNITHOLOGICAL SOCIETY

February 3, 2026

Education, Energy, and Environment Committee

Testimony on: Bill to Phase Out Lead Ammunition in Maryland

Position: Support SB 181

Dear Chair Feldman and Members of the Committee

I write on behalf of the Maryland Ornithological Society (MOS) in strong support of SB 181, the Bill to Phase Out Lead Ammunition in Maryland.

Impact of Lead Shot on Birds

The presence of lead in the environment from spent ammunition is deleterious to many forms of wildlife, but particularly to raptors and water birds. Lead has been shown to reduce populations of Bald Eagles by 3.8% and those of Golden Eagles by 0.8%[i]. Other studies have concluded that lead suppresses the vigor of Bald Eagle populations[ii] and decreased the resilience of Golden Eagle populations to other environmental toxins [iii] and reduced their growth rate by 4.2% (in female) and by 6.3% (in males)[iv]. Both species are protected under the Bald and Golden Eagle Protection Act which prohibits 'take' of either species, where take is defined as harming them in one or more of various ways, including poisoning[v]. Regardless, both species are still poisoned whenever they eat wildfowl or fish containing lead. In addition to eagles, carrion eating birds, namely vultures, condors and corvids, are poisoned by the lead in carcasses. Exposure to spent lead shot also causes lethal and sub-lethal impacts in many other birds, notably ducks[vi] and swans[vii].

Bans Really Do Work

Bans on the use of lead ammunition have already shown promising results. The ban on lead shot for hunting waterfowl in Illinois was followed by a reduction in the numbers of crippled duck and geese[viii]. The ban in New Jersey was followed by lower detectable levels of lead in the blood of American black ducks[ix]. Bans on lead shot in 1999 were followed by lower incidence of non-hunting lead poisoning among ducks using the Mississippi Flyway and an estimated 64% reduction in mortality among mallards from ingesting lead shot[X]. Following a lead shot ban in the California Condor's range in 2008, lead levels in golden eagles and turkey vultures.[xi]

Banning lead would also have positive impacts on human health since, according to the World Health Organization, there is no safe level of lead[xii]. The ban will thus also protect those who eat wildfowl. It is high time that exposure of birds and ourselves to lead was reduced by passage of this eminently sensible bill.

Based on the forgoing, we urge the Committee to vote favorably on SB 181.

MOS

MOS is an approximately 2200-strong member all-volunteer organization that is dedicated to the study, conservation and enjoyment of birds in Maryland and beyond. We were founded in 1945 and are organized into 15 chapters throughout the state. We lead field trips, organize lectures, have a very active youth group, conduct period bird counts, hold an annual convention and own 10 sanctuaries in various parts of state (all of which are open to the public at no charge).

In closing, I wish to thank you and the Committee for considering our request.

Sincerely,

Robin G. Todd PhD,
Conservation Chair
Maryland Ornithological Society
10174 Green Clover Drive
Ellicott City, MD 21042
Robin.todd@mdbirds.org

References Cited

[i] Slabe et al. (2022. Demographic implications of lead poisoning for eagles across North America. Science, 375. Pp. 779-782.

[ii] Hanley, B. J. et al. (2021). Environmental lead reduces the resilience of bald eagle populations. The Journal of Wildlife Management, 86(22177).

[iii] Watson, J.W., and Davies, R.W. (2015). Lead, Mercury, and DDE in the Blood of Nesting Golden Eagles in the Columbia Basin, Washington. The Journal of Raptor Research, 49(2). Pp.217-221.

[iv] Golden, N.H., Warner, S.E., and Coffey, M.J. (2016). A Review and Assessment of Spent Lead Ammunition and Its Exposure and Effects to Scavenging Birds in the United States. Reviews of Environmental Contamination and Toxicology, 237. Pp. 123-191.

[v] 16 U.S.C. 668-668d and 50 CFR 22.6

[vi] Rattner, B.B., Franson, J.C., Sheffield, S.R., Goddard, C.I., Leonard, N.J., Stang, D. and Wingate P.,J. (2008).
Sources and Implications of Lead Ammunition and Fishing Tackle on Natural Resources.
The Wildlife Society American & The Fisheries Society Technical Review Committee on Lead in the Environment. Technical Review 08-01 Pp.15, 22, 28 31 and 35

[vii] https://www.trumpeterswansociety.org/what-we-do/swan-health.html

[viii] Ellis, M.B., and Miller, C.A. (2021). The effect of a ban on the use of lead ammunition for waterfowl hunting on duck and goose crippling rates in Illinois. Wildlife Biology, e01001.

[ix] Lewis, N.L., et al. (2021). Blood lead declines in wintering American black ducks in New Jersey following the Lead Shot ban. Journal of Fish and Wildlife Management, 12(1).

[x] Havera, A.W., and Zercher, B. (2000) Ingestion of lead and nontoxic shotgun pellets by ducks in the Mississippi flyway. Journal of Wildlife Management 64. Pp. 848–857.

[xi] Kelly, R.T. et al. (2011). Impact of the California Lead Ammunition Ban on Reducing Lead Exposure in Golden Eagles and Turkey Vultures. PLoS One, 6(4).

[xii] https://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health

Support

Uploaded by: Senator Karen Lewis Young

Position: FAV

KAREN LEWIS YOUNG
Legislative District 3
Frederick County

Budget and Taxation Committee

THE SENATE OF MARYLAND
ANNAPOLIS, MARYLAND 21401

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The Honorable Senator Feldman, Chair
The Honorable Senator Kagan, Vice Chair
Education, Energy, and Environment Committee
Annapolis, MD

February 3rd, 2026

SB0181: Hunting - Lead and Lead-based Ammunition - Phase-Out

Chair Feldman, Vice Chair Kagan, and esteemed members of this committee,

SB0181 will phase out lead and lead-based ammunition in hunting. We have known for a long time that lead is toxic. There are no safe levels for human consumption. Lead ammunition is a danger to people (especially children and pregnant individuals), animals, and our environment.

Lead has been banned from gasoline, water pipes, paint, and household items. Ammunition is now the greatest source of lead discharged into our environment, with agency reports indicating that over 90% of deer killed by firearms are shot with lead bullets. Many of these deer are then donated to a program that provides game meat to local food banks. The Maryland Food Bank does not perform any testing for lead in donated venison. Additionally, none of the butchers participating in the donation program perform any contamination tests to determine if the meat is lead-free. The Department of Natural Resources confirmed that of the estimated 3000-5000 deer donated annually, there is no testing of the animals or the venison from them.

A New York study recently found that 19% of venison packages donated to local food banks contained lead, with one sample containing 617% of the FDA's lead safety limit for children. Notably, some lead-contaminated samples had no visible metal fragments on x-rays, showing that even radiographic inspection can miss dangerous contamination.

Children exposed to lead are at an increased risk of learning disabilities, developmental delays and seizures. For adults, lead exposure can lead to high blood pressure, mood disorders, cardiovascular disease, miscarriages, and memory failure. The absence of regulation for contamination-free, donated food increases the risk to low-income recipients who are already disproportionately affected by elevated lead levels. According to a report published by The Lancet, "The annual human costs of lead exposure include 5.5 million premature adult deaths from cardiovascular disease and US$1.4 trillion in losses to the global economy from lead impairing children's cognitive development[1]."

[1] Luby, Stephen P et al., The Lancet Planetary Health, Volume 8, Issue 11, e966 - e972
https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(24)00244-4/fulltext

Lead ammunition is also a threat to our wildlife. The New York Times has reported that between 10 million and 20 million animals, including eagles, hawks, bears, vultures, ravens, and coyotes, die each year — not from hunting, but from lead poisoning, by feeding off of carcasses and gut piles. Studies found that as many as half of our Bald Eagle population suffered from lead poisoning.

In 1991, the U.S. Fish and Wildlife Service banned lead shot for waterfowl hunting. Manufacturers and hunters adapted easily, and today's waterfowl populations are healthy. Copper or brass bullets are available in virtually every rifle and handgun caliber. Copper or brass bullets' ballistics are similar to lead, while weight retention during penetration is usually superior. In fact, the U.S. military is transitioning to non-lead small arms ammunition under its "green ammunition" initiative.

Finally, some hunters are concerned about cost differences between lead and copper. Currently the difference is just a few pennies. As demand increases we expect parity.

We all know that lead exposure poses a serious risk to public health, and its negative impact on wildlife has been proven again and again. To protect ourselves and our wildlife, I urge a favorable report.

Sincerely,

Senator Karen Lewis Young

animal wellness action

CENTER FOR A HUMANE ECONOMY

Lead Ammunition Imperils Wildlife, Hunting Families

Use of alternative forms of ammunition will remediate widespread lead poisoning problem.

DECEMBER 2025

Topline Concerns

- Millions of birds and mammals, especially scavengers and predators, suffer and die from lead poisoning after feeding on carcasses or gut piles left by hunters that are impregnated with toxic lead fragments
- Lead bullet fragments contaminate game carcasses and gut piles, posing health risks to hunters, their families, and food-insecure individuals who rely on soup kitchens and food pantries. Children and pregnant women are at the greatest risk from neurological, cardiovascular, and developmental damage by lead ammunition residues in game meat.
- Non-lead ammunition (including copper, steel, bismuth, tungsten, and metal alloys) provides strong ballistic performance and delivers equal or superior killing power at only marginal additional cost. This shields nontarget species, reduces human health risks from lead exposure, and aligns with conservation and public health goals.

I. Why is lead ammunition an issue?

Lead bullets, slugs, and shot for hunting manmals and birds have been used since the invention of firearms in the early 15th century. The popularity of lead ammunition is due to its historical use, low cost, and its ballistic properties as a soft but dense metal. However, lead (Pb) is a heavy metal with no safe level of exposure. Lead is toxic to all animals, including humans. Lead is even toxic to plants. Lead mining and manufacturing is a small industry that generates enormous harm. Lead impairs the growth, development, and reproduction of microbes, insects, plants, and animals.

Lead does not break down or biodegrade. The ingestion of even small quantities of lead can deliver a range of adverse health impacts to people, especially children, pregnant women, and unborn children.

- Lead is particularly damaging to the brain and the rest of nervous system. Lead can quickly reach the bloodstream when inhaled as dust, ingested, or consumed in water. Unlike most toxicants and pathogens, it can pass into the brain through the blood-brain barrier.
- Lead mimics calcium's properties so that it accumulates in bone and teeth and interrupts metabolic processes.
- In humans, lead reduces IQs and increases the risk of heart disease, kidney failure, and premature death. Women and children are particularly vulnerable as lead exposure can cause miscarriage, premature birth, and low birth weight.

As evidence of lead toxicity has accumulated over the past century, efforts have been made to limit anthropogenic sources of Pb in the environment. Some of these efforts were successful. For example, in most developed countries, lead was banned from gasoline, paint, water pipes, and various household items (such as children's toys and pottery).

The U.S. Fish and Wildlife Service banned lead shot for waterfowl hunting in 1991. Despite this conservation triumph and the rapid transition by waterfowl hunters to non-toxic ammunition, hunters pursuing other game, from squirrels to rabbits to deer, moose, elk, and black bears, still use lead ammunition nearly 35 years later.

Unlike lead in batteries or other in industrial uses, lead ammunition is used as projectiles and expelled directly into ecosystems, posing risks to wildlife and humans. Lead ammunition is now the greatest, unregulated source of lead that is knowingly discharged into our environment. The U.S. annually produces billions of rounds of ammunition, including rimfire and centerfire cartridges and shotshells. Hunters and target shooters annually discharges at least 50,000 tons of lead into our nation's environment. This is equivalent to about 9 billion .22 caliber bullets or ~180 million car batteries worth of lead. In fact, most lead ammunition is manufactured from recycled lead batteries.

For millions of Americans, game meat, especially from deer and elk, is an important source of animal protein. There are about 12 million deer hunters in the U.S., and their families, friends, and neighbors consume more than 6 million deer annually, according to the National Deer Association. While the exact percentage of deer killed with lead ammunition is not known, available research and agency reports suggest that more than 90% of deer in the U.S. killed by firearms are shot with lead-based bullets.

II. Lead ammo & human health: venison with a side of lead

Lead ammunition widely used in deer hunting across the United States poses significant threats to human health. When a lead bullet strikes an animal, it often fragments into hundreds to thousands of tiny particles that can disperse well beyond the wound channel. These fragments may remain in the meat, even after standard butchering and trimming. They are often small enough to be unknowingly ingested.

Studies have found elevated blood lead levels in people who frequently consume wild game harvested with lead ammunition, particularly children and pregnant women, for whom even low doses can impair neurological development, lower IQ, and cause long-term cognitive and behavioral deficits. For adults, chronic lead exposure increases the risk of cardiovascular disease, kidney damage, and reproductive problems. The U.S. Food and Drug Administration does not recognize a safe limit for lead in meat. Because there is no safe level of lead exposure, these risks are a public health concern wherever lead-based hunting ammunition is common.

Most rifle bullets used for large game hunting expand upon impact to ensure maximum deadly effect. Expanding high-velocity lead bullets fragment upon impact, producing large to microscopic fragments, especially in larger game animals. A single round can shatter into millions of smaller fragments up to 18 inches away from the bullet's trajectory, especially when it strikes bone in deer and elk. Many of the fragments in the animal's tissues are tiny microparticles that are too small to see with the naked eye or to feel or otherwise sense when eating. These fragments scatter into the muscle and entrails of hunted animals. For a venison consumer, these particles bioaccumulate over time and contribute to rising lead levels, with the attendant and well-documented array of neurological and other health risks. Although the FDA does not recognize a safe limit for the amount of lead in meat, the European Commission set maximum levels at 0.1 parts per million (ppm). Lead concentrations more than 100 times this limit have been detected in the meat of lead-shot carcasses as far as six inches from the entry wound.

Scientists have used X-rays, CT scans, and other imaging technologies to visualize and count sometimes hundreds of minute lead particles in hunted meat. Chemical analysis has also detected high concentrations of lead in hunted carcasses. Most lead shards are too small to be seen with the naked eye, and minuscule fragments (nanoparticles) are not detectable even by X-rays. The lead shards can also dissolve during digestion, poisoning the surrounding tissues. Both the fragments and the contaminated meat are poisonous when consumed. Recent research found that in deer and grouse samples, lead micro- and nanoparticles too small to be detected by standard medical radiography exceeded levels set by the U.S. Centers for Disease Control and Prevention for protection of human health.

A strong body of scientific research demonstrates that lead-based ammunition frequently contaminates hunted meat and increases blood lead levels of humans and animals who consume it.

- In 2008, the Minnesota Department of Natural Resources experimentally shot 80 deer and sheep carcasses and evaluated the presence of lead in each. High-velocity ballistic tip bullets left an average of 141 fragments in a mean of eleven inches from the wound channel; some were farther. Some fragments were too small to see with anything but a sensitive X-ray image. Lead ammunition fired from high-powered rifles contaminated carcasses more than slower-moving lead slugs fired from shotguns.

- A 2009 study of 30 deer harvested with lead bullets in Wyoming and processed by 22 different meat processors found an average of 136 lead fragments per deer; 32% of the burger packages had at least one metal fragment. Twenty percent of the packages had only one fragment, 7% had two fragments, and 5% had 3 to 8 fragments. Burger packages always have more lead fragments than steaks and roasts.
- The Minnesota Department of Agriculture tested 1,029 commercially ground burger packages using X-rays and found lead fragments in 26%. Lead was also found in 2% of 209 packages containing whole cuts of meat. (Ground meat is far more likely to show detectable fragments than intact cuts because fragments mix through the batch during grinding, so that more samples for testing will test positive for lead.) Also, the cuts that are ground are usually the shoulder and neck musculature, which are much more likely to be near the point of bullet impact than the loins and rumps, which are considered the primal cuts.
- In a 2008 Wisconsin study, researchers collected 183 packages of venison burgers from hunters' freezers, food pantries, and meat processors. They found that 15% of commercially processed burgers and 8% of hunter-ground packages were contaminated with lead.
- Ground venison packets from shotgun- and archery-harvested white-tailed deer in Illinois in 2013 and 2014 were analyzed for metal contamination. Radiographs indicated that 48% of twenty-seven ground venison packets from ten shotgun-harvested deer contained lead metal fragments, while none of the fifteen packets from three archery-harvested deer contained fragments.
- Multiple studies have found a direct link between game harvested with lead ammunition and spikes in blood lead. For example, in a 2009 North Dakota study with 736 participants, those who consumed wild game had higher blood lead levels than those who did not.

The 2025 PhD thesis of Annina Haase, "Food safety implications of metals from bullet fragments in game meat: An investigation of bullet composition, bullet fragmentation and gastrointestinal solubility," cites 308 references on lead fragments in game meat, the most comprehensive literature review of this topic ever published. The thesis highlights the need for greater policy consideration of the biological hazards from lead ammunition and fragmentation for game meat food safety, i.e., a regulatory focus beyond the environmental impacts of lead ammunition.

Not surprisingly, venison donated to food banks can also be contaminated with lead fragments from lead-based ammunition. Over 40 states operate game meat donation programs associated with food banks, facilitating the distribution of roughly 1 million kilograms (1,100 tons) of game meat annually (Buenz et al 2024). Most donated game meat is ground deer meat (venison), as well as wild hog and goose.

The proportion of donated ground venison packages containing detectable lead fragments is typically 10-25%. For example, the U.S. Department of Health and Human Services found that 15% of donated one-pound ground venison packages sampled from Wisconsin food banks contained visible lead fragments. From 2014 to 2019, the Minnesota Department of Agriculture found and discarded 9% of donated venison because of lead contamination observed via X-ray. This prevented more than 4,243 lb. of lead-adulterated venison from reaching Minnesota food banks. Donations of hunted meat from archery season and from animals killed with non-lead ammunition have extremely low levels of lead contamination.

Venison donation programs provide millions of meals to food banks across the country. States with venison donation programs include those that also harvest the most deer: Texas, Michigan, Pennsylvania, Wisconsin, and Georgia. None

of these five states require X-ray inspection of meat for lead contamination. Minnesota is the only state with mandatory screening of donated hunted meat for lead contamination. Some states, such as Iowa and South Dakota, put warning labels on donated venison stating that lead fragments may be present. This underlying lack of food safety standards for adulterated donated food increases risks to low-income recipients who are already disproportionately affected by elevated blood lead levels (BLLs).

III. Lead-linked losses: wildlife casualties in the wake of the hunt

Lead-based ammunition poses serious threats to wildlife, especially birds, and particularly avian or mammalian scavengers and predators that feed on carcasses or gut piles left in the field or directly ingest environmental spent lead bullets. Lead poisoning from ammunition also creates important global conservation problems for many wildlife species, especially raptors, including the highly endangered California condor. An estimated ten million to twenty million birds and other animals die each year from lead poisoning in the United States after ingesting lead left behind by hunters.

Lead poisoning is a leading cause of death in some raptor populations, causing paralysis, emaciation, reproductive failure, and death. A lead fragment the size of a grain of rice is lethal to a mature bald eagle, meaning that a standard 150-grain lead bullet can poison ten eagles. The deadly metal bioaccumulates in an eagle's system throughout their lives, causing long-term harm even at low exposure levels. Just as in humans, there is no safe amount of lead exposure. For this reason, lead is often called "the silent killer."

Slabe et al (2022) looked at lead levels in samples collected from 1,210 bald and golden eagles from 38 U.S. states across North America. They found that almost half of all animals sampled had chronic, toxic levels of lead (as measured in bone), and about a third of bald and golden eagles had acute Pb poisoning, as measured in liver, blood, and feathers. Demographic modeling suggested that these levels are high enough to suppress population growth in both species.

Mammalian predator scavengers, including foxes, coyotes, and bears, are similarly at risk from lead in spent ammunition, as are waterfowl who ingest spent lead shot from the ground or sediments. The problem is widespread and well-documented, with numerous studies showing that seasonal spikes in wildlife lead poisoning follow hunting seasons. Domestic animals, such as dogs and cattle, are also exposed to Pb through ammunition. Coyotes, wolves, and foxes are less likely to die from lead poisoning (as they pass Pb fragments more quickly through their digestive tract as compared to birds), but they can still suffer sublethal effects such as organ damage, neurological impairment, and immune suppression. Hunting dogs fed trimmings from lead-shot game have also been poisoned.

The ecosystem impacts of lead ammunition extend beyond individual wild animal deaths. The loss of top predators and scavengers can disrupt ecological balance, leading to cascading effects including increased carcass persistence, prey population changes, and altered nutrient cycling. In aquatic systems, lead bullets and shot can persist in sediments for decades, leaching into water and posing ongoing hazards to fish, amphibians, and aquatic invertebrates. Because lead is a persistent, bio-accumulative toxin, it can move up the food chain, magnifying exposure risks for both wildlife and humans who rely on hunting and fishing for subsistence.

IV. Lead-free ammunition is available and in wide use

Lead-free ammunition, including steel, copper, bismuth, and tungsten, is widely available and increasingly effective from both cost and lethality perspectives. Copper and copper-alloy bullets, for example, retain their weight, mushroom predictably on impact, and do not fragment into toxic particles, thereby eliminating the primary source of contamination.

Advances in bullet design have ensured that non-lead ammunition can approach or match the accuracy and lethality of lead rounds for deer hunting. The lethality of copper usually exceeds that of lead bullets in larger game. In a survey of manufacturers who produce both lead and non-lead ammunition in the same caliber, the non-lead rounds are usually 25-50% more expensive. That sounds like a lot, but so few rounds are fired on most hunting trips that the cost difference is negligible. Transition programs in several states and tribal areas have shown that voluntary or mandated shifts to non-lead ammunition can significantly reduce Pb exposure in both humans and wildlife within just a few hunting seasons.

Given the known health risks, the proven ecological harm, and the availability of safe, effective alternatives, phasing out lead ammunition in deer hunting is a practical and scientifically supported step toward protecting public health and sustaining healthy ecosystems. The reasons for switching to non-lead are numerous: excellent weight retention and penetration, consistent expansion, and less risk of lead fragments ending up on dinner plates and in the bellies of scavengers.

Hunters have touted the lethality of non-lead bullets for decades. Even the April 10, 2010, issue of the National Rifle Association's (NRA's) American Hunter Magazine wrote:

> "Every now and then a new bullet comes along that redefines what we think we know about hunting projectiles. The Barnes all-copper X-Bullet was one of those, and it has become the most imitated big-game bullet on the market. It was introduced in 1989, and ever since, the Barnes X has been a favorite of serious big game hunters wherever men take rifles into wild places."

Just as non-toxic alternatives have been available for waterfowl hunters for decades, there are readily available alternatives for big game hunting. Copper or brass bullets are available in virtually every rifle and handgun caliber. Copper or brass bullets' ballistics are similar to lead, while weight retention during penetration is usually superior. In fact, the U.S. military is transitioning to non-lead small arms ammunition under its "green ammunition" initiative.

Copper vs Lead Bullets

30 caliber Winchester magnum lead core with copper jacket
- Highly toxic
- Hundreds of fragments

30 caliber Winchester magnum solid copper bullet
- Non-toxic
- No fragmentation

https://www.usgs.gov/media/images/copper-and-lead-ammunition-comparison

V. Banning lead ammunition for hunting protects people and wildlife

In public health, primary prevention refers to actions taken before a disease or injury occurs to prevent it from happening in the first place. The successful American history of banning lead from paint (1977), plumbing for drinking water (1986), and gasoline (1996) in reducing lead levels in humans demonstrates the utility of the primary lead prevention approach. For example, following the lead ban from gasoline, blood lead levels in U.S. children decreased from 15.2 µg/dL in the late 1970s to 0.83 µg/dL by 2016. This reduction is associated with an average increase of 4-5 IQ points across the population.

Similarly, the nationwide ban on lead shot for waterfowl hunting in the United States, implemented in 1991, shows the benefits of banning lead ammunition. Prior to the lead ban for waterfowl hunting, an estimated 2,700 tons of shot were deposited in wetlands each year. This policy reduced lead ingestion among waterfowl by approximately 50%, preventing an estimated 1.4 million duck deaths annually.

A strong, multi-line evidence base shows that restricting or banning lead ammunition produces measurable wildlife and human-health benefits. These include:

- Large, measurable reductions in waterfowl lead poisoning and crippling occurred after lead-shot bans in 1991, as described above. Crippling (wounding) occurs when a hunter shoots an animal, but the animal is wounded and not immediately killed, allowing it to escape and die a slow and painful death from starvation, predation, or exposure. Whenever hunters are asked to transition away from the use of lead ammunition to mitigate lead's known risks to wildlife and people, hunters frequently cite concerns about the effectiveness of non-lead ammunition and how it will result in greater crippling rates and associated animal welfare costs. However, recent studies have found no differences in crippling rates using lead and steel ammunition. An Illinois study evaluated 37 years of waterfowl harvest data overlapping the mandated federal transition to non-lead shot for waterfowl hunting to assess how crippling rates changed following the ban. The authors (Ellis and Miller, 2022) reported, "The average crippling rate prior to the lead shot ban was 23% for both ducks and geese and reduced to an average of 15% and 11% for ducks and geese (respectively) following the ban. In addition, the annual trend in the proportion of ducks and geese crippled reversed following the ban, from a significant annually increasing to a significant annually decreasing trend."
- The recovery of the California condor from near extinction after lead ammunition was banned from its range shows that restricting lead ammunition reduces the pathways that poison scavengers and predators. Golden eagles and turkey vultures have also shown decreased lead exposure, indicating broader ecological benefits. Opponents of California's lead ammunition ban acknowledge that lead poisoning has historically hindered the recovery of the California condor. However, they argue that the species' resurgence can be attributed to intensive management efforts, such as captive breeding and veterinary care, rather than the elimination of lead ammunition.
- Human biomonitoring in Europe and North America links game consumption to higher blood lead, especially in frequent game meat consumers, so reducing ammunition-derived contamination reduces human exposure

and risk. Switching to non-lead bullets meaningfully lowers lead residues in edible tissues of game meat, reducing lead exposure in humans who consume it. There is some evidence that lead exposure from lead bullets may pose a higher risk of lead poisoning in humans compared to lead shot, primarily due to the greater fragmentation of lead bullets upon impact. Lead shot, commonly used in shotgun ammunition, consists of small pellets that are less likely to fragment into numerous tiny particles upon impact. However, the ingestion of even a single lead pellet can be harmful, particularly to children and pregnant individuals. If ingested with food, lead shot can become lodged in the appendix and release lead over time, commonly observed in people who regularly eat meat from wild fowl killed using lead shot.

- Regulation and policy: when governments require non-lead ammunition, benefits to human health and wildlife are expected. For example, California's lead ammunition ban has led to measurable health improvements in wildlife, particularly scavenger species like the California condor, and has reduced human exposure to lead through game meat consumption.

Several states have specific lead regulations beyond the federal waterfowl restrictions, many requiring non-toxic shot on certain management units or statewide. Waterfowl Production Areas and U.S. Fish and Wildlife Service refuges generally require non-toxic shot for hunting upland bird species because these areas are managed primarily for waterfowl and often contain numerous wetlands.

As of September 2025, California is the only U.S. state that has fully implemented a ban on lead ammunition for all hunting. This statewide prohibition began in 2019 and was phased in over several years, starting with restrictions in the California condor's range in 2007. Lawmakers in Maryland, Minnesota, New York, Maine, Oregon, and Washington have introduced legislation in recent years to prohibit the use of lead ammunition for hunting purposes or in certain areas, but these proposals have not been enacted into law.

At the federal level, while the U.S. Fish and Wildlife Service has announced plans to phase out the use of lead ammunition and/or fishing tackle on half a dozen national wildlife refuges by 2026, the agency continues to allow lead ammunition and tackle on the vast majority of refuges, even though the agency recognizes the adverse effects of lead on wildlife.

At certain other refuges, the U.S. Fish and Wildlife Service has initiated a voluntary lead-free pilot program. This project, extended for the 2025-2026 hunting season, offers rebates to hunters who voluntarily use lead-free ammunition on 13 national wildlife refuges across 11 states. The initiative aims to encourage the adoption of nonlead ammunition and reduce the risk of lead exposure to wildlife. Unfortunately, voluntary lead-free ammunition programs have shown limited effectiveness in reducing lead exposure among wildlife and humans. While they can foster collaboration and reduce conflict among stakeholders, their impact on hunting behavior and wildlife health has been minimal. They usually fail to achieve widespread compliance.

For example, a 2025 United Kingdom study found that 99% of pheasants and 100% of red grouse sampled were still killed with lead ammunition, despite a voluntary pledge by the UK's nine leading game shooting and rural organizations to phase out lead shot by 2025. "Because so many raptors were dying of plumbism (lead poisoning), Audubon of Kansas offered varminters nontoxic copper ammo at the same cost as cheaper lead bullets," wrote award-winning hunting writer Ted Williams in an essay describing large-scale target shooting of prairie dogs in the Sunflower State. "After four years, it didn't have a single taker. Varminters resist copper for no other reason than they've always used lead." In contrast, California's mandatory lead ammunition ban has led to measurable reductions in lead exposure among wildlife, such as California condors, golden eagles, and turkey vultures.

One reason for this failure to implement a hunting ammunition lead ban is the opposition from the firearms and ammunition interest groups and manufacturers. This includes the National Rifle Association (NRA), Gun Owners of America (GOA), Safari Club International (SCI), Congressional Sportsmen's Foundation (CSF), National Shooting Sports Foundation (NSSF), and firearm and ammunition manufacturers.

VI. Congress debates lead ammunition policy

In November 2025, U.S. Rep. Ted Lieu, D-Calif., introduced the Lead Endangers Animals Daily (LEAD) Act (H.R.6268) to phase out the use of lead ammunition on lands and waters under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Senator Tammy Duckworth, D-Ill., previously introduced a similar bill, S.3852, in the 118th Congress. The bills aim to mitigate the risks of lead toxicosis in people and wildlife, including federally listed threatened and endangered species, particularly scavengers like bald eagles and California condors. The bills have not yet passed either chamber of Congress.

There is also an effort in Congress by lawmakers allied with the NRA to block federal agencies from restricting the use of lead ammunition on our federal lands. The Protecting Access for Hunters and Anglers Act of 2025, S.537 and H.R.556, introduced by Sen. Steve Daines, R-Mont., and Rep. Rob Wittman, R-Virg., aims to prevent federal agencies from banning lead ammunition or fishing tackle on federal lands unless there is unit-specific scientific evidence showing harm to wildlife populations and the regulation is approved by the relevant state. This legislation prioritizes recreational access and affordability for hunters and anglers, asserting that blanket federal bans are unnecessary and burdensome. Together, these bills reflect opposing philosophies and a sharp divide in federal policy approaches: one prioritizes environmental protection, the other emphasizes recreational access and state control.

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

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

- No copper bullet fragments

VII. Evolving USFWS views of lead ammunition for hunting on National Wildlife Refuges

The FWS operates hunting and sport fishing programs on wildlife refuges to implement Congressional directives to facilitate refuge-compatible priority wildlife-dependent recreational opportunities, including fishing and hunting. The recently (re)-introduced Lead Endangers Animals Daily (LEAD) Act (H.R.6268) proposes to phase out the use of lead ammunition on lands and waters under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Specifically, the bill would "require the Secretary of the Interior to prohibit the use of lead ammunition on United States Fish and Wildlife Service lands."

The National Wildlife Refuge System of the USFWS manages 573 national wildlife refuges across all 50 U.S. states and territories. The FWS formally acknowledged in 2022 that "… the best available science and sound professional judgement … indicates that lead ammunition and tackle have negative impacts on both wildlife and human health." The agency further stated, "We disagree with the notion that there is insufficient scientific evidence to support regulatory requirements for hunters to use lead-free ammunition."

"While the Service continues to evaluate the future of lead use in hunting and fishing on Service lands and waters, we will work with stakeholders and the public to evaluate lead use through the annual rulemaking process. In the interim, the Service does not intend to allow opportunities increasing or authorizing the new use of lead on Service lands and waters."

Regarding the use or non-use of lead ammunition and fishing tackle, the USFWS utilized a dual approach: (1) applying lead restrictions on certain refuges (via station-specific rules) and (2) voluntary incentive-based programs to use non-lead ammo and tackle on others.

(1) *Refuge-by-refuge regulatory action for public use:* Instead of a comprehensive lead ammo or tackle system ban, the Service has been addressing lead use by the public on a refuge-specific basis through the annual station-specific hunting and sport-fishing rulemakings and signaling that broader lead-free adoption is a long-term goal. For example, the Service has put in place a lead-free ammunition requirement for newly opened elk hunting at four refuges in North Dakota.

(2) *Voluntary/incentive program approach:* USFWS is also running and expanding voluntary lead-free ammunition incentive pilots (rebates/outreach) at selected refuges as a non-regulatory pathway to reduce lead use while gathering data and stakeholder input. The program was piloted in 2024 and expanded for 2025-26. See U.S. Fish and Wildlife Service.

VIII. Conclusions

Lead ammunition remains one of the last widely tolerated sources of intentional lead release into the environment, despite overwhelming evidence of harm to wildlife, domestic animals, ecosystems, and human health. As this report demonstrates, lead-based hunting ammunition contaminates game meat, poisons scavengers and predators, disrupts ecological processes, and exposes millions of American hunters, their families, and food-insecure non-hunting communities who consume donated venison to unnecessary health risks. These impacts are well documented across multiple scientific disciplines and mirror the historical harms that led the United States to ban lead from gasoline, paint, plumbing, and other consumer products.

Conservation-minded hunters who are using lead ammunition or improperly disposing of animal remains may be uninformed about this issue, rather than indifferent to the deleterious impacts lead ammunition can have on non-target organisms. On the other hand, lead ammunition use continues among some hunters who are dismissive, unconvinced, or mistrustful of lead's dangers or who believe that non-lead ammunition campaigns are part of an anti-hunting agenda.

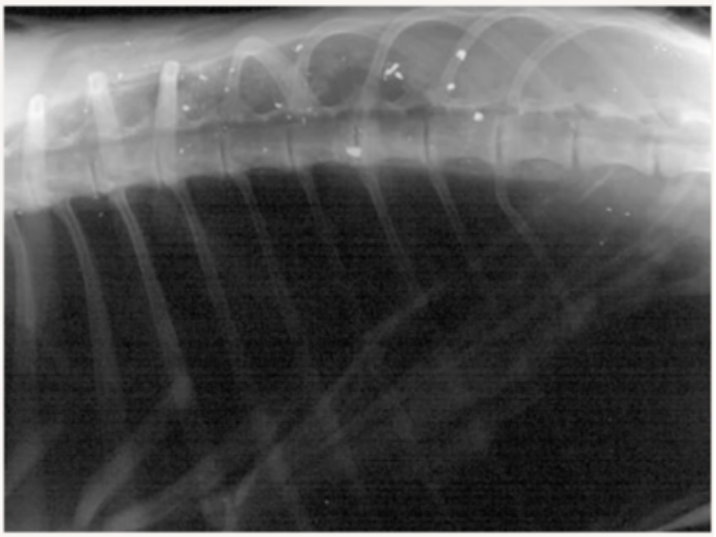
Crucially, these plumbism harms from lead ammunition are now avoidable. Safe, effective, and widely available non-lead ammunition alternatives now exist for virtually all hunting applications, offering comparable ballistic performance at modest additional cost. Where mandatory or well-designed transition programs have been implemented, reductions in lead exposure among wildlife and humans have followed within just a few hunting seasons. The continued use of lead ammunition is therefore not a technological necessity, but a policy and awareness failure.

Phasing out lead ammunition for hunting represents a clear opportunity for primary prevention by protecting wildlife, safeguarding public health, and sustaining ecosystems without compromising hunting effectiveness or tradition. Given the strength and consistency of the evidence, the continued discharge of lead into the environment through hunting is neither scientifically defensible nor ethically justified. Replacing lead ammunition with non-toxic alternatives is a practical, proven, and overdue step toward healthier humans, resilient wildlife populations, and functioning ecosystems. Given the failure of voluntary attempts to reduce hunting lead ammunition use, policies and laws tightly regulating and eventually banning lead ammunition at the state and federal levels will most likely result in the best health outcomes for hunters and their families, animals, and ecosystems.

Addendum of images

Traditional lead bullet fragmentation on entry

Copper bullet on entry showing zero fragmentation



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

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

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.

According to industry estimates, 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. These bullets are often jacketed by a harder metal like copper or steel (Urbina 2018).

Radiograph (X-ray) showing bullet fragmentation in a deer carcass. The “white spots” are bullet fragments. Many lead fragments are microscopic and are undetectable during butchering or when the venison is eaten.

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Either way, you can use them with confidence — but not always with the exact same shots you'd consider for cup-and-core (copper jacketed lead) bullets."

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" No rational deliberation about the use of lead-based ammunition can ignore the overwhelming evidence for the toxic effects of lead, or that the discharge of lead bullets and shot into the environment poses significant risks of lead exposure to humans and wildlife. Given the availability of non-lead ammunition for shooting and hunting, the use of lead-based ammunition that introduces lead into the environment can be reduced and eventually eliminated. This seems to be a reasonable and equitable action to protect the health of humans and wildlife."

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"Now, over 30 years after the first copper bullets began spiraling down rifle bores, hunters can find non-lead projectiles that will topple animals from prairie dogs to cape buffalo. Some bullets even deliver bone-shattering performance to 600 yards and beyond … The reasons for switching to non-lead are numerous: excellent weight retention and penetration, consistent expansion, and less risk of lead fragments ending up on dinner plates and in the bellies of scavengers. … Making the switch makes changing ammunition sound like a bigger deal than it usually is. For most hunters who shoot typical distances with a common cartridge, it's as simple as buying a box of non-lead ammunition, sighting in, and then going hunting. … The cost of non-lead has come down in recent years as the overall cost of ammunition has gone up."

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Discusses the human health risks from hunted game meat donated to food banks across the United States

Author:
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Support of SB 181 - Earthjustice Lead Bullet Ban.p
Uploaded by: Susan Miller
Position: FAV

EARTHJUSTICE

January 30, 2026

Chair Brian J. Feldman
Members of the Senate Education, Energy, and the Environment Committee

Re: Earthjustice support of SB 181:
Hunting – Lead and Lead-Based Ammunition – Phase-Out

Earthjustice[1] strongly supports the passage of SB 181, which would require the Department of Natural Resources to adopt regulations requiring the use of nonlead ammunition for all hunting by July 1, 2029, with earlier deadlines for hunting certain species and an exception for weapons for which nonlead ammunition is not commercially available. This bill represents a vital, common-sense measure to protect people and wildlife from the unnecessary harm posed by hunting with lead ammunition while maintaining the full range of existing hunting opportunities available to the public.

Ingestion of residual lead ammunition from hunting is the primary source of lead poisoning of birds and other wildlife, which injures or kills millions of birds each year.[2] Lead poisoning harms numerous species, and particularly severe impacts have been documented for certain of them, including waterfowl and bald and golden eagles.[3] For example, a major 2022 study in the journal *Science* found that nearly half the dead bald and golden eagles tested nationwide had lead levels indicating chronic lead poisoning and the observed rates of lead poisoning were sufficient to significantly slow both species' rate of recovery from near extinction.[4] While lead poisoning can kill birds immediately, it also causes lasting, potentially fatal damage even when not immediately lethal.

Hunting with lead ammunition also harms people. Lead fragments can be found in wild game meat despite best attempts to remove sections surrounding a bullet wound.[5] And studies have found that eating game shot with lead ammunition is associated with increased levels of lead in the human body—a clear danger given the well-known harmful impacts of lead on human health.[6]

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[1] Earthjustice is a non-profit public interest environmental law organization that represents other non-profits free of charge. Earthjustice uses the power of law and the strength of partnerships to advance clean energy, combat climate change, protect people's health and preserve magnificent places and wildlife.
[2] Deborah J. Pain, et al., *Effects of lead from ammunition on birds and other wildlife: A review and update*, 48 Ambio 935–953 (2019), https://doi.org/10.1007/s13280-019-01159-0. ("Pain et al. (2019")
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Thankfully, these are avoidable problems. Non-lead ammunition is widely available, just as effective, and comparably or even lower priced than premium lead ammunition. A 2013 study found that lead-free ammunition is available in the United States in "all of the common and less-common rifle calibers," and found "no major difference" in the price of lead-free and lead-core ammunition for most popular calibers.[7] The Maine Department of Inland Fisheries and Wildlife notes on its website that the overall price differential between lead and non-lead ammunition is less than $10 per year for a typical hunter and lead-free ammunition is available in "a large array of calibers, weights and designs that meet or exceed the performance of their lead counterparts."[8] Studies confirm that non-lead ammunition is just as effective as lead ammunition for hunting, while avoiding harm to non-target animals and producing game meat that is much safer for people to eat.[9] Given the comparable price, wide availability, and equivalent effectiveness of non-lead ammunition, it is not surprising that the U.S. Fish and Wildlife Service has observed no declines in hunting attributable to phasing out lead ammunition on the federal lands where lead ammunition is now prohibited.[10] In sum, requiring the use of nonlead ammunition solves a serious wildlife conservation problem while maintaining Maryland's traditional hunting opportunities.

SB 181 thus represents a crucial, common-sense step to protect people and wildlife from the harmful effects of lead ammunition. Earthjustice strongly supports its passage.

Respectfully submitted,

Susan Stevens Miller

Susan Stevens Miller
Senior Attorney, Clean Energy Program
Earthjustice

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[10] U.S. Fish & Wildlife Serv., 2022–2023 Station-Specific Hunting and Sport Fishing Regulations, 87 Fed. Reg. 57108 (Sept. 16, 2022), https://www.federalregister.gov/documents/2022/09/16/2022-20078/2022-2023-station-specific-hunting-and-sport-fishing-regulations.

Ted Williams testimony.pdf
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February 3, 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 Ted Williams. I am a journalist. I write exclusively about fish and wildlife. I've been a full-time freelance writer for the last half-century, and I serve on the Circle of Chiefs of the Outdoor Writers Association of America. I've been published in such outlets as *Outdoor Life*, *Audubon, Sierra, National Wildlife, Smithsonian*, *Earth Island Journal, High Country News*, *Modern Maturity, Yale Environment 360, Yankee, Reader's Digest* and *Slate*. I'm a life-long hunter, own a dozen guns and have a permit to carry a concealed high-capacity handgun. As a former information officer for the Massachusetts Division of Fisheries and Wildlife, I worked closely with hunters. I continue to work with them.

I am writing in strong support of SB 181, the phase-out of lead ammunition for hunting, for the following reasons:

The bill would protect humans from lead poisoning
The bill would protect wildlife from lead poisoning
Non-toxic ammo (mostly copper) kills more cleanly, more effectively and more humanely than toxic lead. It is only slightly more expensive than lead, and the price is going down.

I respectfully urge the Committee to issue a favorable report on SB 181. Thank you for your consideration.

Sincerely,

Ted Williams

It baffles me why so many of my fellow hunters insist on poisoning wildlife, themselves, friends and family by using lead ammo when the expense of swapping to more efficient nontoxic copper for a hunting season would amount roughly to a Starbucks latte.

The claim I've been hearing from lead defenders that squirrel hunters can't buy non-toxic .22 rimfire ammo is patently false. It is now readily available and, like higher caliber non-toxic ammo, only marginally more expensive. What's more, tests by the Wildlife Society show that it performs as well or better than lead. (https://wildlife.onlinelibrary.wiley.com/doi/full/10.1002/wsb.1255)

Readily available non-toxic .22 rimfire products include: Norma ECO Speed-2, CCI® TNT® Green .22 WMR 30 Grain Lead-Free Rimfire Ammo, and Hornady Varmint Express Rimfire 17HMR 15.5 Grain Nontoxic.

Multiple studies have found direct links between human consumption of lead-killed game and spikes in blood lead levels. A North Dakota study with 736 participants found that those who consumed wild game had higher blood lead levels.

The Minnesota DNR shot 80 deer and sheep carcasses with lead bullets, which left an average of 141 fragments, a mean of eleven inches from wound channels.

The health departments of North Dakota and Minnesota impounded 17,000 pounds of hunter-donated venison because it was contaminated with lead fragments.

The Minnesota Department of Agriculture X-rayed 1,029 commercially ground venison burger packages, finding lead fragments in 26 percent.

Forty-eight percent of ground venison packets analyzed in Illinois contained lead fragments.

Iowa requires this warning label on venison donated by hunters in the "Help Us Stop Hunger" program: "Lead fragments may be found in processed venison. Children under 6 years and pregnant women are at the greatest risk from lead."

The U.S. Department of Agriculture certifies commercial meat lockers. But neither it nor the Food and Drug Administration regulates lead in donated venison.

The CDC reports: “No safe blood lead level in children has been identified. Even low levels of lead in blood have been shown to negatively affect a child’s intelligence, ability to pay attention, and academic achievement.”

I polled the most hardcore big-game hunters I know. They serve with me on the Outdoor Writers of America Association’s Circle of Chiefs. A few of their comments:

Jim Low: “I’ve been hunting whitetails exclusively with copper bullets -- center-fire and muzzleloader -- for about 15 years and have nothing but praise. Highly accurate, sturdy, excellent expansion and weight retention.”

Matt Miller: “I have found copper superior in every way in my hunting for mule deer, whitetail, pronghorn and feral hog.”

Scott Stouder: “Nothing but stellar performance and the knowledge that I’m not killing others out there from magpies to eagles.”

Larry Stone: “Accurate, hard-hitting, and no fragmentation.”

Mike Furtman: “As I hunted deer today, I sat within sight of the gut pile from the doe I killed two days ago. Much of it had been eaten already, but what remained was dined upon by two bald eagles, three ravens, two pileated woodpeckers, one hairy woodpecker, several blue jays, and numerous chickadees and nuthatches. Which is why I switched to copper bullets.”

Ammo companies developed copper bullets not to protect wildlife or humans, but to kill game more effectively than lead bullets. They do. Hunters have known this for years. In 2012 *American Hunter*, the official publication of the National Rifle Association, selected the Barnes VOR-TX copper bullet for its “Ammunition Product of the Year Award.” And *American Hunter* field editor Bryce Towsley writes that the Barnes all-copper X-Bullet “redefines what we think we know about hunting projectiles.” And in a good way: “I have lost count of the game I have taken with Barnes X-Bullets in various configurations.”

The North American Non-Lead Partnership -- committed to protecting wildlife from poisoning by lead bullets -- includes 46 partners, all of which represent

hunters -- members like The Peregrine Fund (founded by hunters using falcons), Midwest and Northeastern Associations of Fish Wildlife Agencies, Arizona Game and Fish Department, Oregon Hunters Association, Arizona Elk Society, Wisconsin Sharp-tailed Grouse Society, and Arizona Wild Turkey Federation.

The Partnership sponsors demonstrations in which copper and lead bullets are fired into plastic bags filled with water and housed in plastic drums. Slugs and fragments fall to the bottom of the drums. In one typical demo, hosted by Allen Zufelt of the Arizona Game and Fish Department and Partnership co-founder Chris Parish, Zufelt fires a Federal Nosler AccuBond 180-grain lead bullet, then a 180-grain Federal Trophy Copper bullet. Parish retrieves and weighs the two mushroomed slugs. The copper slug weighs 179.9 grains. The lead slug weighs 137.5 grains, having shed and scattered 42.5 grains of fragments.

The toxicity of lead hunting projectiles is ancient news. George Bird Grinnell published this warning in his sporting weekly *Forest & Stream*: “Until they reach the gizzard where the wildfowl grinds his food, these pellets do no harm, but, when reduced to powder…they become a violent poison.” The year was 1894.

Here are links to some of my other pieces on the poisoning of wildlife with lead bullets (and fishing tackle):
https://www.landcan.org/landcan-blog/Poison-Bullets/349
https://www.hcn.org/wotr/let-them-eat-copper/
https://blog.nature.org/2016/11/28/recovery-saving-common-loon-lead-fishing-tackle-poisoning-birds/

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TE WĀNANGA ARONUI
O TĀMAKI MAKAU RAU

February 3, 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 Valery Feigin. I am a Professor of Neurology, a licensed stroke physician, and Director of the National Institute for Stroke and Applied Neurosciences at Auckland University of Technology in New Zealand. I am also an Affiliate Professor of the University of Washington; Principal Collaborator of the Global Burden of Disease Study of the Institute for Health Metrics (IHME) and Evaluation of the University of Washington; Full Fellow of the Royal Society of New Zealand and American Academy of Neurology; member of the World Health Organization (WHO) Technical Advisory Group and member of the WHO on NCD-related Research and Innovation; Visiting Professor, Capital Medical University, China; and Editor-in-Chief of the international journal of Neuroepidemiology.

I strongly support SB 181, the phase-out of lead ammunition for hunting, based on clear scientific and public-health evidence. The key points are as follows:

- Lead is a cumulative toxic metal with no safe level of exposure. It causes irreversible harm to the brain and cardiovascular system and is recognised by the WHO as a major, entirely preventable environmental health risk.[1]
- According to the Global Burden of Disease 2023 Study,[2] led by the Institute for Health Metrics and Evaluation, lead exposure remains a major cause of preventable disease and death worldwide. It is responsible for an estimated 3.5 million deaths and more than 73 million healthy life years lost (disability-adjusted life years lost [DALYs]) globally, including nearly 88,000 deaths and 1.6 million DALYs in the United States.
- The link between lead exposure and stroke is well established.[3] Lead raises blood pressure, damages blood vessels, accelerates atherosclerosis, and increases stroke risk.[4]
- Lead ammunition is a preventable source of exposure. Fired bullets and shot fragment and contaminate game meat with microscopic lead particles that cannot be reliably removed.[5,6]
- Phasing out lead ammunition is a practical primary-prevention measure.[7] Safe and effective non-lead alternatives already exist.[8]
- Passing SB 181 would protect the health of Maryland residents and position Maryland as a public-health leader, setting an example for other states and countries working to pass similar evidence-based legislation.

Sincerely,

Valery L. Feigin

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Uploaded by: Wayne Pacelle
Position: FAV

February 3, 2026

The Honorable Brian J. Feldman
Chair, Senate Education, Energy, and the Environment Committee
Maryland General Assembly
Annapolis, MD 21401

The Honorable Cheryl C. Kagan
Vice Chair, Senate Education, Energy, and the Environment Committee
Maryland General Assembly
Annapolis, MD 21401

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

Dear Mr. Chairman,

On behalf of Animal Wellness Action, the Animal Wellness Foundation, and the Bethesda-based Center for a Humane Economy, I write in support of SB 181, by Senator Karen Lewis Young, to phase out the use of highly toxic and irreducible lead ammunition in sport hunting over the next three years.

With an atomic number of 82, the poisonous characteristics of lead have been understood by people throughout the world for more than 2,000 years. Its intrusion into the body has the potential to diminish the function of every organ in the body, but it is best known for its effects on the brain and cognitive function. According to one peer-reviewed study published in 2022 in the Journal Proceedings of the National Academy of Sciences, exposure to leaded gasoline lowered the IQ of about half the population of the United States, focusing on people born before 1996 — the year the U.S. banned gas containing lead.

"Within the brain, lead-induced damage. . .can lead to a variety of neurological disorders, such as brain damage, mental retardation, behavioral problems, nerve damage, and possibly Alzheimer's disease, Parkinson's disease, and schizophrenia," according to the National Institutes of Health.

Lead poisoning, or plumbism, is a serious threat to humans and animals, with lead exposure long known to be found in food, soil, water, cannabis, paint, gasoline, and a vast array of other products. With more than 100,000 hunters in Maryland, there is a volunteer pool that distributes it farther and wider in lethal amounts more than any prior form of commercial lead use – leaving a toxic lead across most of the open space in our great state. There is no scientific debate about the extraordinarily detrimental effects of lead on human health and wellness and wildlife.

Because of the extreme threat to public health, the U.S. removed lead from toys to furniture to house paint to gasoline (with that transition completed finally in 1996). With safer, affordable, and high-performance alternatives to lead ammunition available, it's time to embrace these other elements and alloys in rounds and shot that do not produce lasting threats to wildlife and human health.

In weighing the inestimable costs of neurological capacity and other irreversible effects to people who in consume lead, along with the lingering, painful deaths of countless thousands of animals, are we indeed serious about comparing those existential public and animal health consequences with the minor incremental cost of non-toxic ammunition (< $5 or $10/per year for the average hunter) that is now widely available and regularly purchased online and delivered to our doorsteps?

And when we add up the other costs that hunters bear to pursue their passion for hunting – the costs of licensing, clothing, hunting equipment, transportation, processing of game meat, and, in many cases, leasing of private lands, the incremental ammunition costs are negligible. The scales are tipped in the extreme on one side of this debate. This is not a close call when we balance the interests.

And let's remember the power of market forces. As demand for non-toxic ammunition increase – as it will if you pass SB 181, cost differences between lead and non-lead ammunition are likely to evaporate, given the wide underlying low costs of mining and manufacturing these other metals. We saw that with the ban on lead ammunition in waterfowl hunting.

And to look at it through a different lens, let's remember that California began to phase in its lead ammunition ban in 2015 and completed it in 2019. A year before the ban began to be implemented, California sold 284,759 hunting licenses; the year after the ban took effect, it sold 286,276 licenses – an increase of 1500 licenses in a state that has been slowly seeing a decline in hunting participation, as we've seen in many states.

If arsenic or polonium or mercury or plutonium were abundant metals and if they had the right weight and ballistic properties for good ammunition, would we ever think about equipping hunters with any one of those elements and allowing them to go afield with them and then allow them to consume the game they kill with it? Perhaps the core purpose of hunting is to procure game meat for the table, and no form of lead use ever had such a direct route into body and with such high volumes of lead as lead ammo used for wild-game consumption.

Over 40 states operate game meat donation programs associated with food banks, facilitating the distribution of roughly 1 million kilograms (1,100 tons) of game meat annually (Buenz et al. 2024). Add millions of others to the lead exposure list beyond the hunters using lead and sharing it with family and friends.

Remember, Maryland has a wanton waste law. The state essentially obligates a hunter not to leave a shot animal behind, and the presumption, grounded on hunting ethics and the responsible use of wildlife, is that the hunter will ready it for consumption or sharing it for consumption. In doing so, we are all but mandating that hunters and the recipients of their generosity consume lead in their diet even though we know 1) no level of lead is considered safe, and 2) it is impossible to cleanse the care of lead, which fragments on its way to the target and disperses even more widely when it hits the target.

A single round can shatter into millions of small fragments up to 18 inches away from the bullet's trajectory, especially when it strikes bone. One recent study shows that lead dust cannot even be picked up by a microscope or X-ray, never mind the human eye. High-velocity ballistic-tip lead bullets left an average of 141 fragments in a mean of 11 inches from the wound channel, according to one state fish and wildlife agency study.

In the United States, we have two federal agencies -- the U.S. Food and Drug Administration and the U.S. Department of Agriculture -- responsible for assuring food safety rules to keep us safe from dangerous substances in foods. But neither food safety agency would ever allow the levels of lead that impregnate the carcass of a deer or a dove that hunters take home for the pot or pan.

On SB 181, you'll hear from people who served as leaders or top scientists with the U.S. Fish and Wildlife Service and the National Park Service and from public health experts at Johns Hopkins University who say that that we must put an end to the use of lead ammunition in sport hunting. Even the Maryland Hunting and Trapping Guide warns hunters about the toxic effects of lead in the carcasses of the animals they shoot with lead.

In Maryland, the lead ingestion problem is worse than ever because of the growth in deer hunting. Deer kills increased by 270% from 1989-2025 (from 34,000 to 85,000 deer); even after adjusting for deer taken with archery equipment or copper bullets, it's estimated that more than 60,000 lead-contaminated gut piles litter the state, threatening wildlife and hunting families relying on game meat.

For humans or wildlife, no amount of lead in our environment is safe.

- As noted above, fragments of lead or dust are nearly impossible to remove from meat, even with professional processing. One study showed "all [deer] carcasses showed metal fragments" with risk to "ten million hunters, their families, and low-income beneficiaries of venison." Hunting writer Ted Williams noted in the outdoor publication *Hatch*, two "health departments impounded 17,000 pounds of donated, lead-impregnated venison."
- The most common form of lead exposure today is from hunting ammunition and fishing tackle. Over 500 studies are definitive in documenting risk to 134 species (including humans), according to the National Park Service. Animals consume spent lead ammunition or fishing tackle by foraging from the ground, feeding on the remains of lead-contaminated carcasses, or ingesting lead sinkers and jigs.
- A 2022 study in Science examined 1,210 bald and golden eagles across 38 states and found that nearly half of them had "bone lead concentrations above thresholds for chronic poisoning." Wildlife rehabilitation facilities take in an unyielding stream of lead-poisoned hawks, ravens, turkey vultures, and mourning doves.
- In October 2023, the U.S. Fish and Wildlife Service (USFWS) published a final rule relating to hunting on wildlife refuges and concluded that lead is an unmistakable threat to wildlife and to hunting family and friends. The rule noted that "lead ammunition, including bonded lead ammunition, fragments when it hits an animal, and this distributes tiny pieces of lead within a wide radius in the soft tissues of the harvested animal…These tiny fragments of lead are then consumed by humans eating the game meat and scavenger species eating carcasses or gut piles left behind. In this tiny, fragmented form and acted on by digestive enzymes and acids, the lead derived from ammunition can then shed particles that enter the blood stream and affect systems throughout the body, presenting both chronic and acute health risks."

Lead phase-outs work, and alternative ammo available and cost-effective.

- USFWS banned lead shot for waterfowl hunting in 1991. Lead poisoning mortality for mallards dropped 64% in short order, and studies show that we may have annually sparing more than 3 million ducks and geese from deadly lead poisoning. Maryland, long known as a waterfowl hunting mecca on the Atlantic Flyway, saw no drop-off in waterfowl hunting participation, but more ducks and geese survived, enhancing hunting success because birds were more abundant. Ten years later, research found lower blood and bone lead levels in waterfowl.
- It's time to complete work in phasing out lead. Thirty-five states regulate, to varying degrees, lead ammunition use. California phased it out completely, with beneficial effects on wildlife and no disruption in hunting participation. Six states are soon to consider petitions to ban lead ammunition formulated by Animal Wellness Action and partnering organizations.
- Nationwide, millions of hunters already use alternative forms of ammunition, that these forms of ammo are widely accepted by state and federal wildlife agencies and are widely recognized as having equal or superior killing power. In a survey by the Arizona Game and Fish Department, 93.1% of hunters said the overall performance of non-toxic ammo was equal or superior to lead; 89.1% said they would use it again.
- The Texas Parks and Wildlife Department released a peer-reviewed study in 2015 comparing lead and steel shot loads in dove hunting. The researchers found "no relationship between ammunition type and level of hunter satisfaction" and "no difference in doves bagged per shot, wounded per shot, bagged per hit, or wounded per hit among the 3 ammunition types."
- Lead alternatives such as steel, copper, and bismuth are widely available, and often cheaper than premium lead. Where lead has been banned – such as the nationwide ban on leader for waterfowl hunting – demand for alternative ammunition increased and price points declined.

All prior debates about balancing public health and safety against costs to consumers and industry for commercial uses of lead have been settled in favor of public health. Let's keep that streak going.

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

Sincerely,

Wayne Pacelle
President
Animal Wellness Action

Appendix I – Images of Lead-Poisoned Bald Eagles

Appendix II – Timeline on Lead and the Humane Experience

Time to Get the Lead Out:
A Brief History of Lead-Related Harms and Lead Abatement

c. 6500 B.C.: Lead is thought to have been discovered and first mined in Anatolia (a region of what is now Turkey).[i] Its use becomes widespread due to its density, malleability, and resistance to corrosion.

c. 200 B.C.: Greek botanist Nicander documents colic and paralysis in lead-poisoned people.[ii]

c. 100 A.D.: Greek physician Dioscorides writes that ingesting lead or inhaling its fumes makes the mind "give way."[iii]

c. 500 B.C. to 300 A.D.: Lead is used to build the Roman aqueducts. Roman engineer Vitruvius reports that "water conducted through earthen pipes is more wholesome than that through lead," which "may be verified by observing the workers in lead, who are of a pallid color."[iv]

July 18, 1610: Italian Baroque artist Caravaggio dies at the age of 38. In 2010, a forensic analysis of remains believed to be his suggests he may have been poisoned by lead in his paints.[v]

1696: In part of what is now Germany, the physician Eberhard Gockel traces a colic epidemic to wine sweetened with "sugar of lead," a mixture of vinegar and litharge (a lead oxide). As a result, the Duke of Württemberg issues an edict banning the use of lead in winemaking.[vi]

1757: Théodore Tronchin of Geneva, the personal physician to French Enlightenment philosophers Voltaire, Rousseau, and Diderot, identifies lead poisoning as the source of an outbreak of the disease known as "Poitou colic" in western France in the 1610s.[vii]

1760s: The personal physician to King George III, Sir George Baker, traces a common and sometimes fatal illness known as "Devon colic" to the consumption of cider produced with lead equipment.[viii] His findings are met with resistance by cider manufacturers, but by the late 1810s lead is removed from the cider-making process and Devon colic is virtually eradicated.

July 31, 1786: Benjamin Franklin writes a letter to a friend about the "bad Effects of Lead taken inwardly," enclosing a copy of a Massachusetts law banning lead in the production of rum.[ix]

March 26, 1827: German classical composer Ludwig van Beethoven dies at the age of 56. In 2005, studies on his hair by the U.S. Department of Energy find lead levels 100 times higher than normal, suggesting lead poisoning may have contributed to his death.[x]

1839: French physician Louis Tanquerel des Planches studies 1,200 lead poisoning cases at a Paris hospital and reports that workers exposed to lead fumes are at even greater risk than those working with lead in solid form. To describe the neuropsychiatric results of lead poisoning, he coins the term "encéphalopathie saturnine," from which "encephalopathy" is later derived.[xi]

1904: In the July edition of its monthly publication, paint manufacturer Sherwin-Williams notes that a French expert had determined lead-based paint is "poisonous in a large degree, both for the workmen and for the inhabitants..."[xii] The same year, William James Furnival publishes a treatise noting the risks of lead in the ceramics industry and containing lead-free ceramic recipes.[xiii]

1909: France, Belgium, and Austria ban the use of white lead interior paints.[xiv]

1922: The League of Nations bans white lead interior paint.[xv]

c. 1923: Leaded gasoline is introduced to prevent engine knocking and valve seat wear.

1924: In one week in late October, 80% of workers at a Standard Oil plant in New Jersey die or suffer severe neurological symptoms such as palsies and hallucinations after prolonged exposure to leaded gasoline fumes. Leaded fuel production is halted for nine months the following year, and multiple jurisdictions (including New York state, New York City, and Philadelphia) temporarily ban leaded gasoline. New York City's ban remains in place for three years.[xvi]

1971: Congress passes the Lead-Based Paint Poisoning Prevention Act, prohibiting the use of lead-based paints in federally supported residential construction or renovation projects.[xvii]

1978: Lead-based paint is effectively phased out in the U.S. by a Consumer Product Safety Commission regulation that also affects painted toys and furniture. The agency cites a need "to reduce the risk of lead poisoning in children who may ingest paint chips or peelings."[xviii]

1991: The Bush Administration's Fish and Wildlife Service finalizes a rule first announced by the Reagan Administration[xix] to prohibit the use of lead ammunition for all waterfowl hunting nationwide. The rule

follows decades of research showing a decrease in waterfowl populations due to collateral poisonings of fowl that ingest spent lead ammunition while foraging.

1992: Congress passes the Residential Lead-Based Paint Hazard Reduction Act, requiring pre-sale disclosures of possible hazards to buyers of homes that may contain lead paint.[xx]

1996: The U.S. completes a 20-year phase-out of leaded gasoline.[xxi]

2000s: Lead exposure in childhood is linked to violent crime by several peer-reviewed studies published during the decade.[xxii] One uses a regression analysis of murder rates in U.S. cities from 1985-1994 to conclude that "murder could be especially associated with more severe cases of childhood lead poisoning."[xxiii] Another finds "the reduction in childhood lead exposure in the late 1970s and early 1980s was responsible for significant declines in violent crime in the 1990s."[xxiv]

2004: The U.S. House of Representatives holds oversight hearings after the *Washington Post* runs a front-page story about lead levels in Washington, D.C., drinking water found to be at least 83 times higher than the acceptable limit.[xxv] The contamination is traced to a change in the treatment chemical used for the city's pipes.

2008: President George W. Bush signs the Consumer Product Safety Improvement Act, which incorporates the Lead-Free Toys Act, reducing the allowable amounts of lead in toys.[xxvi] The same year, the Bush EPA issues its Lead Renovation, Repair, and Painting Rule, requiring certification for renovators whose work disturbs lead paint in homes, preschools, or child care facilities built before 1978.[xxvii]

2016: President Obama and Michigan Governor Rick Snyder each declare states of emergency after aging lead pipes poison the drinking water of 100,000 people (including about 12,000 children) in Flint, Michigan, when a state-appointed official changes the city's water supply.[xxviii]

2020: The Trump Administration's EPA issues its final Lead-Free Rule to implement a series of statutes enacted since 1986 limiting the amount of lead in plumbing fittings and fixtures (valves, joints, faucets, etc.).[xxix]

2021: Algeria becomes the last country on Earth to fully remove lead from gasoline.[xxx]

2022: The Biden Administration's Fish and Wildlife Service publishes a final rule to require nontoxic lead-free ammunition be used for hunting on certain federal lands.[xxxi]

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SB 181 Lead Ammunition.pdf
Uploaded by: Cathy Wright
Position: UNF

SB 181
Hunting – Lead and Lead-Based Ammunition – Phase-Out

UNFAVORABLE

SB 181 would require the Department of Natural Resources to phase-out lead or lead-based ammunition for the hunting of all game species. I respectfully request that committee members become acquainted with the research available from HuntForTruth.org before considering this legislation.

Groups behind the proposed ban on the use of traditional ammunition have based their claims on faulty scientific studies and are probably driven by an anti-hunting and anti-gun agenda. Many of the research papers used by anti-lead ammunition proponents to support lead ammunition bans have consistently been critiqued for questionable scientific methodology. These researchers have used selectively incorporated (cherry-picked) scientific data to support their conclusions, while consistently ignoring abundant alternative sources of lead found in the environment that are likely the actual cause of lead poisoning in some wildlife.

The research and information presented by the Hunt For Truth Association through https://www.huntfortruth.org/ has raised serious questions about the purported causal link between traditional ammunition and lead poisoning and/or mortality in California condors and other wildlife:

- *In 2007, proponents of one of the nation's first lead ammunition bans, California Assembly Bill (AB) 821, claimed that California condors were being poisoned by consuming hunters' lead ammunition. They promised that if hunters stopped using lead ammunition in the condor range, the lead poisoning would cease. The California Fish and Game Commission did not accept these claims. So the proponents leap-frogged the Commission's scientific review process and instead went straight to the California Legislature where they had pre-disposed politicians willing to pass the law without giving it the scrutiny that the proposal would have received had it gone through the usual process with the Fish and Game Commission. The Legislature passed AB 821, banning the use of lead ammunition in the Condor range.*

- *Despite the California Department of Fish and Wildlife's records showing a 99% compliance rate by hunters with the AB 821 lead ammunition ban, a comparison of pre-ban and post-ban blood-lead data from condors in the "condor range" indicates that the incidence of lead exposure and poisoning in condors remains static, or has increased slightly! This failure of the lead ammunition ban has compounded the problem and left multiple condors dead. The failure of California's lead ammunition ban to decrease lead poisoning proves that alternative sources of lead in the environment are causing lead poisoning in condors.*

- *As activist researchers twist and manipulate the scientific process to incriminate lead ammunition as the sole source of lead poisoning in hunting areas, they unconscionably and inexplicably ignore the presence of numerous non-ammunition lead sources that are common in the environment. For example, lead-based paint, gasoline, pesticides and micro-trash, which include hardware such as galvanized screws, nuts, bolts, washers and the like have all been shown to be available and attractive to condors. These items have appeared not only in their nests, but also in their digestive tract and the digestive tracts of their fledglings. However, activists and researchers advocating for lead bans consistently overlook such alternative sources.*

The failure of California's lead ammunition ban to successfully address lead poisoning in condors strongly indicates that alternative sources of lead, other than hunters' ammunition, is the primary cause of lead exposure, toxicity and mortality in condors and other affected species. There is a growing body of science that examines

the alleged nexus between lead ammunition and lead poisoning in wildlife and critically evaluates the alternative sources of lead in the environment. HuntForTruth.org has compiled reference materials to present the real facts and truth regarding the debate on the use of lead ammunition in hunting:

- https://www.huntfortruth.org/papersstudies-
- https://www.huntfortruth.org/reportsarticles
- https://www.huntfortruth.org/reference-materials

Please carefully consider this research before supporting SB 181. These anti-hunting and anti-gun groups distort the facts regarding the use of lead ammunition, undermine public interests, threaten hunters' and recreational shooters' rights, suppress important conservationist efforts, and, ironically, threaten the fragile California condor population and other natural wildlife resources that they purport to champion.

I respectfully request an UNFAVORABLE report on SB 181.

Thank you for your consideration.

Sincerely,
Cathy S. Wright, self
North Beach, MD
919.360.9484
cathywrightnra@gmail.com

Allegany-Garrett Sportsmen's Assn

Uploaded by: Joe Schroyer

Position: UNF

ALLEGANY-GARRETT
SPORTSMEN'S ASSN.

"I give my pledge as an American to save and faithfully defend from waste, the natural resources of my country, its air, soil and minerals, its forests, waters and wildlife"

P.O. Box 625 * Midlothian, Maryland 21543

Honorable and distinguished committee members,

I am writing to respectfully express my opposition to Senate Bill 0181, titled "Hunting – Lead and Lead-Based Ammunition Phase-out."

While I appreciate the intent to protect Maryland's environment and wildlife, I have serious concerns about advancing this legislation without a comprehensive, Maryland-specific study demonstrating the necessity and anticipated impact of a statewide lead ammunition ban. To date, it does not appear that a study has been completed that evaluates local wildlife populations, hunting practices, or environmental conditions unique to Maryland. Decisions of this magnitude should be grounded in data collected within our own state rather than extrapolated from conditions elsewhere that may not accurately reflect Maryland's realities.

Additionally, there is a significant practical concern regarding the current lack of widely available and affordable non-lead ammunition alternatives. Many hunters already face limited access to ammunition, and non-lead options are often scarce, prohibitively expensive, or unavailable in common calibers used by Maryland hunters. Implementing a phase-out before the market can reliably meet demand risks effectively preventing lawful participation in hunting activities.

Hunting is an important tradition in Maryland and plays a vital role in wildlife management and conservation funding. Policies that restrict access to essential equipment without sufficient alternatives in place may unintentionally undermine these efforts and disproportionately impact rural residents, lower-income hunters, and small businesses.

For these reasons, I urge you to oppose Senate Bill 0181 or, at a minimum, delay its consideration until a thorough, Maryland-based study is completed and non-lead ammunition alternatives are consistently available and affordable statewide. A measured, data-driven approach would better serve both conservation goals and the citizens who responsibly enjoy Maryland's hunting heritage.

Thank you for your time and consideration of my concerns.

Respectfully,

Joe L. Schroyer
Legislative Secretary
Allegany-Garrett Sportsmen's Association

SB0181_Testimony_2A_Maryland.pdf
Uploaded by: John Josselyn
Position: UNF

2A *Maryland*
2A@2AMaryland.org

Senate Bill 0181
Hunting – Lead and Lead-Based Ammunition – Phase-Out
UNFAVORABLE

Senate Bill 181 seeks to prohibit the use of lead ammunition for hunting after July 1, 2029. What is does not consider is the long-term impact it will have on Maryland's hunters who play an integral part in controlling Maryland growing wildlife population.

The provisions in this bill will make it difficult and expensive for many deer hunters in Maryland to continue to hunt deer. The net result will be fewer Maryland citizens hunting deer in Maryland. Hunters are an integral part of the Department of Natural Resources' conservation plan.

Attachment 1 demonstrates that while the number of deer taken from 1975 to 2024 has dramatically increased, the number of deer hunters and hunting licenses has declined from 194,122 in 1975 to 110,182 in 2024. This is a nearly tenfold increase in deer taken and a 44% decrease in the number of active hunters. Consequently, the Department of Nature Resources has increased the "bag limit" in an effort to maintain the deer population at the appropriate levels based upon the available habitat. The need to control the deer population to reduce vehicular traffic accidents and resulting human injury and property damage is also a concern. Imposing restrictions which will further reduce the number of hunters is not a wise course of action.

The exception provided in §10-408 (E)(2) "THE DEPARTMENT SHALL AUTHORIZE THE USE OF LEAD 17 AMMUNITION FOR MUZZLELOADERS, HANDGUNS, RIFLES, AND SHOTGUNS IF 18 NONLEAD AMMUNITION IS NOT COMMERCIALLY AVAILABLE FOR THE SPECIFIC (underline added for emphasis) WEAPON" will create an enforcement nightmare for Maryland Department of Natural Resources Police.

Ammunition is not manufactured for a "Specific" firearm (we don't use the term weapon). Just because a firearm is chambered for a certain cartridge does not mean every firearm chambered for that cartridge is compatible with the type and weight of the projectile.

The Natural Resources Police will have a daunting task, enforcing the provisions of this bill because they lack the resources necessary to justify an enforcement action.

There are also technical issues involved. Unless the rifling in the barrel is designed with the proper rate to twist (expressed in the number of inches required for 1 revolution of the projectile), the projectile will likely “key hole” which means it is tumbling in flight and thus inaccurate and unlikely to perform properly upon impact on a game animal.

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To avoid keyholing, it's important to choose the right ammunition for your firearm, considering factors such as the bullet's weight, diameter, and the firearm's barrel twist rate. It's also essential to maintain the firearm properly to prevent issues like muzzle damage.

Source: trueshotammo.com/

The provisions of §10-408 (a)(3) (II) are meaningless. The federal government does not "approve" ammunition for hunting. It does publish a list of materials it considers to be non-toxic.

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We strongly recommend an unfavorable report on Senate Bill 181.

Respectfully,

John H. Josselyn
2A Maryland

Brian Eyler, Associate Director
Wildlife Heritage Service
Maryland Department of Natural Resources

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1977	10,869	97,416	193,855
1978	12,182	95,340	181,008
1979	13,647	103,811	171,914
1980	13,724	103,272	169,971
1981	14,495	109,605	169,405
1982	15,120	105,381	172,738
1983	16,586	104,434	173,991
1984	18,176	100,550	170,997
1985	17,395	103,058	170,521
1986	23,711	109,433	174,088
1987	26,766	112,832	174,391
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1995	59,227	90,137	138,098
1996	59,183	89,774	129,896
1997	62,856	86,585	127,804
1998	71,479	82,765	128,667
1999	75,526	77,368	128,614
2000	82,426	80,357	126,914
2001	82,205	84,086	128,993
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2009	98,281	64,244	120,761
2010	95,883	56,919	118,588
2011	95,372	59,979	119,025
2012	85,129	55,398	123,919
2013	93,162	60,753	116,754
2014	83,855	61,041	114,105
2015	81,095	65,541	121,111
2016	82,360	59,010	118,181
2017	83,382	55,368	118,551
2018	73,948	54,486	117,319
2019	76,010	54,866	111,963
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Image Details

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Camas National Wildlife Refuge, Idaho – elk hunting
Cape May National Wildlife Refuge, New Jersey – deer hunting
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Uploaded by: Kaleigh Leager
Position: UNF

CONGRESSIONAL
SPORTSMEN'S
FOUNDATION

To: **Hon. Brian J. Feldman**
Chair, Senate Education, Energy, and the Environment Committee
2 West Miller Senate Office Building
Annapolis, MD 21401

Re: **Senate Bill 181 – Hunting – Nonlead Ammunition**

Position: **Oppose**

Date: **2/3/2026**

Chairman Feldman, Vice Chair Kagan, and Honorable Members of the Maryland Senate Education, Energy, and the Environment Committee,

As the Assistant Manager, Mid-Atlantic States for the Congressional Sportsmen's Foundation (CSF), and as a generational Eastern Shore Native and a resident hunting and fishing license holder, I respectfully urge you to oppose Senate Bill 181 (SB 181) – Hunting – Nonlead Ammunition.

Founded in 1989, the Congressional Sportsmen's Foundation (CSF) is the informed authority across outdoor issues and serves as the primary conduit for influencing public policy. Working with the Congressional Sportsmen's Caucus (CSC), the Governors Sportsmen's Caucus (GSC), and the National Assembly of Sportsmen's Caucuses (NASC), CSF gives a voice to hunters, anglers, recreational shooters, and trappers on Capitol Hill and throughout state capitals advocating on vital outdoor issues that are the backbone of our nation's conservation legacy.

SB 181 will require the Department of Natural Resources (DNR) to mandate the use of nonlead ammunition for all game species on or before July 1, 2029. The long-term effects of a statutory ban on lead hunting ammunition may be extremely detrimental to conservation funding, which is directly driven by hunters. Moreover, there are proven-successful incentive-based programs run by other states to encourage hunters to make the voluntary switch to lead alternatives that avoid these unintended, but foreseeable consequences. CSF strongly suggests that Maryland look to develop and implement a similar program that could be managed by the DNR which would allow them to address the social concerns that have been raised around lead hunting ammunition, without compromising their funding stream.

When it comes to lead ammunition bans, the negative impact to hunter participation, and ultimately conservation funding, is of concern to CSF. As of 2025, there were 113,137 certified paid hunting license holders in Maryland that generated $6,301,731 in hunting license sales. As a direct result of

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Federal Tax ID • 52-1686163

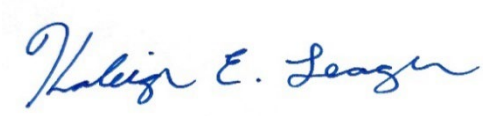
this hunting participation, Maryland was then able to access $8,323,089 in USFWS Wildlife Restoration dollars (also generated by sportsmen and women through excise taxes on outdoor gear, including ammunition), totaling more than $14.6M in conservation dollars from hunting alone. Hunters are boots-on-the-ground conservationists that continue to provide the most efficient and cost-effective method of managing wildlife populations.

In the current market, non-lead ammunition is not sufficiently available to accommodate a mass transition, and that ammo which is available in the market is more costly, which may prevent more cost-sensitive hunters from participating in a time-honored tradition that is a pillar of the state's culture. Additionally, like many states in the region, Maryland is continuing to see a steady increase in human-wildlife conflicts, particularly with White-tailed deer populations. The nonlead ammunition provision within SB 181 will likely eliminate opportunity for hunters to take game, as they may not be able to hunt if they cannot access non-lead ammo. The unintended, but foreseeable consequence of this proposed lead ammunition ban will ultimately result in the legislature creating a new barrier for hunters to keep wildlife populations such as White-tailed deer within acceptable biological and social carrying capacities.

Creating this participation barrier harms more than just Maryland's sportsmen and women and the wildlife that will no longer be properly managed through hunting; it also has significant negative financial impact on both the DNR and the state's economy. As noted above, Maryland's DNR receives significant funding through the unique "user pays – public benefits" structure of the ASCF. Sportsmen and women support wildlife management through purchasing sporting licenses, as well as a manufacturer-level excise tax that is levied on outdoor goods such as firearms and ammunition (Pittman-Robertson).

In closing, CSF encourages the legislature and the Department of Natural Resources to work together to implement incentive-based programs for the use of non-lead hunting ammunition by hunters if there exists demonstrable scientific evidence that such an effort is needed to address population-level impacts of lead exposure in specific wildlife species. CSF further recommends that such a program be developed and tested prior to any further consideration of a statutory ban on lead ammunition with its unintended and consequential diminishment of conservation funding. For these reasons, we respectfully request an unfavorable report on SB 181.

Sincerely,



Kaleigh E. Leager
Assistant Manager, Mid-Atlantic States | Congressional Sportsmen's Foundation
110 North Carolina Ave, SE | Washington, DC 20003
kleager@congressionalsportsmen.org | 202-543-6850 X 20

MSI Testimony on SB 181.pdf
Uploaded by: Mark Pennak
Position: UNF

MARYLAND SHALL ISSUE®
SELF DEFENSE IS A CIVIL RIGHT

February 3, 2026

WRITTEN TESTIMONY OF MARK W. PENNAK, PRESIDENT, MSI, IN OPPOSITION TO SB 181

I am the President of Maryland Shall Issue ("MSI"). Maryland Shall Issue is a Section 501(c)(4), all-volunteer, non-partisan organization dedicated to the preservation and advancement of gun owners' rights in Maryland. It seeks to educate the community about the right of self-protection, the safe handling of firearms, and the responsibility that goes with carrying a firearm in public. I am also an attorney and an active member of the Bar of Maryland and of the Bar of the District of Columbia. I recently retired from the United States Department of Justice, where I practiced law for 33 years in the Courts of Appeals of the United States and in the Supreme Court of the United States. I am an expert in Maryland firearms law, federal firearms law and the law of self-defense. I am also a Maryland State Police certified handgun instructor for the Maryland Wear and Carry Permit and the Maryland Handgun Qualification License ("HQL") and a certified NRA instructor in rifle, pistol, personal protection in the home, personal protection outside the home and in muzzle loader. I appear today as President of MSI in OPPOSITION TO SB 181.

The Bill:

This Bill amends MD Code, Natural Resources, § 10.408, to provide in new subsection (e) that1) EXCEPT AS PROVIDED IN PARAGRAPH (2) OF THIS SUBSECTION, ON OR BEFORE JULY 1, 2029, THE DEPARTMENT SHALL REQUIRE THE USE OF NONLEAD AMMUNITION FOR THE HUNTING OF ALL GAME SPECIES.
(2) THE DEPARTMENT SHALL AUTHORIZE THE USE OF LEAD AMMUNITION FOR MUZZLELOADERS, HANDGUNS, RIFLES, AND SHOTGUNS IF NONLEAD AMMUNITION IS NOT COMMERCIALLY AVAILABLE FOR THE SPECIFIC WEAPON. .

Discussion:

This Bill is justified as a means of reducing lead in the environment. But the total elimination of lead ammunition used in hunting game is vast overkill. The federal ban on the use of lead shot for hunting waterfowl is very limited. It was phased-in starting with the 1987-88 hunting season. The ban became nationwide in 1991. **Nontoxic shot regulations apply only to waterfowl, defined as the family Anatidae (ducks, geese, [including brant], and swans) and coots**. Nontoxic shot is federally defined as any shot type that does not cause sickness and death **when ingested by**

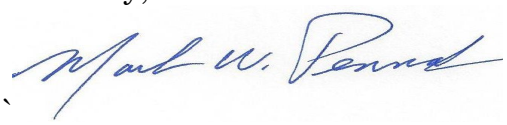
migratory birds. https://www.fws.gov/story/2022-04/nontoxic-shot-regulations-hunting-waterfowl-and-coots-us. As is apparent, that ban was imposed by federal law because these particular migratory waterfowl **"ingest"** the lead shot that was previously used to hunt these migratory birds. Nothing in this Bill would alter these federal requirements.

That purpose cannot be rationally applied to any other game species. Deer, for example, do not eat bullets. Nor do turkeys or upland game or other species of migratory birds. Unlike lead shot, the amount of lead introduced into the environment by hunters shooting bullets at game is microscopically small. See *Martinez v. Amazon.com Services LLC,* 491 Md. 38, 61 (2025) (applying the "*de minimis* rule" to Maryland's wage laws). In contrast, the effect on hunters will be significant.

Non-lead ammunition for hunting rifles is also both hard to find and typically much more expensive than traditional hunting ammunition that uses lead cores covered by gliding metal, such as copper alloys. That expense is not limited to ammunition used in hunting. Different bullets have different ballistics. Thus, hunters sight in their firearms and practice with the same ammunition they will use while hunting. Doing so promotes accuracy and the humane harvesting of game. Imposing this Bill's requirements on all hunting in Maryland will make hunting more expensive and make Maryland less desirable for out-of-State hunters to no point. That result conflicts with efforts of the Department of Natural Resources to promote hunting in Maryland. https://dnr.maryland.gov/wildlife/pages/hunt_trap/mentored-hunt-program.aspx. The. Bill will further harm the economies of rural parts of Maryland that rely on hunting.

For all the foregoing reasons, we urge an unfavorable report on this Bill.

Sincerely,



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Mark W. Pennak
President, Maryland Shall Issue, Inc.
mpennak@marylandshallissue.org

SB0181 Lead Ammunition Phase Out.pdf
Uploaded by: Nicholas Andraka
Position: UNF

SB0181 Lead Ammunition Phase Out

OPPOSE SB0181

Nicholas Andraka
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Owings, MD 20736
nickandraka@verizon.net
410-693-3207

Committee Members,

I have been a Maryland hunter for decades; I am a member of Deer management with 2 counties, and a DNR trained Maryland Hunter Education instructor.

Key Take Aways

Impossible to enact/enforce:

Adding the section that allows The DNR to "Authorize the use of lead ammo if Non-lead ammo is not commercially available for a caliber/weapon" will not work as they think it will. This is just another example of the crafters of these legislative attempts that have no concept of Firearms, ballistics or hunting.

Education and outreach has a high rate voluntary use of non-lead ammunition, While mandates shuts many hunters out:

Arizona and other states have partnered with nationwide conservation groups and have had a high rate of hunters using copper ammunition where it works, up to 80 percent.

SB0181 contains many fallacies and unproven guesses.

"Peer reviewed studies" are mentioned multiple times,, with no mention of the actual studies,, And often mentioning a study subject that has nothing to do with lead hunting projectiles. There is not a single study that shows lead poisoning from eating deer meat.

Bald Eagles in the Chesapeake region have gone from ~60 breeding pairs in 1970s to over 3000 pairs in 2020, in fact they are at or above carrying capacity in many areas.

Maryland's own DNR released a report on July 3rd 2025

"A Soaring Success: Maryland's Bald Eagle Population Recovery"

Without a single mention of lead in the entire report.

https://news.maryland.gov/dnr/2025/07/03/a-soaring-success-marylands-bald-eagle-population-recovery/

You can eliminate all perceived lead contamination from deer hunting by having the hunters remove/bury the gut pile when they remove the entire deer from the woods. This is a No Cost solution to the cash strapped state.

DETAILS

Education

Conservation is most effective when it's led by those who know the land, the wildlife, and the Firearms best—hunters, conservationists, Wildlife biologists.
The last 2 years I have requested that MD enact a policy of education and outreach to teach hunters about non lead alternatives, where they work, and where they do not.
There are national groups of hunters specializing in the promotion of Lead-free ammunition for hunting. They are achieving up to an 80% rate of hunters voluntarily switching to lead-free bullets. And this is in the infancy of these programs and the copper bullet market.
And yet Maryland legislators lead by national anti-hunting groups continue to ignore these options and push blanket bans that would cut many hunters out.
These are programs that would cost the State zero dollars,, and yet the sponsors of these MD bills ignore these options.

https://www.leadfreepartnership.org/about

https://www.fws.gov/press-release/2025-09/voluntary-lead-free-ammunition-incentive-program-2025-2026-hunting-season

https://www.kjzz.org/kjzz-news/2024-10-27/arizona-hunters-aid-california-condor-recovery-efforts-through-lead-free-ammunition-program

Enforcement and mandates

SB0181 includes the section*: "THE DEPARTMENT SHALL AUTHORIZE THE USE OF LEAD AMMUNITION FOR MUZZLELOADERS, HANDGUNS, RIFLES, AND SHOTGUNS IF NONLEAD AMMUNITION IS NOT COMMERCIALLY AVAILABLE FOR THE SPECIFIC WEAPON."*
This is both not enforceable, and not practical. Just because there is ONE non-lead cartridge available for a caliber rifle that does not guarantee that it will function in that rifle. A perfect example is the 44mag rifle. Up to the 1990s 44mag rifles typ had a 1:38 twist barrel, in the mid 1990s the manufactures switched to a faster 1:20 twist to stabilize longer bullets. The newer 44 mag rifles may stabilize the longer copper bullets, the older

1:38 twist will not. It typically takes a hunter trying multiple brands of ammunition to find one that works in their particular rifle. How Is DNR going to be able to regulate what ammo will function properly in whose rifle?? ,, They are not.

Vagueness and assumptions in SB0181

500 peer-reviewed studies about lead exposure, but no references to the actual studies, or what form of lead (Inorganic? Organic? Metallic?)
What do individuals working at an indoor range have to do with lead hunting projectiles?
The Shattering lead bullets – what brand/model bullet, what velocity, what range?
Deer meat consumed by humans – again, link the study,, it does not exist.
Bald Eagles are being poisoned by Maryland's refusal to clean up the lead pollution from industrial and military sites.

Bald Eagles

As noted above, The Bald Eagle population in the Chesapeake region has gone from ~60 breeding pairs in 1970s to over 3000 pair in 2020.

(The following are clips from a "Bay Journal article and WTOP Melissa Howell interview)
According to Bryan Watts, founder and director of the Center for Conservation Biology at Virginia's College of William and Mary, who has authored dozens of academic papers on bald eagles over a more than 30-year career:

"Eagles have shown themselves to be more adaptable than we expected," But now, he says, they seem to be running out of room in the Bay region. The most notable consequence has been the growing population of so-called "floaters," breeding-age eagles of either sex with no territory of their own. The crowding has become so intense that researchers now believe that the floater population is six to eight times greater than the breeding population. Breeding males that do have nests and mates find themselves at near-constant threat of losing them to intruders."These things can be bloody fights to the death". "It's a jungle out there for these birds." "Food supply for eagles hasn't been able to keep up and infighting has become common, the professor said. Watts added that the population began to reach its limits". "The young were starving in the nest,"

Lead is present in many aspects of the Chesapeake Bay, It is in the sediment base, it is in the fish the Eagles eat, A major source is the paint in the bridges over/around the bay, often where Eagles perch/nest, It comes from runoff from active industrial sites and military installations that are prevalent in the bay region.
Eagles exposure to lead is not primarily from hunters.
https://pubmed.ncbi.nlm.nih.gov/30698866/

Summary:

SB0181 is not enforceable and if it was, it would cut many hunters off from hunting with their weapons, as a wide range of viable copper Ammo is not yet available for all weapons.

There are no Reports of lead poisoning from eating deer meat shot with lead projectiles, and there are no studies linking lead in eagles to deer hunter's bullets.

There is a National organization that helps States with "Education and incentive" based transition to lead free hunting ammunition – "North American Lead Free Partnership", This is a route the state could take that would cost zero dollars and achieve a 80% compliance in the first few years, giving the market time to mature and provide product to the hunters. https://www.leadfreepartnership.org/about

For these reasons I OPPOSE SB0181

Nicholas Andraka

SB0181_kasuba_UNF.pdf
Uploaded by: Thomas Kasuba
Position: UNF

Please find **UNFAVORABLE S**B0181
Hunting – Lead and Lead–Based Ammunition – Phase–Out

While SB0181 is framed as an environmental and public health measure, experience from other states—most notably California—demonstrates that this approach carries **serious unintended consequences for hunters, conservation funding, and state revenues**.

California's statewide lead ammunition ban, fully implemented in 2019 [1], resulted in **higher ammunition costs, reduced availability, and declining hunter participation**. Non-lead ammunition often costs two to three times more than traditional lead alternatives and is unavailable or impractical for many common or legacy firearms. Faced with these barriers, many hunters reduced participation or left the activity entirely. This decline had predictable downstream effects:

- **Reduced hunting license sales**
- **Lower ammunition and equipment purchases**
- **Lost state and local tax revenue tied to hunting activity**

More concerning, reduced participation and ammunition sales threaten **federal Wildlife Restoration funding** under the Pittman-Robertson Act. These funds—derived from excise taxes on firearms and ammunition—support wildlife habitat management, hunter education, and conservation programs. When lawful ammunition sales and participation decline, states receive **less federal conservation funding**. California historically received tens of millions of dollars annually through this program; policies that discourage hunters directly undermine the conservation model itself. [2]

SB0181 risks repeating these mistakes in Maryland. By significantly increasing costs and restricting ammunition choice, the bill would:

- Disproportionately harm low-income hunters and families who rely on hunting for food
- Reduce hunting participation and youth engagement
- Shrink state license revenue
- Decrease Maryland's share of federal Wildlife Restoration funds

Ironically, a bill promoted as protecting wildlife may ultimately **reduce the funding that sustains wildlife conservation**. [3]

SB0181 relies on generalized claims rather than Maryland-specific evidence of population-level harm, and it imposes sweeping mandates that risk long-term damage to Maryland's conservation framework. For these reasons, I respectfully urge the Committee to issue an **unfavorable (UFAV) report on Senate Bill 181**.

[1] https://www.shootingnewsweekly.com/ammunition/lead-ammo-has-been-banned-so-why-are-agenda-driven-researchers-still-blaming-hunters-and-traditional-ammo-for-struggling-california-condors/

[2] https://www.gohunt.com/browse/journal/the-life/the-economic-impact-of-cas-lead-ammo-ban

[3] https://www.guns.com/news/2024/03/25/gun-ammo-sales-translate-to-989-million-for-state-conservation-efforts

Thomas J. Kasuba (registered Democrat)
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Ellicott City, MD 21043-3332
tomkasubamd@netscape.net

MDFB - Oppose - SB181 Hunting – Lead and Lead–Base
Uploaded by: Tyler Hough
Position: UNF

Maryland Farm Bureau

3358 Davidsonville Road | Davidsonville, MD 21035
410-922-3426 | www.mdfarmbureau.com

February 3, 2026

To: Senate Education, Energy and the Environment Committee

From: Maryland Farm Bureau, Inc.

RE: **Opposition of SB181 Hunting – Lead and Lead–Based Ammunition – Phase–Out**

On behalf of the over 7,000 members of the Maryland Farm Bureau, I submit written testimony in opposition to HB181 Hunting – Lead and Lead–Based Ammunition – Phase–Out. This proposed legislation mandates a statewide phase-out of lead ammunition for all hunting activities beginning in 2027 and culminating in a complete ban by July 1, 2029. The bill requires hunters to transition to nonlead ammunition for all game species, with limited exceptions only when nonlead products are deemed not commercially available for a specific weapon.

Maryland Farm Bureau's grassroots adopted policy is clear that the organization opposes any restriction on the use of lead ammunition for all non-waterfowl hunting, making this bill directly contrary to member-driven positions. For tens of thousands of Maryland hunters, including farmers who rely on hunting to manage crop-damaging wildlife, lead ammunition remains a lawful, effective, affordable, and widely used tool, and SB 181 imposes a mandate that Farm Bureau members have explicitly rejected.

Farmers across Maryland rely heavily on hunting to control deer, turkey, and other wildlife populations that cause significant damage to crops, and Farm Bureau policy emphasizes the need for more tools, not fewer, to effectively manage overpopulated species and nuisance wildlife. By limiting ammunition options, SB 181 risks reduced hunter participation due to higher ammunition costs and supply constraints, lower harvest success, and greater crop losses, all of which run counter to the State's need to address severe wildlife-related agricultural damage. Maryland already faces costly and dangerous deer overpopulation challenges, and this bill could unintentionally worsen them at a time when proactive population control is essential for both agriculture and roadway safety.

Maryland Farm Bureau also opposes the creation of state-specific mandates that put Maryland farmers, hunters, and rural communities at a competitive disadvantage compared to neighboring states. Many policies throughout the Farm Bureau book warn against Maryland adopting unique, burdensome standards not required elsewhere, especially when they increase costs or regulatory burdens without providing meaningful benefits. A statewide ammunition ban would impose higher costs on Maryland hunters than those in surrounding states, require ammunition types that are often less available, and risk reducing out-of-state hunter visitation and the rural economic activity that comes with it.

Maryland Farm Bureau

3358 Davidsonville Road | Davidsonville, MD 21035
410-922-3426 | www.mdfarmbureau.com

Farm Bureau strongly supports hunting participation and opposes policies that discourage responsible hunters, and many sections of the organization's policy promote expanded deer hunting opportunities, Sunday hunting, and improved wildlife-damage control. By forcing a statewide shift in ammunition types, SB 181 creates another barrier to hunting participation at a time when the hunter population is aging and shrinking, which undermines wildlife management, food donation programs, and the agricultural community's ability to mitigate crop damage. Maryland Farm Bureau agrees that hunters should be educated about responsible field practices and environmental stewardship, but mandatory ammunition bans are not the correct policy approach. The organization has consistently supported voluntary, incentive-based programs over mandates, and other states have successfully reduced wildlife exposure to lead ammunition through collaborative, not compulsory, approaches.

For these reasons, Maryland Farm Bureau respectfully urges the Committee to issue an unfavorable report on SB 181. The bill conflicts directly with adopted Farm Bureau policy, undermines critical wildlife-management and crop-damage prevention efforts, imposes unnecessary financial and practical burdens on Maryland hunters, and creates Maryland-only disadvantages without demonstrating sufficient scientific or economic justification. Thank you for the opportunity to share our position.

Tyler Hough
Director of Government Relations
Please contact Tyler Hough, though@marylandfb.org, with any questions

FINAL SB181 Hunting-Lead and Lead-Based Ammunition

Uploaded by: Jordan Baucum Colbert

Position: INFO

THE MARYLAND-NATIONAL CAPITAL
Park and Planning Commission

Bill: SB181 Hunting-Lead and Lead-Based Ammunition-Phase Out

Position: Informational **Date:** February 3, 2026

Contact: Debra Borden, General Counsel

Jordan Baucum Colbert, Senior Government Affairs Analyst

Dear Chair J. Sandy Bartlett,

The Maryland-National Capital Park and Planning Commission ("M-NCPPC" or the "Commission") to provide information on this bill.

What this Bill Does. This bill requires the Department of Natural Resources to require, through a certain phasing–out process, the use of nonlead ammunition for the hunting of all game species on or before a certain date under certain circumstances. The Commission foresees potential impacts on our programs, and most notably sharp-shaped programs. The bill permits DNR to decide when lead-based ammunition is "unavailable"- but no assurances.

Challenging Impact on Sharp Shooting Operations. M-NCPPC manages extensive parklands in Montgomery and Prince George's Counties. Our enabling legislation grants the Commission's Park Police departments supervisory concurrent police jurisdiction over Commission properties and programs. Toward that end, for many years our elected officials and other partners in county government have strongly supported our deer management programs in direct response to the county residents expressed concerns about the danger of deer-vehicle collisions in both counties.

The Commission's Montgomery Park Police range master has researched available alternative ammunition and spoke with several ammunition sales representatives about lead-free replacements for sharp shooting purposes. He was only able to find one manufactured round in Winchester (38 gr zinc core) that was comparable to what we currently use, and this ammunition is rarely manufactured if at all. As it stands, finding comparable lead-free ammunition may be a challenge, which can have an impact on the Commission's ability to maintain current deer management operations.

Suggested Considerations

10-408 (E) (1) EXCEPT AS PROVIDED IN PARAGRAPH (2) OF THIS SUBSECTION, ON OR BEFORE JULY 1, 2029, THE DEPARTMENT SHALL REQUIRE THE USE OF NONLEAD AMMUNITION FOR THE HUNTING OF ALL GAME SPECIES.

- The sponsor should consider waiving or phasing out the date regarding available ammunition.

10-408 (E)(2) THE DEPARTMENT SHALL AUTHORIZE THE USE OF LEAD AMMUNITION FOR MUZZLELOADERS, HANDGUNS, RIFLES, AND SHOTGUNS IF NONLEAD AMMUNITION IS NOT COMMERCIALLY AVAILABLE FOR THE SPECIFIC WEAPON

- The sponsor should consider defining "commercially available" using the terms "readily available or similarly available."