Lead-Free Wildlife

THE HUMANE SOCIETY OF THE UNITED STATES

H 460: Protect Wildlife, Humans and the Environment from Toxic Lead Contamination

Lead is a potent neurotoxicant that is unsafe for humans, wildlife and the environment. Lead ammunition needlessly exposes humans and other animals to this life-threatening poison.

The Centers for Disease Control states there is no safe level of lead exposure.[i] Lead has been removed from various paints, gasoline, pipes, and a host of other items to protect human health and our environment.

Lead-based ammunition is one of the greatest sources of lead discharged to our lands and water.[ii] It poses significant health risks to animals, including humans, and can have serious implications for the environment.[iii]

Threat to wildlife: More than 130 species—including humans—have been documented to be exposed to or killed by ingesting lead shot, bullet fragments, or prey contaminated with spent lead ammunition.[iv]

Animals can fall victim to spent lead ammunition through two avenues:

- **Primary poisoning**, in which an animal ingests spent ammunition directly from the environment, usually when foraging for food on the ground; and
- **Secondary poisoning**, in which an animal consumes wounded or dead prey or scavenges gut piles contaminated with lead ammunition left behind by hunters.

Both avenues are often lethal to wildlife. For those who survive, poisoned animals often experience long-term negative effects that make them more susceptible to predation and dangers, such as car collisions. Fortunately, lead poisoning from spent ammunition is preventable with proper management and regulation.

Lead ammunition is toxic: A single ingested shotgun pellet or bullet fragment is sufficient to cause brain damage in birds, resulting in inhibition of critical neuromuscular, auditory, and visual responses.[v] Lead poisoning can induce lethargy, blindness, paralysis of lungs and intestinal tract, various organ failure, seizure, and death in wild animals.

Vermont is on the right track: In response to high loon mortality rates from lead poisoning[vi], Vermont passed legislation that prohibits the sale and use lead fishing sinkers weighing one-half ounce or less. The law became effective in January 2007. This simple switch to non-toxic material for sinkers translates to fewer wildlife, including our state's fragile loon population, being exposed to this dangerous neurotoxicant.

Photo credit: Daniel D'Auria, Southern New Jersey, USA, via Wikimedia Commons

The toxic effects of lead ammunition are poisoning Vermont's wildlife.

Last May, the VINS Center for Wild Bird Rehabilitation received a Canada Goose with neurological symptoms, dehydration, and fever. The Goose was also very weak, paralyzed, and had fluid running from its beak.

Treatment for lead poisoning was performed, but the bird's condition was too critical and its health declined rapidly. It had to be euthanized the day of admission.

The VINS Center also received two Canada Geese in 2013 with lead poisoning. One survived but the other was euthanized.

<u>These cases are not unique and Vermont's wildlife is at risk.</u>

According to a 2014 USFWS study, radiographed gut piles from 25 deer shot with lead ammunition showed that 36 percent of the gut piles contained 1-107 fragments of lead.[xv]

Switching to non-lead ammunition is an easy way to protect Vermont's wildlife.

Threat to human health: Lead is a potent neurotoxicant, for which no safe level of exposure has been identified.[vii] Individuals who consume meat from animals killed with lead ammunition are at risk for lead exposure.[viii] Several studies using x-ray imaging have shown that lead ammunition is highly fragmentable and nearly impossible to completely remove from meat.[ix]

Photo credit: National Park Service 2012

X-ray of a mule deer neck shows more than 450 lead bullet fragments.

Effective alternatives are available: Alternative ammunition is widely available and effective. For shot, the U.S. Fish & Wildlife Service (USFWS) has approved a dozen nontoxic shot types. Steel, copper, and bismuth are among the most common non-lead materials and are readily available at major outfitters. With the increase in supply, the price of non-lead shot has fallen since lead shot was federally banned for waterfowl hunting in 1991. Nonlead bullets are also available and ammunition manufacturers are already increasing production in response to California's 2013 landmark decision to become the first state to require non-lead ammunition for the take of any wildlife statewide.[x] Indeed, a survey conducted by the Arizona Game and Fish Department revealed that nearly 80% of hunters rated the performance of non-toxic ammunition to be better than or equivalent to its lead counterpart.[xi]

Ammunition regulations are effective: The mandated use of non-toxic ammunition has proven to be an extremely effective management approach to lead poisoning. In 1991, the USFWS required the use of non-lead shot for the hunting of waterfowl nationwide. Within just six years, researchers found significant improvements in the blood and bone lead levels in a variety of waterfowl species.[xii] The use of nontoxic shot reduced the mortality of Mallards by 64% and generated a national saving of approximately 1.4 million ducks in a single fall flight.[xiii]

Restrictions are commonplace: Thirty-four states have increased restrictions on lead ammunition beyond the 1991 federal waterfowl regulation.[xiv] As a result of its success, the National Park Service announced in 2009 that they would begin eliminating the use of lead ammunition, and the U.S. Army has invested resources and intelligence toward creating—and switching to non-toxic ammunition, citing environmental and animal welfare concerns.[xv] Most recently, California enacted legislation in 2013 that will phase in a non-lead ammunition requirement for all hunting statewide.

Science is clear: Scientists resoundingly agree that spent lead ammunition poses a significant risk to human health and wildlife. More than 500 scientific papers published since 1898 have cited the many dangers caused by lead exposure from spent ammunition. And in 2013, a strong scientific consensus was released in support of eliminating the introduction of lead ammunition into the environment, signed by thirty leading national and international experts.[xvi] Toxicologists, veterinarians, pathologists, physicians, epidemiologists, biologists, and other experts have advised against the use of lead in ammunition due to its toxic effects.

> We're taking a known toxic material [lead] and putting it into our environment at the rate of tens of thousands of tons per year...No species is immune to its toxic effects—including humans. Like we have done for so many other products, it just makes sense to remove lead from ammunition."
>
> **Dr. Mark A. Pokras, veterinarian and former director of the Wildlife Clinic and Center for Conservation Medicine at the Cummings School of Veterinary Medicine, Tufts University**

References

[i] Centers for Disease Control and Prevention. 2013. Lead Factsheet. National Biomonitoring Program. http://www.cdc.gov/biomonitoring/Lead_FactSheet.html.

[ii] D. Bellinger, A. Bradman, J. Burger, T. Cade, D. Cory-Slechta, D. Doak, et al. 2013. Health Risks from Lead-Based Ammunition in the Environment – A Consensus Statement of Scientists. Microbiology and Environmental Toxicology, UC Santa Cruz. http://escholarship.org/uc/item/6dq3h64x.

[iii] *Id.*

[iv] M.A. Tranel & R.O. Kimmel. 2009. Impacts of lead ammunition on wildlife, the environment, and human health – a literature review and implications for Minnesota. In *Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans.* R.G. Watson, et al., eds. Boise, Idaho: The Peregrine Fund.

[v] M.P. Dieter & M.T. Hohman, *∂*-Aminolevulinic Acid Dehydratase Enzyme Activity in Blood, Brain, and Liver of Lead-Dosed Ducks, 19 Environ. Res.127–135 (1979).

[vi] Let's Get the Lead Out, 2014. Vermont Department of Fish and Wildlife. http://www.vtfishandwildlife.com/library/Factsheets/Fishing/Get_the_lead_out/Get_the_Lead_Out_Brochure.pdf

[vii] Centers for Disease Control and Prevention. 2013. Lead Factsheet. National Biomonitoring Program. http://www.cdc.gov/biomonitoring/Lead_FactSheet.html.

[viii] D.J. Pain, et al. Potential hazard to human health from exposure to fragments of lead bullets and shot in the tissues of game animals. *PLoS ONE* 2010; 5: e10315.

[ix] U.S. National Park Service. 2011. Lead Bullet Risks for Humans & Wildlife. http://www.nps.gov/pinn/naturescience/leadinfo.html.

[x] AmmoLand. 2013. Liberty Ammunition Increases Planned Production. http://www.ammoland.com/2013/12/liberty-ammunition-increases-planned-production/#axzz3BXzjG2dX.

[xi] D.J. Case & Associates. 2006. Non-lead Ammunition Program Hunter Survey. In *Final report to the Arizona Game & Fish Department*. Washington, D.C.: Association of Fish and Wildlife Agencies.

[xii] V.G. Thomas. 2009. The policy and legislative dimensions of nontoxic shot and bullet use in North America.

[xiii] W.L. Anderson, S.P. Havera & B.W. Zercher. 2000. Ingestion of lead and nontoxic shotgun pellets by ducks in the Mississippi flyway. Journal of Wildlife Management 64:848-857.

[xiv] V.G. Thomas. 2014. Availability and Use of Nonlead Rifle Cartridges and Nontoxic Shot for Hunting in California, with Reference to Regulations used in Various Jurisdictions & Survey of California Ammunition Retailers to Assess Availability of Nonlead Ammunition. Prepared for California Fish & Game Commission's implementation of AB 711.

[xv] D. Mikko. 1999. "U.S. Military Green Bullet". *Association of Firearm and Tool Mark Examiners Journal* 31.4, Environment News Service. 19 Mar. 2009. http://www.ens-newswire.com/ens/mar2009/2009-03-16-093.html.

[xvi] D. Bellinger, A. Bradman, J. Burger, T. Cade, D. Cory-Slechta, D. Doak, et al. 2013. Health Risks from Lead-Based Ammunition in the Environment – A Consensus Statement of Scientists. Microbiology and Environmental Toxicology, UC Santa Cruz. http://escholarship.org/uc/item/6dq3h64x.

[xv] U.S. Fish & Wildlife Service. 2014. Lead exposure in bald eagles in the Upper Midwest. http://www.fws.gov/midwest/InsideR3/March14Story14.htm

[xvi] U.S. Fish & Wildlife Service. S. Mierzykowski, C. Todd, M. Pokras, R. Oliveira. 2013. Lead and mercury levels in livers of bald eagles recovered in New England. USFWS. Spec. Prog. Rep. FY13-MEFO-2-EC. Maine Field Office. Orono, ME. 26 pp.