

March 4, 2026

Delegate Marc Korman
House Environment and Transportation Committee
250 Taylor House Office Building
Annapolis, Maryland 21401

RE: **HB1067 – FAVORABLE** – Hunting - Lead and Lead-Based Ammunition -
Phase Out

Dear Chairman Korman and Members of the Committee:

The Green & Healthy Homes Initiative (GHHI) writes in support of House Bill 1067. This bill would remedy a current fault in Maryland law by requiring the Department of Natural Resources (DNR) to phase out use of nonlead ammunition for hunting of all game species by July 1, 2029, provided that there are commercially available alternative ammunitions.

GHHI has advocated for tenants' rights in Maryland and throughout the country for over three decades. GHHI supported the enactment of the groundbreaking Maryland Reduction of Lead Risk in Housing Law in 1994 and has worked to help reduce childhood lead poisoning in our state since then by 99%. Today, GHHI provides tenants' rights assistance, rental property owner compliance assistance, and legal representation of tenants statewide in Maryland for the repair of lead hazards and other hazardous conditions in tenant-occupied homes. 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 serve or have served as a member of the EPA Children's Health Protection Advisory Committee, the CDC Lead Exposure and Prevention Advisory Committee, and the Maryland Green and Healthy Homes Task force among others.

House Bill 1067 focusses on an often-overlooked issue that requires attention – lead in ammunition as a source of lead exposure. Studies have shown that anyone that consumes hunted game meat can be exposed to lead from hunters using leaded ammunition. For example, a 2009 study out of the University of North Dakota School of Medicine by Cornatzer et. al. that tested a random sample of 100 ground venison packages from the Community Action Food Centers of North Dakota donated by the Hunters For The Hungry Association found **metal fragments in 59 of the 100 packages**. Five of the packages were biopsied to obtain metal fragments for testing, and all five tested positive for lead.¹ We attached the study with highlights for your reference.

¹ William E. Cornatzer, Edward F. Fogarty & Eric W. Cornatzer, *Qualitative and Quantitative Detection of Lead Bullet Fragments in Random Venison Packages Donated to the Community Action Food Centers of North Dakota, 2007*, in *Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans* 154–56 (R.T. Watson et al. eds., The Peregrine Fund 2009) (DOI: 10.4080/ilsa.2009.0111).

Hunters themselves can also be exposed to lead vapors and residue through using lead ammunition in their firearms, and leaded ammunition can 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. For example, a 2006 study by Hunt et. al. of the diet of California Condors have shown that there are small particles of lead in the tissues of deer shot with high velocity rifle bullets.² 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.³ This is because most donated hunted game meat 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,⁴ 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.⁵ Lead poisoning contributes to severe issues such as significant learning disabilities, loss of IQ, speech development problems, attention deficit disorder, poor school performance and violent, aggressive behavior that heavily burdens low-income communities. Lead poisoning especially harms children by contributing to cycles of learning disabilities, poor school performance, steep school dropout rates, and juvenile delinquency that prevent low-income children in Maryland from being able to thrive and which burdens the State through increased special education and criminal justice costs. Children poisoned by lead are also seven times more likely to drop out of school, six times more likely to be involved in the juvenile justice system, and can suffer upwards of \$2 million in lost lifetime earnings.

² W. Grainger Hunt, William Burnham, Chris N. Parish, Kurt K. Burnham, Brian Mutch & J. Lindsay Oaks, *Bullet Fragments in Deer Remains: Implications for Lead Exposure in Avian Scavengers*, 34 *Wildlife Soc'y Bull.* 167 (2006), [https://doi.org/10.2193/0091-7648\(2006\)34\[167:BFIDRI\]2.0.CO;2](https://doi.org/10.2193/0091-7648(2006)34[167:BFIDRI]2.0.CO;2).

³ 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>.

⁴ 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>.

⁵ Centers for Disease Control & Prevention, *About Childhood Lead Poisoning Prevention* (Aug. 21, 2025), <https://www.cdc.gov/lead-prevention/about/index.html>.

House Bill 1067 Written Testimony
March 4, 2026
Page Three

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.

For these reasons, we request a Favorable Report on HB1067.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ruth Ann Norton', with a long horizontal flourish extending to the right.

Ruth Ann Norton
President and CEO

QUALITATIVE AND QUANTITATIVE DETECTION OF LEAD BULLET FRAGMENTS IN RANDOM VENISON PACKAGES DONATED TO THE COMMUNITY ACTION FOOD CENTERS OF NORTH DAKOTA, 2007

WILLIAM E. CORNATZER, EDWARD F. FOGARTY, AND ERIC W. CORNATZER

*University of North Dakota School of Medicine, Southwest Campus,
Bismarck, ND 58501, USA. E-mail: doccornatzer@qwestoffice.net*

ABSTRACT.—We studied randomly selected ground venison packages donated to the Community Action Food Centers of North Dakota by the Hunters For The Hungry Association. These packages were studied by high resolution computerized tomography imaging and x-ray fluoroscopy for qualitative detection of metal fragments. Quantitative measurements of lead levels in both randomly selected and fluoroscopic image guided site-specific subsamples from packages were performed. This study documented a health risk from lead exposure to humans consuming venison. *Received 30 July 2008, accepted 30 October 2008.*

CORNATZER, W. E., E. F. FOGARTY, AND E. W. CORNATZER. 2009. Qualitative and quantitative detection of lead bullet fragments in random venison packages donated to the Community Action Food Centers of North Dakota, 2007. *In* R. T. Watson, M. Fuller, M. Pokras, and W. G. Hunt (Eds.). *Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans*. The Peregrine Fund, Boise, Idaho, USA. DOI 10.4080/ilsa.2009.0111

Key words: Computed tomography imaging, health risk, humans, lead, venison.

STUDIES OF LEAD TOXICITY in the diet of California Condors (*Gymnogyps californianus*) have shown there are small particles of lead in the tissues of deer shot with high velocity rifle bullets (Hunt et al. 2006). Reports from Canada and Greenland have shown a statistically significant correlation between elevated serum lead levels in people and the consumption of wild game killed with lead bullets (Bjerregaard et al. 2004, Dewailly et al. 2001, Tsuji et al. 2008). Preliminary research presented at The Peregrine Fund's Board of Directors meeting in May of 2007 (Parish pers. comm.) showed small metal fragments in processed venison. Based on these data, we conjecture that there might be lead fragments from rifle bullets in venison consumed by the general population.

METHODS AND MATERIALS

One hundred, one-pound ground venison packages were randomly selected from the Community Action Food Pantry program in North Dakota. The venison had been donated by the Hunters for the Hungry Program in the fall of 2007. The sample of 100 was selected from a total of 15,250 donated one-pound packages. High definition CT scan and fluoroscopy were performed on the sample for qualitative detection of metal fragments. In conjunction with the North Dakota Health Department, fifteen of the 100 randomly selected packages were punch biopsied in a blind fashion yielding 4-g tissue biopsies; this gave 15 random sub-samples from within the randomly selected packages. These specimens were sent to the University of Iowa Hygienic Laboratory for flame absorption atomic spectrometry to detect and quantify the mass of lead in sub-samples. An additional five samples ob-

tained from among the 100 CT screened packages using fluoroscopic image-guided retrieval of metal-containing venison were also submitted for analysis. These image-guided biopsies yielded a maximum of four grams of combined ground venison and metal (Figure 1).

Osirix[®] DICOM[®] workstation software running on Mac OS X[®] was used for visual analysis of CT image data for Hounsfield unit assessments of suspected lead fragments. Objects having Hounsfield unit measurements over 1500 were considered suspicious for metal fragments. Color look-up tables from Osirix[®] were used for color encoding of CT data.

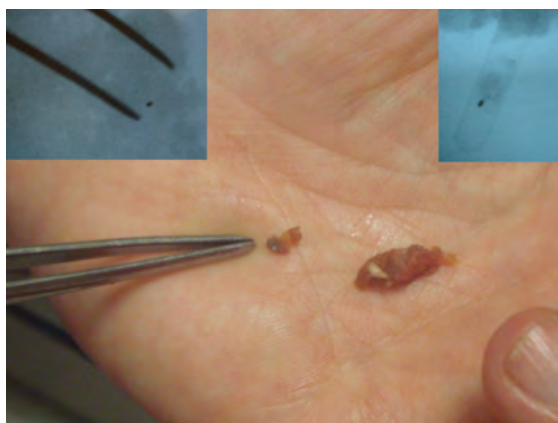


Figure 1. Fluoroscopic image-guided fragment sampling. The fluoroscopic image in upper left shows forceps approaching a metal fragment within a package of ground venison. The upper right image shows a retrieved metal fragment embedded within a small volume of ground venison contained in a glass test tube. Photograph shows forceps pointing to a metal fragment embedded in ground venison.

RESULTS

Qualitative analysis of the randomly selected ground venison samples showed 59 packages out of the 100 had one or more visible metal fragments on high definition computed tomography (Figure 2). Quantitative analysis with flame absorption atomic spectrometry of the fifteen random blind biopsies showed one sample with 120 ppm lead (1 ppm = 1 milligram/kilogram). All five fluoroscopic image-guided biopsies showed elevated lead concentrations varying from 4,200 to 55,000 ppm lead dry weight (Table 1).

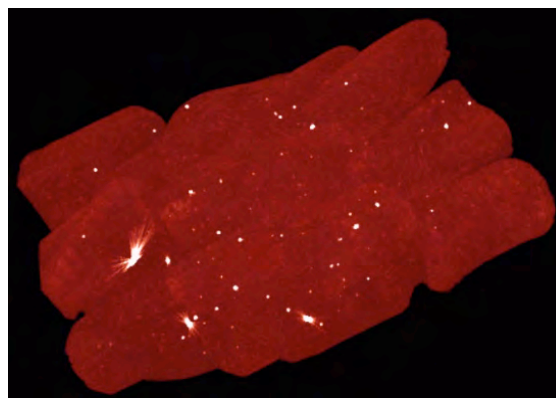


Figure 2. High definition computed tomography (CT) image of ca. 20 one-pound venison packages. Bright spots are metal fragments embedded in the tissue.

Table 1. Lead concentrations of five venison samples retrieved by fluoroscopically guided biopsy.

Sample	Lead Concentration (ppm or mg/kg dry weight)
1	52000
2	34000
3	4200
4	55000
5	9700

DISCUSSION

Our study has shown that 59% of 100 randomly selected packages of ground venison donated to the Community Action Food Pantry in North Dakota in the fall of 2007 were contaminated with lead fragments. Venison is a common dietary staple for many families throughout the United States. Lead has been shown to be a major health threat and in children there is no safe minimum threshold of lead exposure. Sources of dietary lead vary from country to country. In the United States, paint chips, dust, jewelry, toys, lead-based gasoline, and lead plumbing (Markowitz 2007) have been identified as sources of lead exposure in the past. Our study reveals lead-based ammunition residues in venison as a source of lead exposure among the USA population that is largely unrecognized as a threat to human health, other than among subsistence hunters of the circumpolar north including Alaska and Canada (Tsuji et al. 2008, Verbrugge et al. 2009, this volume).

ACKNOWLEDGMENTS

We thank the assistance of Terry Dwelle, M.D. and Sandy Washik of the North Dakota State Health Department, Steven Pickard, M.D., Field Officer of the CDC in the State of North Dakota, and Craig Lambrecht, M.D., Bismarck, North Dakota.

LITERATURE CITED

- BJERREGAARD, P., P. JOHANSEN, G. MULVAD, H. PEDERSEN, AND J. C. HANSEN. 2004. Environment lead sources in human diet in Greenland. *Environmental Health Perspective* 112 (15):1496-1498.
- DEWAILLY, E. P., S. AYOTT, S. BRUNEAU, G. LEBEL, P. LEVALLOS, AND J. P. WEBER. 2001. Exposure of the Inuit population of Nunivik (Arctic Quebec) to lead and mercury. *Archives of Environmental Health* 56:350-357.
- HUNT, W. G., W. BURNHAM, C. N. PARISH, K. BURNHAM, B. MUTCH, AND J. L. OAKS. 2006. Bullet fragments in deer remains: implications for lead exposure in scavengers. *Wildlife Society Bulletin* 34:168-171.
- MARKOWITZ, M. 2007. Lead Poisoning. Pages 2913-2918 in R. M. Kliegman, E. Behrman, H. B. Jenson, and B. F. Stanton (Eds.). *Nelson Textbook of Pediatrics*, 18th ed. W. B. Saunders Co., Philadelphia, Pennsylvania, USA.
- TSUJI, L. J. S., B. C. WAINMAN, I. D. MARTIN, C. SUTHERLAND, J.-P. WEBER, P. DUMAS, AND E. NIEBOER. 2008. The identification of lead ammunition as a source of lead exposure in First Nations: The use of lead isotope ratios. *Science of the Total Environment* 393:291-298.
- VERBRUGGE, L. A., S. G. WENZEL, J. E. BERNER, AND A. C. MATZ. 2009. Human exposure to lead from ammunition in the circumpolar north. In R. T. Watson, M. Fuller, M. Pokras, and W. G. Hunt, (Eds.). *Ingestion of lead from spent ammunition: Implications for wildlife and humans*. The Peregrine Fund, Boise, Idaho, USA. DOI 10.4080/ilsa.2009.0110