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EPA Shoots Down Lead Shot Regulation: Lead Ammo's Unreasonable Risk to Human Health and the Environment, and the Special Situation of the California Condor

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Cover Page Footnote

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EPA SHOOTS DOWN LEAD SHOT REGULATION: LEAD AMMO'S UNREASONABLE RISK TO HUMAN HEALTH AND THE ENVIRONMENT, AND THE SPECIAL SITUATION OF THE CALIFORNIA CONDOR

I. INTRODUCTION

Despite the widely known toxic nature of lead, the metal was traditionally utilized in various consumer products, with few restrictions on its use.¹ Today, lead's deadly qualities are finally being acknowledged with the gradual implementation of more rigid regulations.² However, some uses of lead, including lead in ammunition, are not regulated enough to effectively avert the unnecessary exposure of millions of humans and animals to lead each day.³ The United States Environmental Protection Agency (EPA) recognizes lead exposure as one of the most severe environmental health risks humans and wildlife encounter today.⁴

¹ See Annette Prüss-Ustün et al., *Chapter 19, Lead Exposure*, in 2 COMPARATIVE QUANTIFICATION OF HEALTH RISKS 1496-1497 (Majid Ezzati et al. eds., 2004), available at www.who.int/publications/cra/chapters/volume2/1495-1542.pdf.

² See William Kovarik, *Ethyl-Leaded Gasoline: How a Classic Occupational Disease Became an International Public Health Disaster*, 11 INT'L J. OCCUPATIONAL & ENVTL. HEALTH 384, 385 (2005) (discussing leaded gasoline regulation in the United States).

³ See generally *Lead in the Environment Causes Violent Crime*, Reports University of Pittsburgh Researcher, SCIENCE DAILY, Feb. 23, 2005, www.sciencedaily.com/releases/2005/02/050223145108.htm. For the purposes of this Article, "ammunition" and "ammo" generally refer to shot, pellets, and bullets.

⁴ See generally *Lead*, ENVTL. PROT. AGENCY, www.epa.gov/lead/ (last updated Mar. 6, 2012); see also ENTER. DIRECTORATE-GEN. EUROPEAN COMM'N, ADVANTAGES AND DRAWBACKS OF RESTRICTING THE MARKETING AND USE OF LEAD IN AMMUNITION, FISHING SINKERS AND CANDLE WICKS 9 (2004), available at ec.europa.eu/enterprise/sectors/chemicals/files/studies/ehn_lead_final_report_en.pdf; Clifford L. Rechtschaffen, *The Lead Poisoning Challenge: An Approach for California and Other States*, 21 HARV. ENVTL. L. REV. 387, 390-91 (1997) (noting that the Centers for Disease Control and Prevention regards lead poisoning as a serious health hazard, especially in young children); Complaint for Declaratory and Injunctive Relief, Ctr. for

Lead poisoning can occur at low levels of exposure, resulting in a wide range of serious and even lethal repercussions, especially for children and wildlife.⁵

The regulation of leaded products in the United States has been a long, onerous, and difficult process.⁶ It took over fifty years and the deaths of numerous factory workers for leaded gasoline to be regulated.⁷ Currently, after much struggle, most uses are scrupulously monitored or prohibited.⁸ However, despite the inherently harmful effects of lead ammunition and the availability of comparable alternatives, the production and use of lead ammunition has yet to be fully regulated.⁹ Lead ammunition is still extensively utilized for hunting and recreational shooting.¹⁰

Studies have determined that there is a correlation between consumption of wild game killed with lead ammunition, or shooting guns with lead ammunition, and elevated lead levels in the individual's blood.¹¹ Therefore, whether consuming game meat killed with lead ammunition, or simply shooting recreationally with the toxic ammo, humans can be exposed to the deadly metal.¹²

Like children, wildlife is highly susceptible to lead poisoning even

Biological Diversity v. Jackson, — F. Supp. 2d —, 2011 WL 4498805 (D.D.C. Sept. 29, 2011) (No. 10-2007 (EGS)), 2010 WL 4820688.

⁵ E.g., Robert Johns, *EPA Fails to Address Lead Poisoning of Wildlife, Then Announces Lead Poisoning Prevention Week*, TARGETED NEWS SERVICE, Oct. 27, 2010, www.abcbirds.org/newsandreports/releases/101027.html; Anna Gorman, *Unsafe Levels of Lead Still Found in California Youths*, L.A. TIMES, Feb. 19, 2012, available at articles.latimes.com/2012/feb/19/local/la-me-lead-poisoning-20120219.

⁶ See, e.g., Jamie Lincoln Kitman, *The Secret History of Lead*, THE NATION, Mar. 20, 2000, available at www.thenation.com/article/secret-history-lead?page=full (discussing the history of leaded gasoline regulation in the United States).

⁷ Kovarik, *supra* note 2, at 384; Kitman, *supra* note 6.

⁸ See DYMPHNA POVEY, GLOBAL LEAD ADVICE AND SUPPORT SERVICE, LEAD POISONING: THE TRUTH BEHIND CONSUMER PRODUCTS AND LEGISLATION (2010), available at www.lead.org.au/Lead_Poisoning_The_Truth_Behind_Consumer_Products_and_Legislation.pdf; see also DEP'T OF ECOLOGY, STATE OF WASH., FEDERAL LEAD REGULATIONS AND GUIDELINES, available at www.ecy.wa.gov/programs/hwtr/demodebris/pages2/leadregsfed.html (last visited Mar. 12, 2012).

⁹ Vernon G. Thomas, *Achieving Uniform Regulation of Environmental Lead Exposure and Poisoning in Wildlife and Humans*, 30 THE ENVIRONMENTALIST 206, 206-08 (2010), available at www.springerlink.com/content/k2k1760717x76321/.

¹⁰ RICHARD T. WATSON & DOMINIQUE AVERY, THE PEREGRINE FUND, HUNTERS AND ANGLERS AT RISK OF LEAD EXPOSURE IN THE UNITED STATES 170 (2009), available at www.peregrinefund.org/subsites/conference-lead/PDF/0117%20Watson.pdf (noting that lead is the favored metal in hunting ammunition).

¹¹ Thomas, *supra* note 9.

¹² Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21 (citing H.R. Rep. No. 1341, 94th Cong., 2d Sess. 32 (1976)).

at low levels of exposure.¹³ Over seventy-five species of birds suffer from lead poisoning either as a result of direct ingestion of lead fragments, or through the consumption of animals killed with lead ammunition.¹⁴

One of the animals most vulnerable to lead poisoning is the endangered California condor (condor).¹⁵ Once entirely extinct in the wild, the condor is flying freely again.¹⁶ However, lead mortality resulting from ingestion of lead ammunition is wreaking havoc on reintroduced wild populations.¹⁷ Consequently, lead ammunition is frustrating efforts to maintain viable condor populations in their natural habitat, as lead remains pervasive in the condor's environment.¹⁸

The Toxic Substances Control Act (TSCA) grants the EPA authority to regulate toxic materials that pose an unreasonable risk to human health or the environment.¹⁹ The law requires the Administrator to conduct a cost-benefit analysis to make an initial unreasonableness determination.²⁰ Next, the EPA must demonstrate that other federal laws do not adequately address the risk, and it must make a preliminary determination that an EPA regulation would not contradict current federal laws.²¹

The EPA has established that lead poses an unreasonable risk to human health and the environment in a variety of uses, including plumbing fixtures, paint, and fishing tackle.²² Additionally, the EPA has determined that current federal laws such as the Endangered Species Act (ESA) and the Migratory Bird Treaty Act (MBTA) would not conflict

¹³ Joshua Miller, *Hunters, Conservationists Square Off over Lead Ammunition and Tackle*, FOXNEWS.COM, Aug. 27, 2010, www.foxnews.com/politics/2010/08/27/conservationists-target-lead-ammunition-fishing-tackle/.

¹⁴ Jeffrey R. Walters et al., *Status of the California Condor (Gymnogyps Californianus) and Efforts to Achieve its Recovery*, 127 THE AUK 972, 974 (2010), available at www.fs.fed.us/global/iitf/pubs/ja_iitf_2010_walters001.pdf; Miller, *supra* note 13.

¹⁵ Walters et al., *supra* note 14, at 974-76.

¹⁶ *Id.* at 969.

¹⁷ See Press Release, Ctr. for Biological Diversity, *Lawsuit Filed over EPA Refusal to Address Lead Poisoning of Wildlife* (Nov. 23, 2010), available at www.biologicaldiversity.org/news/press_releases/2010/lead-11-23-2010.html.

¹⁸ See CTR. FOR BIOLOGICAL DIVERSITY ET AL., *PETITION TO THE ENVIRONMENTAL PROTECTION AGENCY TO BAN LEAD SHOT, BULLETS, AND FISHING SINKERS UNDER THE TOXIC SUBSTANCES CONTROL ACT 20-28* (2010), available at www.epa.gov/oppt/chemtest/pubs/Petition%20Attachment.pdf.

¹⁹ 15 U.S.C.A. § 2605(a) (Westlaw 2012).

²⁰ See *id.* § 2605 (c)(1) (Westlaw 2012).

²¹ See *id.* § 2608 (Westlaw 2012).

²² ROBERT L. GLICKSMAN, DAVID L. MARKELL, WILLIAM W. BUZBEE, DANIEL R. MANDELKER & A. DAN TARLOCK, *ENVIRONMENTAL PROTECTION LAW AND POLICY* (Robert L. Glicksman et al. eds., 5th ed. 2007).

with a national ban of lead in fishing sinkers, nor have these laws adequately addressed the problem.²³ However, the EPA persistently maintains that it lacks authority to regulate lead ammunition.²⁴ The EPA and National Rifle Association (NRA), a leading critic of the regulation of lead ammunition, both claim that 15 U.S.C. § 2602(2)(B)(v), which excludes ammunition in its completed form²⁵ from TSCA regulation, preempts the EPA's authority to regulate lead.²⁶

This Comment argues that the EPA has the authority to ban lead ammunition nationwide under TSCA, because lead ammunition poses an unreasonable risk to human health and the environment that is not adequately addressed by other laws. Further, the EPA retains the authority to ban lead ammunition nationwide under TSCA because a national ban would not be preempted by other federal laws.²⁷ Part II of this Comment explores the problematic history of lead regulation as well as the devastating effects of lead poisoning on humans. Part III begins with an in-depth explanation of the harmful effects of lead poisoning resulting from the ingestion of lead ammunition on wildlife, principally the condor. Directly following this examination of the detrimental effects posed by lead is a detailed cost-benefit analysis of a national lead ammunition ban, which demonstrates the vast benefits and marginal costs resulting from a national ban. Next, this Part exemplifies the pitfalls of current federal laws in addressing the lead poisoning problem and illustrates how current laws could effectively work in coordination with a national lead ban. Finally, this Part examines the EPA's proposal to ban lead fishing sinkers nationwide after the EPA made a preliminary determination that lead posed an unreasonable risk to human health and the environment. This Comment closes with the *Center for Biological Diversity v. Jackson* as a case study demonstrating a recent failed attempt by an environmental group to prompt the EPA to use its authority under TSCA to ban lead ammo nationwide. This Part concludes by urging the

²³ 59 Fed. Reg. 11,122, 11,137-38 (Mar. 9, 1994).

²⁴ Complaint for Declaratory and Injunctive Relief, *supra* note 4.

²⁵ "Ammunition in its completed form" refers to shells and cartridges, rather than separate parts of ammunition before the materials are combined to form completed ammunition.

²⁶ 15 U.S.C.A. § 2602(2)(B)(v) (Westlaw 2012). This section of TSCA specifies that "any article the sale of which is subject to the tax imposed by section 4181 of the Internal Revenue Code of 1986" is not a "chemical substance" subject to TSCA regulation. *Id.* Section 4181 of the Internal Revenue Code subjects firearms, shells, and cartridges to an 11% tax. 26 U.S.C.A. § 4181 (Westlaw 2012); Rev. Rul. 68-463, 1968-2 C.B. 507; Letter from Chris W. Cox, Nat'l Rifle Ass'n, to Lisa P. Jackson, Env'tl. Prot. Agency (Aug. 20, 2010), available at www.nraila.org/media/PDFs/EPACBDpetition.pdf; see also Complaint for Declaratory and Injunctive Relief, *supra* note 4.

²⁷ See 15 U.S.C.A. § 2608 (Westlaw 2012).

EPA to exercise its authority, as provided under the TSCA, to preclude the excessive unnecessary risk posed by lead ammunition through the implementation of a national lead ammunition ban.

II. THE HISTORY OF LEAD REGULATION

A. THE TOXICITY OF LEAD AND IMPLICATIONS FOR HUMAN HEALTH

Lead was among the first metals discovered by humans and quickly became one of the most popular because of its malleability and resistance to corrosion.²⁸ While lead has no known biological benefits, it has been used extensively in the manufacture and production of various products.²⁹ Lead's resistance to decomposition makes it extremely dangerous, as it remains in soil, water, and bodies of humans and wildlife for decades.³⁰ After a human is exposed to lead, the lead atoms bond with the sulfur atom of cysteine, modifying protein formation.³¹ This process results in the malfunction of enzymes, ultimately causing a wide range of adverse effects on human health, including blindness, cardiovascular disease, brain damage, convulsions, kidney disease, cancer, and death.³² Recent studies have also linked elevated lead exposure to violent and criminal behavior.³³ When lead finds its way into the brain it affects neural mechanisms that regulate impulses, leading to antisocial and criminal behavior.³⁴

Lead is stored in an individual's bones and releases into the blood when the bones discharge calcium.³⁵ Thus, people who appear to have low levels of lead in their bloodstreams often have considerable amounts

²⁸ *Lead in History*, CORROSION DOCTORS, corrosion-doctors.org/Elements-Toxic/Lead-history.htm (last visited Mar. 12, 2012).

²⁹ *Lead Shot and Sinkers, Weighty Implications for Fish and Wildlife Health*, USGS NEWSROOM (July 11, 2008), www.usgs.gov/newsroom/article.asp?ID=1972&from=rss_home.

³⁰ Kitman, *supra* note 6.

³¹ Josef Eisinger, *Lead's Assault on the Body*, 105 NAT. HIST. 52 (July 1996).

³² Kitman, *supra* note 6. Historically, ancient Romans used lead extensively, even using it as a sweetening additive in food and wine, only to later realize it was resulting in a spectrum of illnesses and diseases. Some attribute the fall of the Roman Empire to widespread lead poisoning. See *Lead in History*, *supra* note 28.

³³ Rechtschaffen, *supra* note 4, at 391.

³⁴ A University of Pittsburgh School of Medicine study found elevated average levels of lead in bones of 190 convicted delinquents and revealed that between 18% and 38% of delinquency in one Pennsylvania county could be attributed to lead. SCIENCEDAILY, *supra* note 3.

³⁵ Liz Szabo, *Where Does Lead Go? Into Bones*, USA TODAY, Oct. 28, 2007, available at www.usatoday.com/news/health/2007-10-28-lead-bone_N.htm.

remaining within their skeletons.³⁶ Events that occasion an elevated release of calcium in the human body, such as pregnancy, breast-feeding, menopause, and old age, result in increased levels of lead in the blood.³⁷ A blood-lead level (BLL), represented in micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dL}$), measures the levels of lead within an individual's blood stream.³⁸ The Centers for Disease Control and Prevention (CDC) has found that BLLs of 25 $\mu\text{g}/\text{dL}$ and above are dangerous levels for adults, while a mere 10 $\mu\text{g}/\text{dL}$ and above result in adverse effects for children six and under.³⁹ However, no level of lead is known to be completely safe; recent studies indicate that concentrations lower than 1 $\mu\text{g}/\text{dL}$ can cause adverse health effects.⁴⁰ Further, BLL tests fail to consider the additional potentially dangerous amounts of lead stored in skeletal systems.⁴¹

Children are especially vulnerable to lead poisoning at low levels of lead exposure and can exhibit a broad range of adverse effects following exposure.⁴² Various neurological injuries have been reported in children from marginal lead exposure, such as lowered intelligence levels, learning disabilities, impaired hearing, diminished motor skills, reduced attention spans, hyperactivity, behavioral problems, lessened communication skills, and hindrance to growth.⁴³ Lead is capable of seeping into the wombs and breast milk of pregnant mothers, thereby exposing developing fetuses when their brains are most susceptible.⁴⁴ The National Institute of Environmental Health Sciences established that levels of lead in a mother's blood and that of her infant's are typically analogous.⁴⁵ About 1.6% of children within the United States in 2005 were found to have dangerous BLLs as established by the CDC, down from 88% in the 1970s.⁴⁶ However, this may not account for lead stored

³⁶ See SCIENCE DAILY, *supra* note 3.

³⁷ Szabo, *supra* note 35.

³⁸ DEP'T OF ECOLOGY, STATE OF WASH., BLOOD LEAD TEST, www.ecy.wa.gov/programs/hwtr/demodebris/pages2/lbloodtest.html (last visited Mar. 12, 2012).

³⁹ *See id.*

⁴⁰ *See* Prüss-Üstün et al., *supra* note 1, at 1496-97.

⁴¹ SCIENCE DAILY, *supra* note 3; *see* Szabo, *supra* note 35. To fully assess the amount of lead in an individual's body, an X-ray fluorescence test of the bones may be conducted. SCIENCE DAILY, *supra* note 3.

⁴² Johns, *supra* note 5.

⁴³ Kitman, *supra* note 6; Szabo, *supra* note 35.

⁴⁴ Szabo, *supra* note 35.

⁴⁵ Ann M. Kennedy, *Lead in Breast Milk*, N.Y. TIMES, Sep. 15, 1998, at F.7, available at www.nytimes.com/1998/09/15/science/health-watch-lead-in-breast-milk.html.

⁴⁶ Szabo, *supra* note 35.

within children's skeletons.⁴⁷ Dr. Needleman, a professor at the University of Pittsburgh School of Medicine, and the first to discover cognitive effects of lead on children, announced, "The government needs to do more to eliminate sources of lead in the environment."⁴⁸ Since there is no known safe BLL, even small reductions in child exposure to lead will likely lead to reductions in adverse health effects.⁴⁹

B. CURRENT FEDERAL LEAD REGULATIONS

Today in the United States, the government is working to minimize lead use through the promulgation of stringent nationwide regulations and prohibitions.⁵⁰ The federal government currently regulates uses of lead in paint, plumbing, consumer products, and automotive gasoline.⁵¹ In 1986, the EPA amended the Safe Water Drinking Act regulations to prohibit lead in pipes, solder, and flux of public water systems.⁵² The EPA later adopted the Lead and Copper Rule, which set an action level for lead in water at 0.015 milligrams per liter (mg/L) and called for the elimination of leaded plumbing through the replacement of existing lead pipes.⁵³

In 1992, Congress enacted the Residential Lead-Based Paint Hazard Reduction Act after finding that the 1971 Lead Paint Poisoning Prevention Act failed to effectively reduce the magnitude of risk posed by lead.⁵⁴ The vague language of the 1971 Act called only for elimination of lead paint hazards "as far as practicable."⁵⁵ Congress found that low-level lead poisoning affected as many as three million children under the

⁴⁷ *Id.*

⁴⁸ SCIENCEDAILY, *supra* note 3 (statement made at the American Association for the Advancement of Science Annual Meeting in 2005).

⁴⁹ ADVISORY COMMITTEE ON CHILDHOOD LEAD POISONING PREVENTION, CENTERS FOR DISEASE CONTROL, INTERPRETING AND MANAGING BLOOD LEAD LEVELS <10 µG/DL IN CHILDREN AND REDUCING CHILDHOOD EXPOSURES TO LEAD 1-14 (Nov. 2, 2007), www.cdc.gov/mmwr/preview/mmwrhtml/rr5608a1.htm.

⁵⁰ *See generally* Kitman, *supra* note 6.

⁵¹ *See id.*; *see also* *Lead Shot and Sinkers, Weighty Implications for Fish and Wildlife Health*, USGS NEWSROOM (July 11, 2008), www.usgs.gov/newsroom/article.asp?ID=1972&from=rss_home; U.S. CONSUMER PROD. SAFETY COMM'N, GUIDANCE FOR LEAD (PB) IN CONSUMER PRODUCTS (Jan. 2012), www.cpsc.gov/businfo/leadguid.html.

⁵² 40 C.F.R. § 141.43 (Westlaw 2012).

⁵³ 40 C.F.R. §§ 141.80(c)(1), 141.84 (Westlaw 2012). An "action level" is defined as "the concentration of lead or copper in water specified in [40 C.F.R.] § 141.80(c) which determines, in some cases, the treatment requirements . . . that a water system is required to complete." 40 C.F.R. § 141.2 (Westlaw 2012).

⁵⁴ 42 U.S.C.A. § 4851(7) (Westlaw 2012).

⁵⁵ *Id.*

age of six, and more than three million tons of lead were present in pre-1980 housing.⁵⁶ The 1992 Act was designed to eliminate all lead-based paint hazards in infrastructure by implementing direct control of lead-based hazards and specific deadlines for abatement.⁵⁷

In 1991, a nationwide ban of lead ammunition for hunting waterfowl was implemented after alarm grew concerning waterfowl mortality resulting from the ingestion of lead ammunition.⁵⁸ Since the ban's implementation, lead-associated mortality for mallard ducks in the Mississippi flyway has been reduced by approximately 64%, and elevated BLLs in American black ducks declined by 44%.⁵⁹ In the 1997 fall migration alone, an estimated 1.4 million deaths of mallard ducks were prevented.⁶⁰ Although waterfowl have shown an immense decrease in lead-related mortalities, deaths of upland birds and mammals, which were not subject to the ban, have remained largely unaffected.⁶¹

C. THE LEADED GASOLINE DILEMMA

The proliferation of lead regulations has not come about without controversy.⁶² The environmental health risks of leaded gasoline were known to its manufacturers and the public health community over seventy-five years ago, but the risks were steadfastly denied by the Ethyl Gasoline Corporation, the largest manufacturer of tetraethyl-leaded gasoline.⁶³ The Ethyl Gasoline Corporation maintained that the effects of lead could not be readily quantified and thus should not be regulated.⁶⁴

⁵⁶ See *id.* at § 4851(1), (3).

⁵⁷ See *id.* at §§ 4851a, 4852c.

⁵⁸ See 50 C.F.R. § 92.20(g) (Westlaw 2012); see also Terra R. Kelly, Peter H. Bloom, Steve G. Torres, Yvette Z. Hernandez, Robert H. Poppenga, Walter M. Boyce, Christine K. Johnson, *Impact of the California Lead Ammunition Ban on Reducing Lead Exposure in Golden Eagles and Turkey Vultures*, PLOS ONE (2011), www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0017656.

⁵⁹ Kelly et al., *supra* note 58.

⁶⁰ *Id.*

⁶¹ MOLLY A. TRANEL & RICHARD O. KIMMEL, MINN. DEP'T OF NAT. RES., *IMPACTS OF LEAD AMMUNITION ON WILDLIFE, THE ENVIRONMENT, AND HUMAN HEALTH—A LITERATURE REVIEW AND IMPLICATIONS FOR MINNESOTA* (2009), www.peregrinefund.org/subsites/conference-lead/PDF/0307%20Tranel.pdf.

⁶² Kitman, *supra* note 6.

⁶³ Paul Brown, *Firms "Knew of Leaded Petrol Dangers in 20s,"* THE GUARDIAN, July 12, 2000, www.guardian.co.uk/environment/2000/jul/13/uknews.

⁶⁴ Kitman, *supra* note 6. The Ethyl Gasoline Corporation, created by General Motors and Standard Oil of New Jersey, was the largest tetraethyl lead manufacturer in the 1920s. BILL KOVARIK, CHARLES F. KETTERING AND THE 1921 DISCOVERY OF TETRAETHYL LEAD IN THE CONTEXT OF TECHNOLOGICAL ALTERNATIVES (1999), www.radford.edu/wkovarik/papers/kettering.html.

Lead was introduced to gasoline in the 1920s because of its benefits, including the prevention of “knocking” and increased speed, power, and compression.⁶⁵ Public health experts maintained that viable alternatives to ethyl-leaded gasoline existed.⁶⁶ In fact, early studies revealed that ethanol was one safe and effective alternative to the lead additive; however, General Motors insisted upon continuing use of the tetraethyl-lead additive.⁶⁷ In the first month of producing the lead additive, one worker died.⁶⁸ Eventually, fifteen more died, and hundreds of others became extremely ill.⁶⁹ The Surgeon General summoned a panel of experts to study the health effects of the lead additive, during which the Ethyl Gasoline Corporation ordered a suspension of leaded-gasoline production.⁷⁰ The committee concluded that there was a lack of sufficient grounds for prohibiting the lead additive.⁷¹

Fifty years later, in 1973, the EPA maintained that there was sufficient evidence to prove that leaded gasoline unnecessarily contributed to elevated lead exposure levels of inner-city adults and children.⁷² However, whenever industries were warned by public health officials of the dangers of lead, they simply responded, “prove it.”⁷³ Today, we still face the quandary of effectively quantifying exact amounts of day-to-day, low-level lead exposures that are harmful to people.⁷⁴ It is especially difficult to conduct comprehensive, quantitative assessments of long-term effects of lead, such as reduced learning levels, high blood pressure, and neurological problems, because these are common disorders that have numerous potential causes.⁷⁵ This “prove it” approach was dubbed “the Kehoe Rule,” after the medical director of the Ethyl Gasoline Corporation, who persistently asserted the safety of leaded gasoline.⁷⁶ He claimed that the BLLs found in workers were not

⁶⁵ Frank Ackerman et al., *Applying Cost-Benefit to Past Decisions: Was Environmental Protection Ever a Good Idea?*, 57 ADMIN. L. REV. 155, 161 (2005). “Knocking” is the abnormal combustion that occurs within the engine resulting in a knocking noise when multiple flame fronts collide, along with increased cylinder pressure that causes the piston and connecting rods to resonate. Ray T. Bohacz, *The Causes of Internal Engine Knock, and How to Eliminate It*, zhome.com/ZCMnL/PICS/detonation/detonation.html (last visited Mar. 12, 2012).

⁶⁶ Brown, *supra* note 63.

⁶⁷ Kovarik, *supra* note 2, at 389-90; Brown, *supra* note 63.

⁶⁸ Ackerman et al., *supra* note 65, at 162.

⁶⁹ *Id.* at 162.

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Id.* at 166.

⁷³ *Id.* at 163.

⁷⁴ Ackerman et al., *supra* note 65, at 163.

⁷⁵ *Id.*

⁷⁶ FRANK ACKERMAN, POISONED FOR PENNIES: THE ECONOMICS OF TOXICS AND

much higher than a “presumably unexposed ‘control’ population” and high levels of lead in the blood were normal and benign.⁷⁷

Eventually, Clair Patterson, a geochemist, discovered through chemical analysis of archeological material and ocean sediments that contemporary amounts of lead in the body were significantly higher than pre-industrial levels.⁷⁸ This disproved Kehoe and the petroleum industry’s claims that the high levels of lead in the body were mundane.⁷⁹ However, there was still a difficult court battle to be won.⁸⁰ The lead industry tried to revive the Kehoe Rule, claiming that the EPA could not regulate leaded gasoline unless it proved the gasoline had in fact caused harm in the past.⁸¹ The court ultimately upheld the EPA’s authority to regulate leaded gasoline under the Clean Air Act, finding the agency may act in a “precautionary” fashion, rather than waiting for scientific certainty of the harmfulness of a substance.⁸²

III. THE LEGAL FRAMEWORK FOR THE EPA’S AUTHORITY TO BAN LEAD AMMUNITION

A. LEAD POSES AN UNREASONABLE RISK TO HEALTH AND THE ENVIRONMENT: TSCA’S COST-BENEFIT ANALYSIS

Today, a new proposed ban is generating controversy: the ban on the manufacture, distribution and use of lead ammunition.⁸³ It was first reported that lead ammunition caused wildlife lead poisoning over a hundred years ago.⁸⁴ Despite these recognized adverse effects of lead, and effective non-lead alternatives, lead ammunition is still widely accepted and used nationwide.⁸⁵ As lead ammunition strikes an animal, it often fragments into hundreds of dust-like particles, traveling up to one foot from the bullet’s entry point and contaminating large portions of the meat.⁸⁶ Around 87% of game taken with lead ammunition contains levels

PRECAUTION 36-37 (2008).

⁷⁷ Ackerman et al., *supra* note 65, at 163.

⁷⁸ *Id.*

⁷⁹ *Id.* at 163-164.

⁸⁰ *Id.* at 166.

⁸¹ Kovarik, *supra* note 2, at 384, 393.

⁸² Ethyl Corp. v. Env’tl. Prot. Agency, 54 F.2d 1, 12–16 (D.C. Cir. 1976) (en banc).

⁸³ Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21 (citing H.R. Rep. No. 1341, 94th Cong., 2d Sess. 32 (1976)).

⁸⁴ See TRANEL & KIMMEL, *supra* note 61, at 2.

⁸⁵ See Thomas, *supra* note 9, at 206-09; see also WATSON & AVERY, *supra* note 10.

⁸⁶ Walters et al., *supra* note 14, at 975; Press Release, Ctr. for Biological Diversity, *supra*

of lead that are dangerous for pregnant women or children.⁸⁷ In spite of this disquieting truth, millions of people continue to hunt and consume wild game harvested with lead ammunition.⁸⁸ To justify their continued perilous use of traditional ammo, many cite the slightly higher price of alternatives, along with widely held misconceptions about less-toxic alternatives' performance.⁸⁹ It is estimated that there are 12.1 million adults and 1.6 million children who hunt in the United States, with an estimated 90% using conventional lead ammunition.⁹⁰ Additionally, countless non-hunters consume wild game provided to them by friends or family, and a large portion of humanitarian organizations accept donated game meat, much of which is also contaminated by lead shot.⁹¹ Consequently, millions needlessly consume contaminated game meat.⁹²

Users of lead ammunition also face lead exposure when employing the use of lead ammunition at shooting ranges.⁹³ Airborne lead is released each time a firearm containing lead ammunition is discharged.⁹⁴ As the bullet passes through the gun barrel, friction creates airborne lead particles.⁹⁵ A study conducted in 2004 on student shooting teams found that nearly every student member had a higher BLL than his or her family members.⁹⁶ Out of fifty-one student shooters, twenty-two shooters had BLLs of 10 µg/dL or higher, and eight of twenty-four shooters had LLs of 25 µg/dL and above.⁹⁷ At one of the ranges, a student coach had a

note 17.

⁸⁷ Press Release, Am. Bird Conservancy, Six More Condors Suffer Lead Poisoning from Ammo, Three Die (June 2, 2011), available at www.abcbirds.org/newsandreports/releases/110602a.html.

⁸⁸ WATSON & AVERY, *supra* note 10.

⁸⁹ See Thomas, *supra* note 9, at 206-08; see also PHIL T. SENG, NON-LEAD AMMUNITION PROGRAM HUNTER SURVEY 8 (2006), available at www.azgfd.gov/w_c/documents/AmmoSurveyFINALReport2-23-06_000.pdf.

⁹⁰ WATSON & AVERY, *supra* note 10, at 170; John McCormack, *Environmental Protection Agency Reviewing Petition to Ban Lead Bullets*, THE WEEKLY STANDARD, Aug. 27, 2010.

⁹¹ WATSON & AVERY, *supra* note 10, at 171.

⁹² TRANEL & KIMMEL, *supra* note 61, at 326. In 2008, the Minnesota Department of Agriculture found lead fragments in a considerable amount of tested samples of venison donated to food shelves, which required the disposal of all donated venison. *Id.*; see also WATSON & AVERY, *supra* note 10.

⁹³ See ENVTL. WORKING GRP., LEAD POLLUTION AT OUTDOOR FIRING RANGES 1 (May 2001), available at www.ewg.org/files/leadpoll.pdf.

⁹⁴ T. Lynn et al., *Lead Exposure from Indoor Firing Ranges Among Students on Shooting Teams—Alaska, 2002-2004*, 54 MORBIDITY AND MORTALITY WEEKLY REPORT 577, 579 (2005), available at www.cdc.gov/mmwr/PDF/wk/mm5423.pdf.

⁹⁵ *Id.*

⁹⁶ *Id.* at 578.

⁹⁷ *Id.*

BLL of 44 µg/dL, a dangerously high level of lead.⁹⁸

Like children, wild animals are especially susceptible to the harmful effects of lead poisoning.⁹⁹ It is estimated that 3,000 tons of lead are discharged in United States hunting grounds each year, with another 80,000 discharged at shooting ranges.¹⁰⁰ Every year, millions of mammalian and avian scavengers die from lead poisoning resulting from the ingestion of lead ammunition fragments.¹⁰¹ Over seventy-five species of birds suffer from the harmful effects associated with the ingestion of lead ammunition, including the symbol of our country, the Bald Eagle, and a bird recently extinct in the wild, the condor.¹⁰²

The condor is not only the largest land bird in North America, but it is also one of the most endangered birds in the world.¹⁰³ In 1967, after a sharp decline in the species, caused in part by lead poisoning, the condor was listed as an endangered species under the ESA.¹⁰⁴ The ESA affords special protections for listed endangered and threatened species, meaning the species are either in danger of extinction or likely to become so in the future.¹⁰⁵ After the condor's numbers fell to fewer than twenty-two in the 1980s, the remaining birds were trapped, rendering condors extinct in the wild.¹⁰⁶ This capture facilitated a captive breeding program in an attempt to thwart the condor's impending total extinction.¹⁰⁷ Today, there is a total population of 369 birds, 191 of which are living in the wild.¹⁰⁸

The condor is facing an inexorable challenge surviving in the wild because of its high susceptibility to lead poisoning.¹⁰⁹ Condors feed solely on carrion, which is frequently riddled with lead ammunition fragments, and will travel up to 150 miles per day in search of animal remains.¹¹⁰ Scientific studies show that spent lead ammunition is a pervasive source of lead toxicity in condors, with at least nineteen condor

⁹⁸ *Id.* at 577.

⁹⁹ Johns, *supra* note 5.

¹⁰⁰ Miller, *supra* note 13.

¹⁰¹ *Id.*

¹⁰² *Id.*; Walters et al., *supra* note 14, at 969.

¹⁰³ *California Condor Recovery*, ARIZ. GAME & FISH DEP'T, www.azgfd.gov/w_c/california_condor.shtml (last visited Mar. 12, 2012).

¹⁰⁴ *California Condor Life History*, VENTANA WILDLIFE SOCIETY (2009), www.ventanaws.org/species_condors_history/.

¹⁰⁵ 50 C.F.R. § 424.11 (Westlaw 2012).

¹⁰⁶ Walters et al., *supra* note 14.

¹⁰⁷ *Id.* at 971.

¹⁰⁸ *California Condor Recovery*, *supra* note 103 (based on March 2011 estimates).

¹⁰⁹ Walters et al., *supra* note 14, at 972.

¹¹⁰ *Id.* at 971, 974–75; *California Condor Life History*, *supra* note 104.

deaths since 2000 caused by lead poisoning.¹¹¹ Additionally, there have been at least 300 known instances of lead poisoning in condors, many of which required extensive chelation treatment or surgery, without which many more would have died.¹¹² A single lead fragment can generate life-threatening toxic levels in the condor's bloodstream.¹¹³ Condors also have an extremely low reproductive rate, not reaching sexual maturity for six or seven years and endeavoring to hatch merely a single chick every other year.¹¹⁴ Slow reproductive rates, combined with high mortality rates, are not conducive to the maintenance of viable wild populations.¹¹⁵

California, Utah, and Arizona are currently the only states that have implemented lead ammunition regulations in response to the condor's demise.¹¹⁶ California has the most stringent laws for lead ammunition use in comparison to other states that condors inhabit.¹¹⁷ The regulations prohibit use of bullets with more than 1% lead to kill big game, non-game birds, and non-game mammals in areas designated as condor country.¹¹⁸ California also includes a non-lead coupon program that offers non-lead ammunition at a reduced rate for as long as funding permits.¹¹⁹ Despite the implementation of these regulations, lead ammunition is still being vastly utilized in California, and although the condor mortality rate has slowed slightly, the success of the regulation has largely been insignificant.¹²⁰

Utah and Arizona have implemented voluntary non-lead ammunition programs that encourage, but do not require, hunters to phase out their use of lead ammunition.¹²¹ These programs have also

¹¹¹ Press Release, Am. Bird Conservancy, *supra* note 87.

¹¹² During chelation treatment the bird is treated with a chelating agent to "chemically bind the lead and remove it by excretion via the kidneys." Walters et al., *supra* note 14, at 976. Other treatment options include purging the gut with psyllium husk to force the toxic particles through the gastrointestinal tract or removal of the lead fragments through surgical procedures. *Id.*

¹¹³ *California Condor Recovery*, *supra* note 103.

¹¹⁴ National Park Service, *California Condor*, NPS.GOV (Dec. 20, 2006), www.nps.gov/brca/naturescience/californiacondor.htm; Walters et al., *supra* note 14, at 971.

¹¹⁵ Walters et al., *supra* note 14, at 971.

¹¹⁶ DOMINIQUE AVERY & RICHARD T. WATSON, THE PEREGRINE FUND, REGULATION OF LEAD-BASED AMMUNITION AROUND THE WORLD (2009), available at www.peregrinefund.org/subsites/conference-lead/PDF/0115%20Avery.pdf.

¹¹⁷ Walters et al., *supra* note 14, at 971.

¹¹⁸ CAL. CODE REGS. tit. 14, § 355 (Westlaw 2011).

¹¹⁹ CAL. FISH & GAME CODE § 3004.5(c)(1) (Westlaw 2011) (program applies only to specific hunting zones).

¹²⁰ Walters et al., *supra* note 14, at 977.

¹²¹ See NATIONAL PARK SERVICE, U.S. FISH & WILDLIFE SERVICE, U.S. DEP'T OF THE INTERIOR, VOLUNTARY USE OF NON-LEAD AMMUNITION DURING THE 2011 ELK AND BISON

resulted in a minor decline of BLLs in wildlife; more stringent regulations are necessary to acquire significant results.¹²² Without 100% compliance by hunters, it is unlikely that programs such as these will ever be truly successful.¹²³ Even with complete compliance by hunters, given the continued availability of lead ammunition, the large number of poachers that take wild game may still pose a problem.¹²⁴

The EPA possesses broad authority to ban lead ammunition nationwide under TSCA.¹²⁵ TSCA mandates EPA to regulate a chemical substance when “there is a reasonable basis to conclude that” the chemical substance poses “an unreasonable risk of injury to human health or the environment.”¹²⁶ Specifically, the EPA may prohibit “the manufacturing, processing, or distribution in commerce” of a chemical substance “for a particular use.”¹²⁷ A chemical substance is defined as “any organic or inorganic substance of a particular molecular identity, including (i) any combination of such substances occurring in whole or in part as a result of a chemical reaction or occurring in nature and (ii) any element or uncombined radical.”¹²⁸ It is undisputed that lead is a chemical substance.¹²⁹

Although Congress failed to include an explicit definition of “unreasonable risk” in the language of TSCA, it mandated a cost-benefit analysis requiring that the “environmental, economic, and social impacts” be considered when making an unreasonable-risk determination.¹³⁰ Particularly, the Act requires that the Administrator consider 1) the magnitude of exposure and health effects on human beings; 2) the magnitude of exposure and effects on the environment; 3) the benefits of the use of the substance and availability of alternatives; and 4) “the reasonably ascertainable economic consequences” of the regulation by considering “effect[s] on the national economy, small business, technological innovation, the environment, and public

SEASONS (2011), available at www.fws.gov/nationalelkrefuge/Documents/2011_Hunting/2011NonLeadInfo.pdf.

¹²² Walters et al., *supra* note 14, at 977.

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ 15 U.S.C.A § 2601 (Westlaw 2012).

¹²⁶ *See id.* § 2605(a) (Westlaw 2012).

¹²⁷ *See id.* § 2605(a)(2)(A) (Westlaw 2012).

¹²⁸ *See id.* § 2602(2)(A) (Westlaw 2012).

¹²⁹ *TSCA Inventory*, DATA.GOV, (Feb. 28, 2012) explore.data.gov/Geography-and-Environment/TSCA-Inventory/pkhi-wvjh (this source provides a downloadable list of non-confidential portions of the TSCA Chemical Substance Inventory comprised of chemical substances submitted under the TSCA).

¹³⁰ 15 U.S.C.A. § 2605(c)(1) (Westlaw 2012).

health.”¹³¹

i. The Magnitude of Exposure and Health Effects of Lead on Human Beings

The magnitude of exposure and the risks to human health and the environment do not have to be based on a factual certainty.¹³² Instead, the EPA may base its determination on known facts, as well as “scientific theories, projections, and extrapolations from available data, and modeling using reasonable assumptions.”¹³³

As stated above, it is well-established that lead is toxic to humans at even minute levels.¹³⁴ The EPA describes lead as a toxic material that can cause a wide range of adverse health effects, including learning disabilities, seizures, and death.¹³⁵ Most lead uses have already been made subject to stringent regulations or have been banned nationwide because of the severe human-health implications.¹³⁶

Several powerful lobbyists, such as the NRA, suggest that there is no link between lead ammunition and human lead poisoning.¹³⁷ A study conducted in the United States by the CDC tested 736 people within six North Dakota cities revealed that those who consumed wild game meat had 50% more lead in their blood than those who did not.¹³⁸ However, because all BLLs were below 10 µg/dL, the NRA and National Shooting Sports Foundation claimed the study supported their conjecture that there is no significant correlation between the ingestion of wild game taken with lead ammunition and lead toxicity in humans.¹³⁹ Interestingly, the

¹³¹ See *id.* at § 2605(c)(1) (Westlaw 2012).

¹³² Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21 (citing H.R. Rep. No. 1341, 94th Cong., 2d Sess. 32 (1976)).

¹³³ See *id.*

¹³⁴ See Prüss-Üstün et al., *supra* note 1, at 1496-97.

¹³⁵ Lead, ENVTL. PROT. AGENCY, www.epa.gov/lead/ (last updated Mar. 6, 2012).

¹³⁶ See DEP’T OF ECOLOGY, STATE OF WASH., FEDERAL LEAD REGULATIONS AND GUIDELINES, available at www.ecy.wa.gov/programs/hwtr/demodebris/pages2/leadregsfed.html (last visited Mar. 12, 2012).

¹³⁷ Dave Kopel, *The State of Heller*, AMERICA’S 1ST FREEDOM, June 2009, at 37.

¹³⁸ Scott Streater & Envtl. Health News, *Wild Meat Raises Lead Exposure*, SCIENTIFIC AMERICAN, Sept. 28, 2009, available at www.scientificamerican.com/article.cfm?id=wild-game-deer-venison-condors-meat-lead-ammunition-ban. Researchers at Wisconsin State and Boise State Universities conducted a study in which a group of pigs were fed venison with lead ammunition fragments while another control group of pigs were fed venison without lead fragments. *Id.* The study revealed that the pigs consuming the venison with the lead fragments had BLLs that shot to 3.8 µg/dL in two days. *Id.*

¹³⁹ *Id.*; see Blaine Smith, EPA Leaves Lead Alone, NRA, www.nrapublications.org/index.php/9290/epa-leaves-lead-alone/ (last visited Mar. 14, 2012).

NRA still recommends that with any meat shot using lead ammunition, considerable portions should be cut away around the wound before consumption.¹⁴⁰ Further, studies have concluded that there is a link between toxic BLLs and Arctic people who consume game animals that have been killed with lead ammo.¹⁴¹ Around 87% of cooked game taken with lead ammunition may contain unsafe levels of lead nationwide.¹⁴²

There were over thirteen million adult and children hunters in 2006 and thirty million sport or recreational shooters nationwide in 2009, most still using traditional lead ammunition.¹⁴³ Thus, a large portion of the population is exposed to lead, either through consumption of game meat or while shooting recreationally.¹⁴⁴

ii. *The Magnitude of Exposure and Effects of Lead on the Environment*

Although lead ammunition undeniably poses an unnecessary risk to human health, the implications for the environment may be even greater. Wildlife deaths due to ingestion of lead shot were first reported over a hundred years ago.¹⁴⁵ Over 130 species of wild animals are known to have been exposed to lead through ingestion of lead shot, bullets, or bullet fragments.¹⁴⁶

Birds are particularly susceptible to lead toxicity because many ingest shot, mistaking it as grit, an essential part of their diet; also, birds of prey and scavengers, such as the condor, ingest lead through consumption of wild game carcasses.¹⁴⁷ As previously stated, over seventy-five avian species have been found to suffer from lead toxicity as a result of ingesting lead ammo.¹⁴⁸ The EPA described the adverse

¹⁴⁰ Walter Brasch, *Toxic Lead to Cover Iowa Killing Fields*, DISSIDENT VOICE (Aug. 27, 2011), available at dissentvoice.org/2011/08/toxic-lead-to-cover-iowa-killing-fields/.

¹⁴¹ LORI A. VERBRUGGE ET AL. HUMAN EXPOSURE TO LEAD FROM AMMUNITION IN THE CIRCUMPOLAR NORTH 129-32 (2009), available at www.peregrinefund.org/subsites/conference-lead/PDF/0110%20Verbrugge.pdf.

¹⁴² Press Release, Ctr. for Biological Diversity, *supra* note 17.

¹⁴³ WATSON & AVERY, *supra* note 10, at 170; John McCormack, *Environmental Protection Agency Reviewing Petition to Ban Lead Bullets*, THE WEEKLY STANDARD (Aug. 27, 2010), www.weeklystandard.com/blogs/epa-reviewing-request-ban-led-bullets (stating that more than 90% of recreational hunters use lead ammunition); Press Release, Nat'l Shooting Sports Found., Inc., *Modern Sporting Rifle Owners Are Most Active Shooters, Says NSSF/Responsive Management Survey*, available at nssf.org/newsroom/releases/show.cfm?PR=041910.cfm&path=2010 (reporting that 34.4 million people in the United States engaged in target shooting in 2009).

¹⁴⁴ WATSON & AVERY, *supra* note 10; T Lynn et al., *supra* note 94, at 577-79.

¹⁴⁵ TRANEL & KIMMEL, *supra* note 61, at 319.

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

¹⁴⁸ *Id.* at 320-323.

effects on avian wildlife in depth in its proposal to ban lead fishing tackle, finding that lead can cause both sub-lethal and lethal effects, including modification of the kidney, bones, and nervous system, and biochemical, behavioral, and reproductive effects.¹⁴⁹ Further, it allows disease to manifest in birds' tissues, causes neuropsychological and fetotoxic effects, and can diminish antibody and blood cell production.¹⁵⁰ Scientists observing lead poisoning in a control group of mallard ducks made the following findings:

Severe damage to the central nervous system results in stupor, convulsions, coma, and death. Other signs of lead poisoning include loss of appetite (and resulting weight loss), lethargy, weakness, emaciation, drooped wings, green liquid feces, impaired locomotion and an inability to fly, and impaired balance and depth perception. Fat deposits in the body are eventually exhausted, and there is a marked atrophy of the bird's pectoral muscles. There is a definite progression of symptoms after [lead is] ingested, ending in most cases in death.¹⁵¹

In a study conducted of Canadian raptors, scientists found that of 184 raptors representing sixteen distinct species, 3% to 4% of the most common species died as a result of lead toxicity due to ingestion of game mammals and birds tainted with lead shot fragments.¹⁵² They concluded that the use of non-lead alternatives “would effectively remove the only serious source of high lead exposure and lead poisoning for upland-foraging raptors.”¹⁵³ Lead poisoning is the highest contributor to the endangered condor's mortality rate, with nineteen deaths since 2000.¹⁵⁴ Even with the extremely high documented mortality rate, the true extent of lead-related deaths is unknown because many animals may seek isolation before dying.¹⁵⁵

The NRA alleges that environmentalists' claims pointing to ammunition as the primary source of lead poisoning in California condors is unproven.¹⁵⁶ However, numerous studies have concluded that condor deaths can be directly attributed to the ingestion of lead

¹⁴⁹ 59 Fed. Reg. 11,122, 11,126 (Mar. 9, 1994).

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

¹⁵² TRANEL & KIMMEL, *supra* note 61, at 325.

¹⁵³ *Id.*

¹⁵⁴ Press Release, Am. Bird Conservancy, *supra* note 87.

¹⁵⁵ TRANEL & KIMMEL, *supra* note 61, at 324.

¹⁵⁶ *Ctr. for Biological Diversity v. U.S. Bureau of Land Mgmt.*, 266 F.R.D. 369, 373 (D. Ariz. 2010).

ammunition.¹⁵⁷ A chain of evidence allows scientists to show with certainty that condors are being poisoned by lead ammunition.¹⁵⁸ First, condors feed exclusively on animal carcasses, primarily carcasses of big game animals, such as deer.¹⁵⁹ Second, a high number of large game animals are killed with lead ammunition near or around condor country.¹⁶⁰ Third, condors ingest enough lead ammunition to account for the lead in their tissue.¹⁶¹ Fourth, the lead within condors' tissues can be traced to lead ammunition.¹⁶² The NRA concedes the validity of the first two links, but asserts that both the third and fourth links are weak, if not erroneous, thus breaking the causal chain.¹⁶³ Although the fourth link may be fairly weak, as the science used to trace the isotopes in lead ammo to the lead found in tissue is controversial, the third link is strong enough to validate a correlation between lead ammo ingestion and condor lead poisoning.¹⁶⁴ There are an estimated 100,000 game animals harvested, with 30,000 gut piles left from deer and wild boar, around 10,000 coyote remains, and an unknown additional amount of animals "lost" in condor country per year.¹⁶⁵ A considerable portion of the remains of the harvested or lost animals was likely tainted with lead ammunition fragments.¹⁶⁶ The NRA argues that this is not conclusive evidence that the condors actually ingest lead ammunition fragments.¹⁶⁷ However, the NRA admits that it is unlikely that condors would regurgitate lead ammunition, as such regurgitation is not characteristic of their feeding habits, which often involve ingestion of bone fragments.¹⁶⁸ Further, actual lead shot fragments have been found in several birds' gizzards, with high BLLs directly correlating to the presence of shot in

¹⁵⁷ See generally CTR. FOR BIOLOGICAL DIVERSITY, SCIENCE LINKS LEAD AMMUNITION TO LEAD EXPOSURE IN CALIFORNIA CONDORS (GYMNOGYPS CALIFORNIANUS), STATEMENT OF SCIENTIFIC AGREEMENT (Jul. 10, 2007), available at www.biologicaldiversity.org/species/birds/California_condor/pdfs/Condor-Lead-Science.pdf.

¹⁵⁸ *Id.* at 1-3.

¹⁵⁹ *Id.* at 1.

¹⁶⁰ *Id.*

¹⁶¹ *Id.* at 1-2.

¹⁶² Walters et al., *supra* note 14, at 975-76.

¹⁶³ THOMAS D. WRIGHT & RICKARD K. PEDDICORD, SUMMARY OF SCIENCE FOR AMMUNITION AS THE SOURCE OF LEAD IN CONDORS 3-6 (Jun. 11, 2007), available at www.cspinet.org/new/pdf/nra_-_lead_ammunition_-_s_recce.pdf (report prepared for National Rifle Association).

¹⁶⁴ *Id.*; see CTR. FOR BIOLOGICAL DIVERSITY, *supra* note 157, at 1-2.

¹⁶⁵ WRIGHT & PEDDICORD, *supra* note 163, at 3.

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

the digestive tract.¹⁶⁹ This leads to the logical inference that ammunition is the source of lead toxicity.¹⁷⁰

BLLs of condors have also been shown to peak during hunting season and fall in the off-season.¹⁷¹ Further, a study conducted on a control group of mallard ducks that were fed small amounts of lead ammunition revealed a direct correlation between the ingestion of lead fragments and lead poisoning.¹⁷²

The NRA provides only one potential alternative source of lead poisoning in wild condors: consumption of cattle that die from lead poisoning as a result of batteries or lead sheathing that cattle find in fields at old building sites.¹⁷³ This argument is largely unsubstantiated because the NRA fails to provide any information about the frequency with which cattle ingest lead batteries and sheathing while grazing, die and are then consumed by condors.¹⁷⁴

As previously discussed, the NRA does not believe there is a significant link between lead ammunition and lead poisoning in wildlife.¹⁷⁵ The NRA additionally claims that environmentalists who seek regulation of lead ammunition because of the serious risks it poses to wildlife are using wildlife as a groundless excuse to infringe on hunters' and shooters' Second Amendment right to bear arms.¹⁷⁶ This argument is unfounded. There are comparable, less toxic alternatives to lead ammunition that would allow hunters and shooters to continue their respective recreational sports.¹⁷⁷ Further, many environmentalists and environmental groups, including the Sierra Club, recognize that regulated recreational hunting is advantageous to wildlife, especially for scavengers like the condor.¹⁷⁸ The condor and other wildlife benefit

¹⁶⁹ Walters et al., *supra* note 14, at 976.

¹⁷⁰ *Id.*

¹⁷¹ CTR. FOR BIOLOGICAL DIVERSITY, *supra* note 157, at 1-2.

¹⁷² 59 Fed. Reg. 11,122, 11,126 (Mar. 9, 1994).

¹⁷³ WRIGHT & PEDDICORD, *supra* note 163, at 4.

¹⁷⁴ *Id.*

¹⁷⁵ *Ctr. for Biological Diversity v. U.S. Bureau of Land Mgmt.*, 266 F.R.D. at 373 (D. Ariz. 2010).

¹⁷⁶ Dave Kopel, *The Plan to Get the Lead Out*, NATIONAL RIFLE ASSOCIATION (Mar. 17, 2011), www.nra.org/Issues/Articles/Read.aspx?id=451&issue=021.

¹⁷⁷ John D. Sutter, *Should Hunters Switch to "Green" Bullets*, CNN (Mar. 4, 2009), articles.cnn.com/2009-03-04/tech/green.bullets_1_hunters-ammunition-barnes-bullets?_s=PM:TECH; *see infra* Section iii.

¹⁷⁸ J.R. Absher, *Sierra Club: We Support Hunting But . . .*, NEWSHOUND (Mar. 25, 2010), www.outdoorlife.com/blogs/newshound/2010/03/sierra-club-we-support-hunting; *see* Christina Larson, *The Emerging Environmental Majority*, WASHINGTON MONTHLY, May 2006, *available at* www.washingtonmonthly.com/features/2006/0605.larson.html; DIRK VAN VUREN, *THE CALIFORNIA CONDOR AT MOUNT PINOS CALIFORNIA: THE IMPACTS OF DEER HUNTING* 50, 51 (1976), *available*

greatly from untainted carcasses and gut piles left by hunters, as it provides them with a reliable food source.¹⁷⁹ Hunters are often great conservationists and contribute time, money, and effort to the welfare of wildlife and also help to regulate wildlife populations, which promotes healthier ecosystems.¹⁸⁰ One educational organization consisting solely of hunters, Project Gulpile, is dedicated to providing lead-free ammunition and educating those who still use traditional ammunition about its dangers for humans and wildlife alike.¹⁸¹ Project Gulpile supports a national lead ban and has demonstrated that hunters and shooters can fully preserve their Second Amendment rights while embracing a phase-out of lead ammunition.¹⁸²

The magnitude of lead introduced into the environment from lead ammunition is immense. There are 1,813 firing ranges across the United States.¹⁸³ If each of those ranges had just fifteen customers per day firing fifty rounds, more than nine million pounds of lead would be deposited into the environment each year.¹⁸⁴ A single lead shot can contaminate up to 370 cubic feet of soil as the ammunition breaks down on the soil's surface and seeps downward and outward with precipitation.¹⁸⁵ Due to numerous loopholes, shooting ranges are allowed almost unlimited site contamination, even near bodies of water, which poses serious implications for water quality.¹⁸⁶ Lead severely degrades the environment and requires more Superfund cleanups than any other chemical or waste.¹⁸⁷ It is estimated that lead shot takes from 100 to 300 years to disappear from the environment.¹⁸⁸ Thus, lead easily accumulates, especially in areas where lead is consistently deposited, such as shooting ranges and frequently hunted areas.¹⁸⁹ The numerous adverse effects shared by wildlife and habitat reflect the immense magnitude of

at www.tws-west.org/transactions/Van%20Vuren.pdf.

¹⁷⁹ VAN VUREN, *supra* note 178, at 50–51.

¹⁸⁰ See NAT'L SHOOTING SPORTS FOUND., THE HUNTER AND CONSERVATION (2009), available at www.nssf.org/lit/HunterConservation10.pdf.

¹⁸¹ Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21 (citing H.R. Rep. No. 1341, 94th Cong., 2d Sess. 32 (1976)).

¹⁸² *Id.*

¹⁸³ ENVTL. WORKING GRP., *supra* note 93.

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*; see also Robin Izzo Scott, Lead Contamination in Soil at Outdoor Firing Ranges at 6 (Nov. 15, 2001).

¹⁸⁶ ENVTL. WORKING GRP., *supra* note 93.

¹⁸⁷ *Id.*

¹⁸⁸ TRANEL & KIMMEL, *supra* note 61, at 325.

¹⁸⁹ *Id.*

environmental lead exposure.¹⁹⁰

iii. The Benefits of the Use of Lead and Availability of Alternatives

The benefits of lead ammunition are insubstantial when compared to the associated risks.¹⁹¹ The most commonly cited advantages of lead ammunition are its low cost, wide availability, and superior performance.¹⁹² However, none of these benefits are substantial, and there is at least one superior-performing alternative that is likely to drop exponentially in price with the implementation of a national ban.¹⁹³

Two of the most common less toxic alternatives to lead in ammunition are steel and copper.¹⁹⁴ Steel ammo is the cheapest alternative to lead, but because it differs greatly in ballistic performance, switching to steel requires some adjustments by the shooter.¹⁹⁵ Steel also cannot be used in older guns, as it has the potential to cause damage to the gun barrel.¹⁹⁶ Copper, the leading alternative, has proven to outperform its lead counterpart for hunters and recreational shooters, while retaining more than 95% of its original weight, unlike lead bullets, which fragment into hundreds of pieces on contact.¹⁹⁷ Although copper can potentially be toxic, because it retains most of its weight, the risks it poses are small in comparison to those posed by lead ammunition.¹⁹⁸ Copper has also proven to be popular among hunters who have tried it.¹⁹⁹ A survey of hunters who were asked to try the copper alternatives revealed that the majority found copper ammunition to be equal to, if not better than, its lead equivalent.²⁰⁰

Although prices for copper ammunition are higher, at around \$15 dollars more per box, it is ultimately an insignificant fraction of the total cost of a hunting trip,²⁰¹ which includes costs such as licensing, tags,

¹⁹⁰ See TRANEL & KIMMEL, *supra* note 61, at 319-25.

¹⁹¹ See *infra* notes 192-193; see also *supra* notes 133-135.

¹⁹² SENG, *supra* note 89.

¹⁹³ See ENTER. DIRECTORATE-GEN. EUROPEAN COMM'N, *supra* note 4, at 50-55.

¹⁹⁴ See *id.* at 50; see also Walters et al., *supra* note 14, at 977.

¹⁹⁵ See ENTER. DIRECTORATE-GEN. EUROPEAN COMM'N, *supra* note 4.

¹⁹⁶ See *id.*

¹⁹⁷ LOU CORNICELLI & MARRETT GRUND, MINN. DEP'T OF NATURAL RES., EXAMINING VARIABILITY ASSOCIATED WITH BULLET FRAGMENTATION AND DEPOSITION IN WHITE-TAILED DEER AND DOMESTIC SHEEP: PRELIMINARY RESULTS 1 (2008), available at files.dnr.state.mn.us/fish_wildlife/lead/bulletstudy/resources/publicsummary.pdf.

¹⁹⁸ Walters et al., *supra* note 14, at 977.

¹⁹⁹ SENG, *supra* note 89, at 16-33.

²⁰⁰ *Id.*

²⁰¹ Editorial, *Copper Bullets*, SALT LAKE TRIB., Oct. 11, 2009, available at www.uwin.org/index.php?option=com_content&view=article&id=91:copper-

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hunting equipment, lodging, gas, public or private land-use fees, taxidermy, and more.²⁰² The use of non-lead ammunition ultimately results in an insignificant 1% to 2% increase in yearly hunting costs.²⁰³ Production capacity for this alternative is limited due to a lower demand; however, numerous ammunition retailers offer non-lead ammunition in a majority of calibers, and the availability would only increase with greater demand.²⁰⁴ Thus, the benefits of lead ammunition are nominal, and there is currently at least one feasible available alternative to traditional lead ammunition.

iv. *The Reasonably Ascertainable Economic Consequences of Lead Ammunition Regulation*

A national lead ammunition ban is unlikely to have a significant negative impact on national and local economies. In its proposal to ban lead fishing sinkers, the EPA determined that such a ban would not result in “serious economic consequences for small businesses or the national economy.”²⁰⁵ In 1994, the year the ban was proposed, there were an estimated thirty million fishermen and just over 15 million hunters.²⁰⁶ Today, there are still an estimated thirty million fishermen while the number of hunters has decreased to 12.5 million.²⁰⁷ Because the EPA has already recognized that a lead fishing sinker ban would not have a severe effect on national or local economies even with the tremendous number of fishermen, with less than half as many hunters, it would be inconsistent for the EPA to find that a national ban of lead ammunition would pose serious implications for the economy.²⁰⁸ While sellers of lead ammunition would be expected to see a drop in revenue with a

bullets&catid=35:press&Itemid=75.

²⁰² FISH & WILDLIFE SERV., U.S. DEP’T OF THE INTERIOR, & CENSUS BUREAU, U.S. DEP’T OF COMMERCE, 2006 NATIONAL SURVEY OF FISHING, HUNTING, AND WILDLIFE-ASSOCIATED RECREATION 73-74.

²⁰³ TRANEL & KIMMEL, *supra* note 61, at 326.

²⁰⁴ See Thomas, *supra* note 9.

²⁰⁵ 59 Fed. Reg. 11,122, 11,139 (Mar. 9, 1994).

²⁰⁶ Press Release, U.S. Fish & Wildlife Serv., Number of Hunters, Anglers Constant in 1995 (Oct. 30, 1996), available at www.fws.gov/news/historic/1996/19961030.pdf.

²⁰⁷ FISH & WILDLIFE SERV., U.S. DEP’T OF THE INTERIOR, & CENSUS BUREAU, U.S. DEP’T OF COMMERCE, *supra* note 202; see also Laurie Lee Dovey, *Number of Hunters and Anglers in the U.S.—Men, Women, & Children*, HUNTING & FISHING @ SUITE 101 (Feb. 3, 2011), laurie-lee-dovey.suite101.com/number-of-hunters-and-anglers-in-the-us---men-women--children-a175352.

²⁰⁸ FISH & WILDLIFE SERV., U.S. DEP’T OF THE INTERIOR, & CENSUS BUREAU, U.S. DEP’T OF COMMERCE, *supra* note 202; see also Laurie Lee Dovey, *Number of Hunters and Anglers in the U.S.—Men, Women, & Children*, HUNTING & FISHING @ SUITE 101 (Feb. 3, 2011), laurie-lee-dovey.suite101.com/number-of-hunters-and-anglers-in-the-us---men-women--children-a175352.

nationwide ban, these sellers could easily mitigate these effects by including non-lead ammunition in their inventory.²⁰⁹ A national lead ammunition ban would also provide an assured market demand for non-lead alternatives, which would facilitate the expansion or creation of new businesses.²¹⁰ Studies have determined that if a large amount of states imposed lead ammunition regulations, the overall price of non-lead ammunition would drop because of the “economy of scale effect.”²¹¹ Thus, a complete ban would likely effectuate a marked reduction in price for non-lead alternatives, which will spur the expansion and creation of new businesses.²¹²

Further, if individual states choose to implement a complete ban within state lines, in the absence of federal regulation, businesses within those states would be hampered, as businesses existing in states without lead ammunition prohibitions would have the advantage of being able to continue selling lead bullets, to the disadvantage of those who could not.²¹³

A national lead ban would have a positive economic effect on recreational industries and tourism.²¹⁴ Compared to the estimated 12.5 million hunters today, the amount of bird and wildlife watchers and photographers increased from 62.8 million in 1996 to 71.1 million in 2006.²¹⁵ Expenditures in the United States for bird watching, photography, and feeding are estimated to be around \$18 billion a year, averaging nearly \$310 per spender.²¹⁶

The endangered condor is one of the species most affected by lead poisoning.²¹⁷ According to the EPA, “each individual is important to the

²⁰⁹ See Notice of Proposed Changes in Regulations Section 311.1 (California Fish and Game Commission, June 2, 2009) (Notice of Decision Not to Proceed issued Aug. 19, 2009). In this proposal the Fish and Game Commission found that there would likely be a drop in revenue for retailers only offering lead ammunition, however that these effects could be mitigated by simply including non-lead alternatives within their inventory. *Id.*

²¹⁰ See Thomas, *supra* note 9.

²¹¹ See *id.*

²¹² See THE INT’L COUNCIL FOR GAME & WILDLIFE CONSERVATION, CIC WORKSHOP REPORT: SUSTAINABLE HUNTING AMMUNITION 51 (2010), available at www.cic-wildlife.org/uploads/media/CIC_Sustainable_Hunting_Ammunition_Workshop_Report_low_res.pdf.

²¹³ See 59 Fed. Reg. 11,122, 11,141-42 (Mar. 9, 1994); Thomas, *supra* note 9, at 7-10.

²¹⁴ See Holly Doremus, *Restoring Endangered Species: The Importance of Being Wild*, 23 HARV. ENVTL. L. REV. 1, 34-35 (1999) (discussing the benefits of reintroduction of endangered species on economies and tourism).

²¹⁵ WATSON & AVERY, *supra* note 10, at 170; David Crary, *Number of Hunters Falls, Worrying Some*, USATODAY (Sept. 2, 2007) www.guideschool.com/articles/hunters-falls.pdf.

²¹⁶ 59 Fed. Reg. 11,122, 11,135 (Mar. 9, 1994).

²¹⁷ See generally Walters et al., *supra* note 14, at 977.

continued survival of an endangered or threatened species, and therefore, impacts on even single individuals are of special concern” and would benefit the most from a national lead ban.²¹⁸ It is in our country’s economic interest to maintain avian biodiversity and ecosystems, due to high recreational expenditures associated with activities involving wildlife.²¹⁹ Birds contribute to the maintenance of healthy ecosystems, biodiversity, aesthetic beauty, genetic value, and bird watching.²²⁰ A lead ammo ban would help to maintain biodiversity, thereby likely increasing expenditures on wildlife-related recreational activities.

Stronger biodiversity and healthier ecosystems as a result of the ban would ultimately benefit hunters. Although the switch to non-lead alternatives may result in a slight increase in hunting costs in the beginning, the price would likely ultimately drop, as non-lead alternatives were produced more extensively. The new demand for non-lead ammunition would spur the creation of new businesses that would be decidedly beneficial for the economy.²²¹ Finally, high costs of cleanup of sites where lead ammunition has accumulated, such as firing ranges and frequently hunted areas, would be exponentially reduced.²²² The national ban would prevent the continued accumulation of lead and thus would reduce the need for future cleanups.²²³ The reasonably ascertainable economic burdens are minimal and are heavily outweighed by economic benefits.

In conclusion, a lead ammunition ban easily meets the four TSCA criteria to demonstrate “unreasonableness.” The combined devastating effects of lead ammunition on humans, wildlife, and the environment are enormous, while the burdens of a national lead ammunition ban are insubstantial. The benefits of a ban plainly outweigh the burdens. Further, a national lead ban is the least burdensome means of adequately addressing the lead risk.²²⁴

v. *Addressing Uncertainties of the Cost-Benefit Analysis for*

²¹⁸ 59 Fed. Reg. 11,122, 11,130 (Mar. 9, 1994); see *Get the Lead Out*, CTR. FOR BIOLOGICAL DIVERSITY, www.biologicaldiversity.org/campaigns/get_the_lead_out/index.html (last visited Mar. 14, 2012).

²¹⁹ See CTR. FOR BIOLOGICAL DIVERSITY, NOTES ON THE ECONOMIC VALUE OF BIODIVERSITY, www.cbd.int/incentives/doc/biodiv-economic-value-en.pdf (last visited Mar. 14, 2012).

²²⁰ 59 Fed. Reg. 11,122, 11,135 (Mar. 9, 1994).

²²¹ See Thomas, *supra* note 9, at 208; see also Kelly et al., *supra* note 58.

²²² See ENVTL. WORKING GRP., *supra* note 93.

²²³ See *id.*

²²⁴ Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21 (citing H.R. Rep. No. 1341, 94th Cong., 2d Sess. 32 (1976)).

Unreasonableness

Although the benefits of a national lead ammunition ban outweigh the associated burdens, it is important to note the uncertainties of the cost-benefit analysis requirement. These questions are exemplified by the colossal battle that ensued in achieving a prohibition of leaded gasoline.

Extensive regulation of lead in gasoline began prior to the implementation of the requirement of a cost-benefit analysis.²²⁵ Had the EPA been required to complete a cost-benefit analysis of the removal of lead in gasoline, the agency likely would not have regulated the product, because it is difficult to quantify the benefits of a reduction in use of a substance before a reduction has actually occurred.²²⁶ Once 80% of lead had been removed from gasoline, a strong correlation was demonstrated between the reduction of lead in gas and lowered BLLs: “The relationship turned out to be remarkably consistent: children’s [BLLs] declined in direct proportion to the reduction of lead in gasoline.”²²⁷ This cost-benefit analysis could not have been realized until a stringent regulation had already been implemented.²²⁸

The correlation between lowered BLLs and lead gasoline regulation became a keystone of the EPA’s 1980s-era cost-benefit analysis, which eventually led to more stringent regulations of leaded gasoline.²²⁹ Similarly, critics argue that there is no direct evidence that a lead ban would effectively reduce lead poisoning in humans and wildlife.²³⁰ However, the benefits of a national lead ban cannot be fully and directly quantified until the ban has been implemented, just as the benefits of regulation of leaded gasoline could not be quantified until after it had been highly regulated. The leaded gasoline example brings to mind the “personal and social costs of having to repeat history when it is forgotten.”²³¹

B. THE EPA ALREADY PROPOSED A SIMILAR BAN USING TSCA’S COST-BENEFIT ANALYSIS FOR UNREASONABLENESS: LEAD FISHING SINKERS

In 1994, the EPA proposed a ban of lead fishing sinkers under the

²²⁵ Ackerman et al., *supra* note 65, at 160-61.

²²⁶ *Id.* at 170.

²²⁷ *Id.* at 167.

²²⁸ *Id.* at 170.

²²⁹ *Id.* at 160-70.

²³⁰ Dave Kopel, *supra* note 137.

²³¹ Kovarik, *supra* note 2, at 384.

same section of TSCA that grants it the broad power to nationally ban lead ammunition.²³² Using TSCA's cost-benefit analysis for unreasonableness, in 1994, the EPA proposed a ban on the manufacturing, processing, and distribution of lead sinkers and lead ammunition that had been modified to be used as sinkers, after finding they posed an unreasonable risk to human health and the environment.²³³

The Environmental Defense Fund (EDF), an environmental group that addresses urgent environmental threats to ecosystems, petitioned the EPA to require labeling of lead fishing sinkers under TSCA.²³⁴ The EDF's goal was to warn users of the hazard lead poses to wildlife, which in turn would motivate users to reduce those hazards by avoiding the use of lead sinkers.²³⁵ The EDF cited studies reporting that trumpeter swans, mute swans, and common loons were dying from ingestion of lead sinkers.²³⁶ The studies examined the results of necropsies performed on dead waterfowl where toxic levels of lead were found in the birds' blood, especially when fishing sinkers were present in the birds' gizzards.²³⁷

The EPA conducted a study on a control group of mallard ducks to determine effects of the ingestion of lead fishing sinkers.²³⁸ The EPA used lead ammunition rather than fishing sinkers in the study because there was a larger body of information on lead ammo, and its toxicity was the most comparable to that of lead sinkers.²³⁹ After considering the "scientific evidence regarding the toxicity of lead . . . , exposure to lead fishing sinkers, the economic consequences of the rule as proposed, and availability of substitutes," the EPA made an initial finding that lead sinkers posed an unreasonable risk to waterfowl.²⁴⁰ The EPA found that low levels of lead often resulted in damage to the liver, kidneys, nervous and reproductive systems, and death of waterfowl.²⁴¹

The Agency determined that labeling, along with other less burdensome regulatory schemes, would not adequately address the risk to waterfowl and proposed a nationwide ban of the manufacture and

²³² 59 Fed. Reg. 11,122 (Mar. 9, 1994); Complaint for Declaratory and Injunctive Relief, *supra* note 4.

²³³ 59 Fed. Reg. 11,122, 11,138-39 (Mar. 9, 1994).

²³⁴ 59 Fed. Reg. 11,122 (Mar. 9, 1994); Environmental Defense Fund, What We Do, (20120), available at www.edf.org/what-we-do.

²³⁵ 59 Fed. Reg. 11,122 (Mar. 9, 1994).

²³⁶ *Id.* at 11,123.

²³⁷ *See id.*

²³⁸ *See id.*

²³⁹ *Id.* at 11,126-27.

²⁴⁰ *See id.* at 11,124.

²⁴¹ *See* 59 Fed. Reg. 11,122, 11,126 (Mar. 9, 1994).

distribution of lead sinkers under TSCA section 6(a).²⁴² The EPA concluded that there are practical alternatives to lead sinkers, and the benefits of removing lead sinkers from the national market would diminish water bird mortality and reduce the risk to human health.²⁴³ Although the EPA did not analyze the direct effects of lead sinkers on human health, the Agency found that the risks lead poses to human health, including “blindness, brain damage, convulsions, and even death,” most notably in children and fetuses, are well documented.²⁴⁴

C. TSCA LEAD AMMO REGULATION: NOT PREEMPTED BY OTHER FEDERAL LAWS

For a toxic substance to remain within the purview of TSCA regulation, the EPA must demonstrate that other federal laws fail to prevent or sufficiently reduce the unreasonable risk posed by the substance.²⁴⁵ Further, the EPA must ensure that regulation of the substance is consistent with other federal laws and is the least burdensome approach that adequately reduces the risk posed.²⁴⁶

In the EPA’s proposed ban of lead fishing sinkers, the Agency found that other laws were insufficient in addressing the health risk of lead.²⁴⁷ The Agency considered the MBTA, which regulates the “take” of migratory and endangered captive-bred birds, and the federal ESA, which is designed to protect endangered and threatened species.²⁴⁸ The EPA found that neither adequately addressed the risk or conflicted with the proposed regulation.²⁴⁹ Therefore, other federal laws were found not to preempt TSCA regulation of fishing sinkers.

Similarly, the MBTA and the ESA do not preempt TSCA regulation of lead ammo. Although a “take” under the MBTA covers shooting or intentional poisoning of migratory or captive bred birds, the plain language of the statute does not appear to cover avian mortality ensuing

²⁴² See *id.* at 11,135-36; Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21 (citing H.R. Rep. No. 1341, 94th Cong., 2d Sess. 32 (1976)).

²⁴³ 59 Fed. Reg. 11,122, 11,125, 1133-34 (Mar. 9, 1994).

²⁴⁴ See *id.* at 11,125.

²⁴⁵ 15 U.S.C.A. § 2608 (Westlaw 2012).

²⁴⁶ See *id.*

²⁴⁷ 59 Fed. Reg. 11,122, 11,137 (Mar. 9, 1994).

²⁴⁸ 16 U.S.C.A. § 703 (Westlaw 2012); 50 C.F.R. § 10.12 (Westlaw 2012) (“Take means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.”); 59 Fed. Reg. 11,122, 11,137-38 (Mar. 9, 1994); see also Larry Martin Corcoran & Elinor Colbourn, *Shocked, Crushed, and Poisoned: Criminal Enforcement in Non-Hunting Cases Under the Migratory Bird Treaties*, 77 DENV. U. L. REV. 359, 378 (1999).

²⁴⁹ 59 Fed. Reg. 11,122, 11,137-38 (Mar. 9, 1994).

from primary or secondary lead poisoning due to the ingestion of lead ammunition through animal carcasses.²⁵⁰ For example, in *United States v. Corbin Farm Service*, the Eastern District of California found that the poisoning of birds protected under MBTA is prohibited unless it is the result of a “just” hunting-related act.²⁵¹ Numerous courts followed suit and applied similar interpretations.²⁵² Consequently, it is unlikely that the justified hunting of game animals, which frequently results in the inadvertent poisoning of condors and other birds, would be covered under the MBTA.²⁵³ Further, the MBTA does not safeguard non-avian wildlife or birds that are not found to fall under the protection of the MBTA.²⁵⁴ Thus, the MBTA does not offer wildlife adequate protection from the risks posed by lead.²⁵⁵

Although the ESA has been successful in halting large projects and construction ventures that would potentially encumber biological diversity, the Act has done little to ensure or improve the continued survival and recovery of endangered or threatened animals.²⁵⁶ Since the passage of the ESA in 1973, a large number of animals have been listed as endangered or threatened under the ESA, but very few have since recovered sufficiently to be delisted, partially due to the lack of adequate recovery plans.²⁵⁷

Section 4(f) of the ESA mandates that the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) develop and implement recovery plans for listed endangered species.²⁵⁸ Each plan must set forth an objective, such as the delisting of a species, and lay out step-by-step means of achieving that objective within a stated amount of time.²⁵⁹ Although the plain language of the statute explicitly requires the USFWS and NMFS to formulate recovery plans for endangered species, the plans are often drafted with vague language that courts frequently interpret to be recommendations rather than requirements.²⁶⁰ Even when drafted with unambiguous language,

²⁵⁰ See 16 U.S.C.A. § 703 (Westlaw 2012); See also 50 C.F.R. § 10.12 (Westlaw 2012); see also Corcoran & Colbourn, *supra* note 248, at 378.

²⁵¹ *United States v. Corbin Farm Serv.*, 444 F. Supp. 510, 515 (E.D. Cal. 1978).

²⁵² Corcoran & Colbourn, *supra* note 248, at 387-89.

²⁵³ See *id.*

²⁵⁴ 50 C.F.R. § 10.12 (Westlaw 2012); see Corcoran & Colbourn, *supra* note 248, at 387.

²⁵⁵ See generally Corcoran & Colbourn, *supra* note 248.

²⁵⁶ Doremus, *supra* note 214, at 24.

²⁵⁷ Federico Cheever, *The Road to Recovery: A New Way of Thinking About the Endangered Species Act*, 23 *ECOLOGY L.Q.* 1, 4, 7 (1996).

²⁵⁸ See 16 U.S.C.A. § 1533(f)(1)(B) (Westlaw 2012); Cheever, *supra* note 257.

²⁵⁹ See *id.*

²⁶⁰ Doremus, *supra* note 214, at 1, 18.

ongoing enforcement issues exist in the implementation of the plans, as courts repeatedly find them unenforceable.²⁶¹ In 1979, the USFWS developed and implemented a recovery plan for the condor, which included tracking and maintenance of the few enduring wild condors, and a captive breeding program.²⁶² However, this plan had to be abandoned with the continued rapid decline of the wild condor population, as conditions necessitated the capture of all condors remaining in their natural habitat.²⁶³ Even if a new unequivocal recovery plan were to be drafted and found to be enforceable by the court, unless it called for a complete ban of lead ammunition, it would still do little to address the risks posed by lead to the condor.²⁶⁴ Private actors are not required to take affirmative action in the recovery of a species, as the duty to conserve is imposed only on federal agencies.²⁶⁵ Consequently, private citizens would not likely be motivated to affirmatively choose non-lead alternatives over lead ammunition.²⁶⁶ As long as lead remains pervasive in the environment, the condor's numbers are going to continue to decline and the hope of future recovery of the species is minimal at best.²⁶⁷

The ESA does even less to protect other wildlife from the perils of lead poisoning. Non-listed animals are not afforded special protections under the ESA, and a recent study determined that almost 75% of animals classified by the International Union for the Conservation of Nature as imperiled are not listed under the ESA.²⁶⁸

A national lead ban is the least burdensome way to adequately address the risks posed by lead. Although there are less burdensome regulatory alternatives, none would adequately address the unnecessary risk posed by lead ammunition.²⁶⁹ For example, as previously discussed, in its proposal to ban lead fishing sinkers, the EPA determined that

²⁶¹ Cheever, *supra* note 257, at 58-61.

²⁶² CONDOR RECOVERY TEAM, CONDOR RECOVERY PLAN (July 1979), available at www.fws.gov/southwest/es/Documents/R2ES/California%20Condor.pdf (approved by Director of U.S. Fish & Wildlife Serv.); see Cheever, *supra* note 257, at 62.

²⁶³ Cheever, *supra* note 257, at 62.

²⁶⁴ See *supra* text accompanying notes 242, 243.

²⁶⁵ 16 U.S.C.A. § 1539 (Westlaw 2012); see Doremus, *supra* note 214, at 59.

²⁶⁶ See *supra* text accompanying notes 88-90 (discussing why most people continue to use traditional lead ammunition).

²⁶⁷ See Walters et al., *supra* note 14, at 972; see also Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21.

²⁶⁸ Press Release, Ctr. for Biological Diversity, New Study: 75 Percent of U.S. Animals Internationally Recognized as in Peril Lack Protection of Endangered Species Act (Dec. 15, 2011), available at www.biologicaldiversity.org/news/press_releases/2011/endangered-species-act-12-15-2011.html; see also 50 C.F.R. § 424.11 (Westlaw 2012).

²⁶⁹ See *supra* text accompanying notes 242, 243.

labeling, along with other less burdensome alternatives, would simply not address the risk posed by lead fishing sinkers.²⁷⁰ The EPA found that while labeling provides consumers with information about the risks of a product, it would not curb the amount of fishing sinkers lost by anglers.²⁷¹ Similarly, labeling of lead ammunition would not likely curtail the amount of lead ammunition lost while hunting or shooting.²⁷² Additionally, the EPA noted that because the risks posed by lead are not immediate, it is unlikely that labeling would serve as an effective deterrent for the purchase of leaded products.²⁷³ The lead fishing sinker proposal also rejected a regulatory scheme that would require the attachment of additional fees to the sale of lead sinkers, as it was not evident whether there would be a risk reduction.²⁷⁴ Thus, a regulatory method like this for lead ammunition would also not ensure a reduction of risk.²⁷⁵ Further, the current piecemeal regulation of lead ammunition by state and federal governments has proven to be largely unsuccessful in diminishing the risks posed by lead.²⁷⁶ In the absence of a national ban, if individual states choose to implement their own bans, businesses within those states would be hampered, as businesses existing in states without lead ammunition prohibitions would have the advantage of being able to continue selling lead bullets, to the disadvantage of those who could not.²⁷⁷ Finally, for hunters, a complete ban of lead ammunition is the least economically burdensome way to achieve a reduction of the risks posed by lead, because the increased demand for non-lead alternatives nationwide would result in a price reduction of non-lead alternatives by the “economies of scale” effect.²⁷⁸ Without a complete ban, the demand would not be large enough to result in a definitive drop in price.²⁷⁹

A national lead ammunition ban could easily work in coordination with other federal laws, such as the MBTA and ESA. The EPA’s proposal to ban lead fishing tackle explained that as long as the EPA

²⁷⁰ 59 Fed. Reg. 11,122, 11,135-36 (Mar. 9, 1994)

²⁷¹ *See id.* at 11,136.

²⁷² *See id.*

²⁷³ *See id.*

²⁷⁴ *See id.* at 11,137.

²⁷⁵ *See id.*

²⁷⁶ Thomas, *supra* note 9, at 206-08.

²⁷⁷ *Id.*

²⁷⁸ *Id.*

²⁷⁹ *See* THE INT’L COUNCIL FOR GAME & WILDLIFE CONSERVATION, *supra* note 212, at 51; *see also* Vernon G. Thomas, The Policy and Legislative Dimensions of Nontoxic Shot and Bullet Use in North America 9-10 (Aug. 2009), *available at* www.peregrinefund.org/subsites/conference-lead/PDF/0311%20Thomas.pdf.

consults with the United States Fish and Wildlife Service to ensure coordination with the ESA, the two agencies could work in coordination. The EPA also determined that the MBTA would complement a national lead regulation because the regulation would work to protect birds.²⁸⁰ Implementation of a national lead ammo ban under the TSCA would allow for regulation of the manufacture, processing, and distribution of lead ammunition, while the Department of the Interior would aptly control the manner of hunting on lands under its control.²⁸¹

D. BUT THERE'S A PROBLEM: CRITICS CLAIM THE EXEMPTION FOR ARTICLES SUBJECT TO THE MANUFACTURER'S TAX PREEMPTS EPA'S AUTHORITY TO REGULATE AMMUNITION

After the highly influential NRA implored the EPA not to exercise its authority to regulate lead ammunition under TSCA, the EPA announced that it lacked the right to regulate lead ammunition.²⁸² The EPA's rationalization for refusing to exercise its authority was its asserted belief that a manufacturer's tax preempted the EPA's power to regulate lead ammunition.²⁸³ Under 15 U.S.C. § 2602(2)(B)(v), "any article the sale of which is subject to the tax imposed by section 4181 of the Internal Revenue Code of 1986" is excluded from TSCA regulation.²⁸⁴ Internal Revenue Code section 4181 imposes taxes on firearms, shells and cartridges.²⁸⁵ The ambiguous language of section 4181 brought about controversy as to the true meaning of shells and cartridges.²⁸⁶ The EPA and NRA argue that the code applies to all parts of ammunition, whether as separate components or in its completed form ready for distribution.²⁸⁷ Environmental groups, on the other hand, maintain that section 4181 is not intended to include separate chemical components of ammunition before they have been manufactured to form completed shells or cartridges.²⁸⁸

However, Revenue Ruling 68-463 cleared up the ambiguous

²⁸⁰ 59 Fed. Reg. 11,122, 11,137 (Mar. 9, 1994).

²⁸¹ *See id.* at 11,137-38.

²⁸² Complaint for Declaratory and Injunctive Relief, *supra* note 4.

²⁸³ *See id.*

²⁸⁴ 15 U.S.C.A. § 2602(2)(B)(v) (Westlaw 2012).

²⁸⁵ 26 U.S.C. § 1481 (Westlaw 2012).

²⁸⁶ Complaint for Declaratory and Injunctive Relief, *supra* note 4.

²⁸⁷ *See* Letter from Nat'l Rifle Ass'n to Lisa P. Jackson, Adm'r, Env'tl. Prot. Agency (Aug. 20, 2010); *see also* Letter from Stephen A. Owens, Assistant Adm'r, U.S. Env'tl. Prot. Agency, to Michael Fry, Dir. of Conservation Advocacy, Am. Bird Conservancy (Aug. 27, 2010), available at www.epa.gov/oppt/chemtest/pubs/Owens_Petition_Response.pdf.

²⁸⁸ Complaint for Declaratory and Injunctive Relief, *supra* note 4.

language of this section, finding that “sales of separate parts of ammunition are not subject to the [Internal Revenue Code’s] manufacturers tax; however, sales of complete shells and cartridges, even though in a knock-down condition, are subject to tax.”²⁸⁹ The House legislative committee that drafted TSCA made it clear that it intended shells and cartridges to be defined under Internal Revenue Code section 4181 as completed ammunition. The committee explained:

Although the language of the bill is clear on its face as to the exemption for pistols, revolvers, firearms, shells, and cartridges, the Committee wishes to emphasize that it does not intend that the legislation be used as a vehicle for gun control. Consequently the Administrator [of the EPA] has no authority to regulate ammunition as an unreasonable risk because it injures people when fired from a gun. However, the Committee does not exclude from regulation under the bill chemical components of ammunition which could be hazardous because of their chemical properties.²⁹⁰

Thus, the TSCA exclusion for articles subject to the manufacturer’s tax does not apply to the separate lead parts of ammunition, preserving the EPA’s authority to ban lead ammo nationwide under TSCA.²⁹¹

IV. CONCLUSION

In 2010, the Center for Biological Diversity (CBD), an environmental group devoted to the preservation of biodiversity, petitioned the EPA to ban lead ammunition and fishing sinkers on the grounds that lead poses an unreasonable risk to human health and the environment.²⁹² The CBD claimed that the EPA had the authority to regulate ammo and tackle under TSCA.²⁹³ The EPA refused both requests, claiming that it lacked authority under TSCA because 15 U.S.C. § 2602(2)(B)(v) excludes from TSCA regulation components of ammunition that is subject to the manufacturer’s tax.²⁹⁴ However, the CBD maintained that the manufacturer’s tax applies only to completed

²⁸⁹ Rev. Rul. 68-463, 1968-2 C.B. 507.

²⁹⁰ Complaint for Declaratory and Injunctive Relief, *supra* note 4, ¶ 21 (citing H.R. Rep. No. 1341, 94th Cong., 2d Sess. 32 (1976)).

²⁹¹ See Rev. Rul. 68-463, 1968-2 C.B. 507.

²⁹² CTR. FOR BIOLOGICAL DIVERSITY ET AL., *supra* note 18, at 2-3.

²⁹³ Complaint for Declaratory and Injunctive Relief, *supra* note 4.

²⁹⁴ Letter from Stephen A. Owens, Assistant Adm’r, U.S. Env’tl. Prot. Agency, to Michael Fry, Dir. of Conservation Advocacy, Am. Bird Conservancy (Aug. 27, 2010), available at www.epa.gov/oppt/chemtest/pubs/Owens_Petition_Response.pdf.

ammunition.²⁹⁵ While the fishing tackle portion of the case is still pending a decision, the lead ammunition portion of the case was dismissed on procedural grounds.²⁹⁶ Although the ammunition portion was dismissed, nothing in the plain language of TSCA prevents the CBD or another group from petitioning the EPA on the very same grounds.²⁹⁷

Although the EPA maintains that it lacks the authority to ban lead ammunition nationwide, the plain language of TSCA shows otherwise.²⁹⁸ Lead ammunition undeniably presents an unreasonable risk to human health and the environment.²⁹⁹ The NRA's assertions that wildlife BLLs are unrelated to consumption of lead ammunition, and that lead ammo regulation is just a ploy of environmentalists to further their anti-Second Amendment agenda, are unsubstantiated.³⁰⁰ Further, other federal laws fail to adequately address the unreasonable risk posed by lead ammunition yet could work entirely in coordination with a nationwide ban under TSCA.³⁰¹ The EPA possesses the broad authority to regulate lead ammunition under the Act and is not preempted by the firearms manufacturer's tax.³⁰²

The EPA may be hesitant to assert its authority under TSCA due to pressures from one of the nation's most influential lobbying organizations, the NRA. However, the EPA must acknowledge the devastating effects lead ammunition has on humans and the environment and what its refusal to regulate lead means for the condor. If the EPA continues to refuse to exercise its authority to enact stringent nationwide lead ammunition regulations, environmental groups, hunters' organizations, and individuals must re-petition the EPA in order to accomplish this necessary change. There is more than enough scientific evidence and data that attribute lead poisoning to lead ammunition to call for the initiation of a national ban and the immediate phase-out of lead.

²⁹⁵ CTR. FOR BIOLOGICAL DIVERSITY ET AL., *supra* note 18, at 58.

²⁹⁶ Press Release, Ctr. for Biological Diversity, National Petition to Ban Toxic Lead Ammunition Snags on Procedural Issue (Sept. 30, 2011), *available at* www.biologicaldiversity.org/news/press_releases/2011/lead-09-30-2011.html.

²⁹⁷ Telephone Interview with Jacki Lopez, Staff Attorney, Center for Biological Diversity (Oct. 25, 2011).

²⁹⁸ Complaint for Declaratory and Injunctive Relief, *supra* note 4.

²⁹⁹ See 59 Fed. Reg. 11,122, 11,124, 11,138 (Mar. 9, 1994).

³⁰⁰ See *supra* text accompanying notes 156–70.

³⁰¹ 59 Fed. Reg. 11,122, 11,137–38 (Mar. 9, 1994).

³⁰² Complaint for Declaratory and Injunctive Relief, *supra* note 4.

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