



1-1-2014

Pulling the Trigger on Pollution or Jumping the Gun on Gun Control?: An Overview of the Environmental Impacts of Guns and Ammunition

Jeffrey F. Hall-Gale

Follow this and additional works at: <https://digitalcommons.law.villanova.edu/elj>



Part of the [Environmental Law Commons](#)

Recommended Citation

Jeffrey F. Hall-Gale, *Pulling the Trigger on Pollution or Jumping the Gun on Gun Control?: An Overview of the Environmental Impacts of Guns and Ammunition*, 25 Vill. Envtl. L.J. 177 (2014).

Available at: <https://digitalcommons.law.villanova.edu/elj/vol25/iss1/7>

This Comment is brought to you for free and open access by Villanova University Charles Widger School of Law Digital Repository. It has been accepted for inclusion in Villanova Environmental Law Journal by an authorized editor of Villanova University Charles Widger School of Law Digital Repository.

2014]

PULLING THE TRIGGER ON POLLUTION OR JUMPING THE GUN ON GUN CONTROL?: AN OVERVIEW OF THE ENVIRONMENTAL IMPACTS OF GUNS AND AMMUNITION

“A well regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed.”¹

I. INTRODUCTION

Of the twelve deadliest shootings in the United States, six have occurred since 2007.² The second most recent, the shooting at Sandy Hook Elementary School in Newtown, Connecticut, left twenty children, aged six to seven, and seven adults dead, including shooter Adam Lanza (Lanza).³ Arguably, a lack of environmental regulations over guns and ammunition may have indirectly led Lanza to commit this heinous crime at Sandy Hook Elementary.⁴

1. U.S. CONST. amend. II (giving constitutional right to bear arms).

2. *Deadliest U.S. Shootings*, WASH. POST, <http://www.washingtonpost.com/wp-srv/special/nation/deadliest-us-shootings/> (last updated Sept. 23, 2013) (listing deadliest United States shooting and weapons used at those shootings).

3. See Dana Ford, *Sandy Hook Victims Names List, Photos: Sandy Hook Elementary School Shooting Victims Remembered*, WPTV (Dec. 21, 2012), <http://www.wptv.com/dpp/news/national/sandy-hook-victims-names-list-photos-sandy-hook-elementary-school-shooting-victims-remembered> (identifying victims of shooting at Sandy Hook Elementary School). During the publication of this Comment, another shooting occurred at the United States Navy Yard in Washington, D.C., that may also have an impact on the issues mentioned herein. See Aaron Alexis *At Gun Range 2 Days Before Navy Yard Shooting*, HUFFINGTON POST (Sept. 17, 2013, 6:11 PM), http://www.huffingtonpost.com/2013/09/17/aaron-alexis-gun-range_n_3943449.html. The Washington, D.C., shooter, Aaron Alexis, fired a rifle at the Sharpshooters Small Arms Range two days before the September 16, 2013, Navy Yard shooting that killed thirteen people, including Alexis, and injured eight. *Id.*

4. See Pierre Thomas et al., *Connecticut School Shooting: Adam Lanza and Mother Visited Gun Ranges*, ABC NEWS (Dec. 16, 2012), <http://abcnews.go.com/Blotter/connecticut-school-shooting-adam-lanza-mother-visited-gun/story?id=17992396> (stating Lanza and his mother spent time at Connecticut firing range); VIOLENCE POLICY CTR., POISONOUS PASTIME § 1: LEAD, ENVIRONMENTAL POLLUTION, AND HEALTH HAZARDS, at 8, 11 (2001) [hereinafter VIOLENCE POLICY CTR.], available at <http://www.vpc.org/graphics/poison.pdf> (stating lead can cause someone to commit rampage killings due to lead's effect on part of brain that controls aggression); George Monbiot, *Yes, Lead Poisoning Could Really be a Cause of Violent Crime*, THE GUARDIAN (Jan. 7, 2013, 3:30 PM), <http://www.guardian.co.uk/commentisfree/2013/jan/07/violent-crime-lead-poisoning-british-export> (finding violent crime reaches its highest point twenty years after lead pollution reaches its peak). Lanza's mother visited a gun range on multiple occasions, but it is unclear if Adam was with her on all of these visits. Thomas, *supra*. In addition, the Aurora, Colo-

Prior to the Sandy Hook shooting, Lanza allegedly visited numerous firing ranges.⁵ Firing ranges are generally exempt from many lead pollution regulations in the United States despite being one of the leading lead polluters nationally.⁶ Evidence suggests that lead poisoning, particularly in children, “helps cause violent criminal behavior, perhaps even ‘rampage’ killings” in some individuals.⁷ Notably, “there is a scientifically demonstrable relationship between lead poisoning and criminal behavior, just as there is between smoking and lung cancer.”⁸

Following the tragic event in Newtown, Connecticut, many people called for heightened gun control.⁹ In response, on January 16, 2013, President Barack Obama proposed twenty-three executive actions.¹⁰ Contemporary arguments against gun control consist of

rado, movie theater shooter, James Holmes, appeared to have an interest in and prior history at gun ranges. Jana Winter, *Massacre Suspect James Holmes’ Gun-Range Application Drew Red Flag*, FOX NEWS (July 22, 2012), <http://www.foxnews.com/us/2012/07/22/massacre-suspect-james-holmes-gun-range-application-drew-red-flag-for-owner/>.

5. Ashley Fantz, *Shooter’s Mother Wanted Her Son to Fit In, Friend Says*, CNN (Dec. 21, 2012, 12:43 PM), <http://www.cnn.com/2012/12/16/us/connecticut-nancy-lanza-profile> (reporting Lanza visited numerous shooting ranges on several occasions with his mother); Tyler Dunn, *Oklahoma Gun Range Receipt Found in Adam Lanza’s Newtown, Connecticut Home After Sandy Hook Shooting*, KJRH (Mar. 28, 2013), <http://www.kjr.com/dpp/news/state/oklahoma-gun-range-receipt-found-in-adam-lanzas-newtown-connecticut-home-after-sandy-hook-shooting> (stating Lanza had receipt from Oklahoma Shooting range).

6. Mike Adams, *8,000 Toxic Waste Sites Ignored by EPA; Massive Lead Contamination at Shooting Ranges*, NATURALNEWS.COM (Dec. 6, 2007), http://www.naturalnews.com/022329_lead_poisoning_contamination.html (reporting firing ranges are exempted from almost all major pollution control laws, including EPA’s lead reporting requirement). Lead that is deposited into the environment via shooting ranges is “one of the leading causes of lead pollution in the U.S.,” and shooting ranges can release millions of tons of lead. *Id.*

7. VIOLENCE POLICY CTR., *supra* note 4, at 8 (explaining connection lead has to violent crime). There are some scholars and historians that claim lead poisoning led to the downfall of Roman Civilization. John Noble Wilford, *Roman Empire’s Fall Is Linked with Gout and Lead Poisoning*, N.Y. TIMES (Mar. 17, 1983), <http://www.nytimes.com/1983/03/17/us/roman-empire-s-fall-is-linked-with-gout-and-lead-poisoning.html>.

8. VIOLENCE POLICY CTR., *supra* note 4, at 8 (finding overexposure to lead might cause someone to commit a violent gun crime).

9. See Brett Logiurato, *How Americans Really Feel About Gun Control*, BUSINESS INSIDER (Dec. 26, 2012, 3:29 PM), <http://www.businessinsider.com/gun-control-polls-sandy-hook-school-shooting-elementary-newtown-ct-2012-12?op=1> (stating that after Newtown, more United States citizens think it is more important to control gun ownership than gun rights).

10. *President Obama’s Actions on Gun Policy*, L.A. TIMES (Jan. 16, 2013), <http://documents.latimes.com/president-obamas-actions-gun-policy/> (giving twenty-three executive actions made by President Obama after Sandy Hook murders); see also Phil Paleologos, *Vice President Biden, Gun Control Committee, Exploring “Executive Order” On Gun Policy*, WBSM, <http://wbsm.com/vice-president-biden-gun-control->

various Second Amendment interpretations, such as the desire to protect individuals from crime, to counter government tyranny, and to enjoy recreational gun hobbies like hunting and skeet shooting.¹¹ On the other hand, many question whether gun control is the answer to combating violent crime.¹² One effect of gun use that does not garner much public discussion in the gun control debate is the impact guns and ammunition have on the environment.¹³ A sizeable amount of litigation focuses on spent ammunition's environmental impact and its connection to federal regulations.¹⁴ Most spent ammunition suits are directed at gun clubs, generally concerning lead ammunition in waterways in violation of the Clean Water Act (CWA).¹⁵ The right to hunt is cited by

committee-exploring-executive-order-on-gun-policy/ (last updated Jan. 10, 2013, 3:28 PM) (stating executive actions were based on findings from Biden's gun control committee). The executive orders include requirements for broader background checks on gun purchasers and the creation of a United States Department of Justice administered National Gun Database available to federal, state, and local law enforcement that provides information on lost and stolen guns. *President Obama's Actions on Gun Policy*, *supra*.

11. See Paul Waldman, *Ten Arguments Gun Advocates Make, and Why They're Wrong*, THE AMERICAN PROSPECT (Dec. 15, 2012), <http://prospect.org/article/ten-arguments-gun-advocates-make-and-why-theyre-wrong> (outlining gun supporters' arguments for constitutional right to own guns); T. David Gordon, 'Preserve Your Second Amendment Right to Hunt?' – *Firearms Discussion (Part III)*, AMMOLAND (Jan. 29, 2013), <http://www.ammoland.com/2013/01/preserve-your-second-amendment-right-to-hunt/#axzz2frBGSqpO> (mentioning Congress and White House refer to Second Amendment right of hunting). Other arguments against additional, restrictive gun control include Americans' reluctance to give up a longstanding, historic right, the need to enforce the current laws, rather than enact new laws, and the American cultural significance of guns. Waldman, *supra*.

12. See Waldman, *supra* note 11 (outlining debate on whether violent crime will be curtailed with more gun laws). Opponents of gun control claim that the 515 murders in 2011 in New York City and Chicago, both areas with tough gun laws, are proof that gun control does not work. Rob Hunter, *Why Gun Control in America Simply Won't Work*, KTAR (Jan. 15, 2013, 5:13 PM), <http://ktar.com/106/1602213/Why-gun-control-in-America-simply-wont-work?page=1>. Further, some claim the answer to preventing violent crime is to solve the issue of poverty in the United States. *Id.*

13. See generally Abhijit Naik, *Arguments for Gun Control*, BUZZLE, <http://www.buzzle.com/articles/arguments-for-gun-control.html> (last updated Sept. 23, 2011) (failing to mention guns' environmental impact when outlining arguments for gun control).

14. See, e.g., *Cordiano v. Metacon Gun Club, Inc.*, 575 F.3d 199 (2d Cir. 2009) (holding gun club did not violate RCRA and CWA); *Connecticut Coastal Fishermen's Ass'n v. Remington Arms Co.*, 989 F.2d 1305 (2d Cir. 1993) (considering suit against trap and skeet shoot club for CWA and RCRA violations); *Calmat Co. v. San Gabriel Valley Gun Club*, 809 F. Supp. 2d 1218 (C.D. Cal. 2011) (discussing property owners' claim against gun club under CERCLA to clean up property that gun club leased).

15. See *Connecticut Coastal Fishermen's Ass'n*, 989 F.2d at 1312-13 (holding gun club did not violate CWA because violations occurred in the past, and future violations are speculative); *Cordiano*, 575 F.3d at 215-18 (finding no CWA violation be-

advocates favoring relaxed gun control in the United States, but hunting has been subject to various lawsuits for its possible adverse environmental impacts.¹⁶ Animal rights activists commonly sue governmental bodies, claiming certain hunting regulations violate the National Environmental Policy Act (NEPA) or similar state statutes and significantly harm animal populations.¹⁷

Another commonly litigated area concerns whether spent lead ammunition qualifies as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA).¹⁸ In addition, gun and ammunition manufacturers have been identified as some of the worst polluters in the country.¹⁹ The United States Department of Defense's (DOD) Radford Army Ammunition Plant (RAAP) in Virginia, for example, was the second largest polluter among all facilities discharging chemicals in 2010 due to its release of 12,006,602 pounds of toxic chemicals.²⁰ Furthermore, an Iowa ammunition manufacturer, PMX Industries (PMX), was responsible for releasing 294,662 pounds of chemicals into Iowa's environ-

cause shooting range and berm at gun club did not constitute jurisdictional wetland under CWA).

16. See Gordon, *supra* note 11 (reporting some politicians find hunting to be constitutional right); see also Russ Chastain, *Why Own a Gun?*, ABOUT.COM, <http://hunting.about.com/od/guns/a/whyownagun.htm> (last visited Jan. 22, 2014) (stating hunting is common reason for owning a gun); *Does Hunting Help or Hurt the Environment?*, SCI. AM. (Nov. 10, 2009), <http://www.scientificamerican.com/article.cfm?id=earth-talks-hunting> (questioning whether hunting is environmentally helpful); *Fund for Animals v. Hall*, 777 F. Supp. 2d 92, 94 (D.D.C. 2011) (hearing action brought by environmentalists alleging FWS violated NEPA by failing to submit cumulative impact of hunting on National Wildlife Refuges).

17. See *Hall*, 777 F. Supp. 2d at 94 (describing action brought by nonprofit organization against FWS); *Comm. to Abolish Sport Hunting, Inc. v. Palisades Interstate Park Comm'n*, 84 A.D.2d 798 (N.Y. Sup. Ct. App. Div. 1981) (ruling anti-hunting group could not obtain injunction to prevent Palisades Interstate Park Commission from hunting deer on certain properties).

18. *Connecticut Coastal Fishermen's Ass'n*, 989 F.2d at 1316-18 (holding lead shot and clay target debris was RCRA hazardous solid waste subject to regulation and remediation). *But see Cordiano*, 575 F.3d at 207-08 (finding spent munitions and their remains are not RCRA hazardous wastes).

19. See Jeff Patch, *Korean Ammo Manufacturer and Polluter Gives Harkin Institute 500,000 Dollar Coins*, THE IOWA REPUBLICAN (Dec. 19, 2012), <http://theiowa republican.com/2012/harkin-dollar-coins/> (noting statistics for Iowa manufacturer in 2009); see also Kiera Butler, *America's Top 10 Most-Polluted Waterways*, MOTHER JONES (Apr. 2, 2012, 3:00 AM), <http://www.motherjones.com/blue-marble/2012/03/top-10-polluted-rivers-waterways> (listing 2010's top twenty polluters). A "vast majority" of the top twenty-polluters in the United States are engaging in pollution that is "perfectly legal." Butler, *supra*.

20. Butler, *supra* note 19 (stating RAAP largely affected the New River with release of toxins); see also *Radford Army Ammunition Plant*, ENVTL. PROT. AGENCY, <http://www.epa.gov/reg3wcmd/ca/va/webpages/va1210020730.html> (last updated Apr. 2013) (summarizing EPA involvement with plant).

ment.²¹ PMX released the fifth-highest amount of cancer-causing chemicals in the state of Iowa.²²

In an effort to strengthen environmental laws, some states have enacted their own environmental statutes that apply to guns and ammunition.²³ For example, in 1971, Minnesota enacted the Minnesota Environmental Rights Act (MERA).²⁴ MERA permits civil remedies where activities interfere with the enjoyment of natural resources in the state.²⁵ Furthermore, the Environmental Protection Agency (EPA) and certain states, such as California, have considered requiring lead-free ammunition.²⁶

This Comment addresses the relationship guns and ammunition have with the environment, environmental laws, humans, and wildlife. Part II addresses the federal statutes that are most relevant to the environmental jurisprudence surrounding the impacts of guns and ammunition.²⁷ Part III discusses lead ammunition's environmental impacts and the debate surrounding lead-free ammunition.²⁸ Part IV discusses environmental issues relating to gun and ammunition manufacturing plants.²⁹ Part V discusses hunting litigation and hunting's effects on the environment.³⁰ Finally, Part VI looks at the future of gun control, including environmental im-

21. Patch, *supra* note 19 (discussing pollution from Iowa gun manufacturer).

22. *Id.* (noting PMX's pollution rank in Iowa).

23. See MINN. STAT. § 116B.01 (2012) (outlining MERA); Minnesota Pub. Interest Research Grp. v. White Bear Rod & Gun Club, 257 N.W.2d 762, 783 (Minn. 1977) (finding gun club violated MERA).

24. See *White Bear*, 257 N.W.2d at 767 (providing background of MERA).

25. See MINN. STAT. §§ 116B.01-13 (outlining MERA); *Minnesota Environmental Rights Act*, MICH. ST. U. C. OF LAW, http://www.animallaw.info/statutes/stusmn116b_01_13.htm (last updated Nov. 2011) (summarizing MERA).

26. See *Press Release, Hunters Embrace Lead-free Ammunition Regulations, More New Non-toxic Bullets Available to Prevent Condor Poisonings*, CENTER FOR BIOLOGICAL DIVERSITY (Feb. 10, 2009), http://www.biologicaldiversity.org/news/press_releases/2009/condor-lead-02-10-2009.html [hereinafter *Condor Poisonings*] (discussing California law requiring lead-free ammunition in California condor's range); see also Mark Whittington, *EPA Considering Banning Lead Bullets*, YAHOO! (Aug. 26, 2010), <http://voices.yahoo.com/epa-considering-banning-lead-bullets-6665744.html> (reporting EPA considered banning lead bullets).

27. For an overview of court discussions of environmental statutes, see *infra* notes 32-102 and accompanying text.

28. For an analysis of lead and lead-free ammunition, see *infra* notes 103-187 and accompanying text.

29. For an analysis of the environmental problems originating from gun and ammunition manufacturing plants, see *infra* notes 188-241 and accompanying text.

30. For a discussion of hunting and its environmental impacts, see *infra* notes 242-351 and accompanying text.

pacts, and discusses a proposed solution to clean up the environment and limit violent crime simultaneously.³¹

II. BACKGROUND

Loose enforcement of the CWA and the RCRA is central to problems surrounding lead accumulation at and near gun range sites.³² The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) is integral in assigning the amount of financial liability for cleaning up contaminated gun manufacturing plants and firing ranges.³³ In addition, NEPA mandates guidelines for the federal government to follow when enacting hunting regulations and other policies that could adversely impact the environment.³⁴

A. Resource Conservation and Recovery Act

Enacted in 1976 as an amendment to the Solid Waste Disposal Act, "RCRA is a comprehensive environmental statute that governs the treatment, storage, and disposal of solid and hazardous waste."³⁵ RCRA's main goal "is to reduce the generation of hazardous waste and to ensure the proper treatment, storage, and disposal of that waste which is nonetheless generated, 'so as to minimize the

31. For a discussion of gun control's future, its relationship to the environment, and a possible way to prevent violent crime, see *infra* notes 352-386 and accompanying text.

32. See Adams, *supra* note 6 (reporting firing ranges are exempt from RCRA); Samuel Blackstone, *The Lead In Bullets Is Creating More Pollution And Public Health Hazards Than Anyone Is Really Willing To Admit*, BUSINESS INSIDER (Aug. 8, 2012, 4:22 PM), <http://www.businessinsider.com/lead-free-bullets-find-little-buyers-2012-8#ixzz2HJ0mkemN> (stating firing ranges are exempt from Clean Air Act (CAA) and CWA).

33. See *Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)*, ENVTL. PROT. AGENCY, <http://www2.epa.gov/laws-regulations/summary-comprehensive-environmental-response-compensation-and-liability-act> (last updated Apr. 16, 2013) (describing Superfund).

34. See Richard Lazarus, *The National Environmental Policy Act in the U.S. Supreme Court: A Reappraisal and A Peek Behind the Curtains*, 100 GEO. L.J. 1507, 1514 (2012) (discussing NEPA requirements); *Wildlife Fund for Animals v. Hall*, 777 F. Supp. 2d 92, 94 (D.D.C. 2011) (holding FWS failed to meet its NEPA requirements when it permitted hunting on national wildlife refuges).

35. *Meghrig v. KFC W., Inc.*, 516 U.S. 479, 483 (1996) (providing RCRA's background); *RCRA Summary*, ENVTL. PROT. AGENCY, <http://www.epa.gov/Region2/waste/summary.htm> (last updated Oct. 19, 2010) (summarizing RCRA). According to the EPA, RCRA's goals are to: (1) "protect human health and the environment from the hazards posed by waste disposal;" (2) "conserve energy and natural resources through waste recycling and recovery;" (3) "reduce or eliminate" the volume of waste generated; and (4) "ensure that wastes are managed in a manner that is protective of human health and the environment." *RCRA Summary, supra*.

present and future threat to human health and the environment.’”³⁶ RCRA imposes both civil and criminal penalties for non-compliance.³⁷ RCRA contains separate programs that help achieve the statute’s goals.³⁸ First, RCRA’s hazardous waste program sets out to control hazardous waste from waste generation to waste disposal.³⁹ Second, the solid waste program, which pertains to the lead ammunition debate, requires solid waste disposal be done in “sanitary landfills.”⁴⁰ The program prohibits the disposal of waste through “open dumping.”⁴¹ Third, RCRA regulates the storage of hazardous substances and petroleum products through its underground storage tanks program.⁴²

RCRA contains a citizen suit provision allowing an individual to bring a civil suit in three situations.⁴³ First, RCRA allows an individual to bring suit against “any person . . . who is alleged to be in violation of any permit, standard, regulation, condition, requirement, prohibition, or order.”⁴⁴ Second, RCRA allows a citizen suit against “any person . . . who has contributed or who is contributing to the past or present . . . disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment.”⁴⁵ Third, citizens can sue to require the EPA Administrator to perform an act that is nondiscretionary under RCRA.⁴⁶ Successful citizen suits can result in civil penalty

36. *Meghrig*, 516 U.S. at 483 (quoting 42 U.S.C. § 6902(b) (2012)) (stating RCRA’s primary purpose).

37. Resource Conservation & Recovery Act, 42 U.S.C. § 6928 (2012) (outlining civil and criminal penalties possible under RCRA).

38. *RCRA Summary*, *supra* note 35 (listing RCRA programs).

39. *Id.* (describing hazardous waste program).

40. 42 U.S.C. § 6944 (2012) (outlining criteria for sanitary landfills); 42 U.S.C. § 6945(a) (2012) (discussing prohibited act of open dumping and its consequences).

41. *See Cordiano v. Metacon Gun Club, Inc.*, 575 F.3d 199, 202 (2d Cir. 2009) (discussing plaintiffs’ open dumping claim).

42. *RCRA Summary*, *supra* note 35 (describing UST program).

43. 42 U.S.C. § 6972 (2012) (describing citizen suits brought under RCRA); *Cordiano*, 575 F.3d at 202 (2d Cir. 2009) (identifying parties of case).

44. 42 U.S.C. § 6972(a)(1)(A) (allowing a citizen to sue for RCRA violation). One can sue “any person (including (a) the United States, and (b) any other governmental instrumentality or agency, to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any permit, standard, regulation, condition, requirement, prohibition, or order which has become effective pursuant to this chapter.” *Id.*

45. *Id.* § 6972(a)(1)(B) (explaining civil suit against contributor to hazardous waste accumulation that causes substantial endangerment to environment or health).

46. *Id.* § 6972(a)(2) (outlining suit against EPA Administrator to perform non-discretionary action).

awards, equitable relief, litigation costs, expert witness fees, and attorney's fees.⁴⁷

B. Comprehensive Environmental Response, Compensation, and Liability Act

In December of 1980, Congress enacted CERCLA, which “provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.”⁴⁸ The Act creates a “Federal ‘Superfund’ to clean up uncontrolled or abandoned hazardous-waste sites, as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment.”⁴⁹ Since CERCLA was enacted, many gun and ammunition manufacturing plants across the United States, both federally and privately owned, have been subject to expensive CERCLA cleanup.⁵⁰

The EPA uses the Superfund to pay for cleanups where the “potentially responsible party” (PRP) cannot pay or cannot be found.⁵¹ In order to fund the Superfund, CERCLA taxed the chemical and petroleum industries and collected 1.6 billion dollars over five years.⁵² The EPA then allocated the money “to a trust fund for cleaning up abandoned or uncontrolled hazardous waste

47. Carter E. Strang, *RCRA Citizen Suits for Injunctive Relief*, TUCKER, ELLIS & WEST LLP, http://www.tuckerellis.com/files/rcra_citizen_suits_for_injunctive_relief.pdf (last visited Jan. 22, 2014) (identifying possible recovery in RCRA civil suit). The RCRA citizen suit “is injunctive in nature” and cannot be used to recover money damages. *Id.*

48. *CERCLA Overview*, ENVTL. PROT. AGENCY, <http://www.epa.gov/superfund/policy/cercla.htm> (last updated Dec. 12, 2011) (providing brief CERCLA overview). Crude oil and natural gas are not subject to CERCLA regulations. *Reporting Exemptions for Hazardous Substance Releases*, ENVTL. PROT. AGENCY, <http://www.epa.gov/osweroe1/content/reporting/hazexems.htm> (last updated Dec. 12, 2011). CERCLA differs from RCRA, as “RCRA is not principally designed to effectuate the cleanup of toxic waste sites or to compensate those who have attended the remediation of environmental hazards.” *Meghrig v. KFC W., Inc.*, 516 U.S. 479, 483 (1996).

49. *Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)*, *supra* note 33 (discussing federal Superfund).

50. Kevin Duchschere, *Arden Hills Ammo Plant Gets Another Chance for Development*, STARTRIBUNE (Nov. 29, 2012, 10:46 PM), <http://www.startribune.com/local/east/181004481.html?refer=y> (discussing CERCLA cleanup of ammunition plant in Minnesota); Molly O’Toole, *Gun Factory Building Has Hazardous History*, CORNELL DAILY SUN (Nov. 28, 2007), <http://web.archive.org/web/20130530192241/http://cornellsun.com/node/26384> [hereinafter *Gun Factory Building Hazardous History*] (discussing on-going CERCLA gun factory cleanup).

51. *Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)*, *supra* note 33 (explaining how Superfund money is used for cleanup efforts).

52. *CERCLA Overview*, *supra* note 48 (discussing federal Superfund funding).

sites.”⁵³ On December 31, 1995, the authority to collect taxes on the chemical and petroleum industries ended; consequently, Congress increased the contribution of general revenues to fund the trust.⁵⁴ CERCLA also permits the EPA to seek the parties responsible for a hazardous release in order to obtain their contribution and cooperation in any cleanup efforts.⁵⁵

CERCLA holds past and present operators liable for threatened or actual hazardous releases when the operators are “financially responsible for cleanup costs, natural resource damages, and the costs of federal public health studies.”⁵⁶ Courts have held that the PRPs may receive “strict, joint and several, and retroactive” liability.⁵⁷ Further, federal agencies can be held liable under CERCLA as owners or operators of contaminating facilities, such as the Twin Cities Army Ammunition Plant (TCAAP).⁵⁸ When the federal government is liable to clean up its own facilities, “the cleanup of federal facilities is not funded with Superfund Trust Fund monies under the Superfund program, but with other federal monies appropriated for other programs administered by the agencies re-

53. *Id.* (detailing use of CERCLA taxes).

54. DAVID M. BEARDEN, CONG. RESEARCH SERV., COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT: A SUMMARY OF SUPERFUND CLEANUP AUTHORITIES AND RELATED PROVISIONS OF THE ACT Summary (2012), available at <http://www.fas.org/sgp/crs/misc/R41039.pdf> (explaining Superfund’s current source of funding since expiration of industrial taxes). General revenues now provide funding for most of Superfund, but other sources continue to contribute, including “cost-recoveries from PRPs, fines and penalties for violations of cleanup requirements, and interest on the trust fund balance.” *Id.* The trust fund monies’ availability under the Superfund program is subject to appropriations from Congress. *Id.* The EPA may also use “[p]rivate settlement funds deposited into site-specific Special Accounts within the Superfund Trust Fund.” *Id.* at 23.

55. *Id.* at 2 (discussing how EPA chooses cleanup sites with limited manpower and financial resources).

56. *Id.* at summary (discussing who can be held financially responsible for release or threat of release under CERCLA). According to the Supreme Court, “Superfund money may not be used to pay for injury to persons or property caused by hazardous wastes, except for payment to the Federal and State Governments for their natural resource losses.” *Exxon Corp v. Hunt*, 475 U.S. 355, 360 (1986).

57. BEARDEN, *supra* note 54, at 14 (discussing various liabilities of PRPs). There are a few affirmative defenses to CERCLA, including the Act of God defense, the Act of War defense, the third party defense, and three landowner defenses. *Id.* at 14-15 (citing 42 U.S.C. § 9607(b)(1)-(4) (2012)). The landowner defenses consist of the innocent landowner defense, the contiguous landowner defense, and the Bona Fide Prospective Purchaser and Windfall Lien defense. *Id.*; see also 42 U.S.C. §§ 9601(35), 9607(q)-(r) (2012).

58. BEARDEN, *supra* note 54, at 29-30 (discussing liabilities of contaminated federal facilities); MINN. POLLUTION CONTROL AGENCY, OFF-SITE GROUNDWATER PLUMES AT THE NEW BRIGHTON/ARDEN HILLS SUPERFUND SITE (A.K.A. THE TWIN CITIES ARMY AMMUNITION PLANT OR TCAAP) 1 (2012), available at <http://www.pca.state.mn.us/index.php/view-document.html?gid=17927> (describing Minnesota Superfund site).

sponsible for these facilities.”⁵⁹ The EPA and related state agencies, however, remain “responsible for overseeing and enforcing the implementation of CERCLA at federal facilities to ensure that applicable [cleanup] requirements are met.”⁶⁰

Due to substantial outstanding cleanups in the United States, CERCLA ordered the EPA to maintain a National Priorities List (NPL) to identify and track the sites requiring prompt attention.⁶¹ The states and the public can assist in cleanup at the NPL sites.⁶² The federal government is primarily responsible for the NPL sites, whereas the states are responsible for the cleanup of the non-NPL sites.⁶³

C. Clean Water Act

Enacted in 1948 as the Federal Water Pollution Control Act, the CWA “establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.”⁶⁴ The CWA “is the principal legislative source of the EPA’s authority – and responsibility – to abate and control water pollution.”⁶⁵ Originally, the CWA intended to eliminate “the discharge of pollutants into navigable waters” by 1985 and to maintain, whenever possible, “water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water . . . by July 1, 1983.”⁶⁶ The EPA has promulgated rules concerning its pol-

59. BEARDEN, *supra* note 54, at 1 (explaining responsibility of contamination at federally owned or operated facilities).

60. *Id.* (describing parties responsible for overseeing CERCLA implementation at federal facilities).

61. *Id.* at 2 (discussing how EPA handles limited CERCLA resources when many sites require cleanup).

62. *Id.* at 11-12 (explaining states’ and public’s role at NPL sites).

63. *Id.* at summary (discussing cleanup responsibilities for NPL and non-NPL sites).

64. *Summary of the Clean Water Act*, ENVTL. PROT. AGENCY, <http://www2.epa.gov/laws-regulations/summary-clean-water-act> (last updated July 26, 2013) (discussing CWA’s origin).

65. *Waterkeeper Alliance, Inc. v. EPA*, 399 F.3d 486, 491 (2d Cir. 2005) (providing brief overview of CWA). The CWA seeks to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. § 1251(a) (2012) (stating Congress’ goals and policies for CWA).

66. Clean Water Act, 33 U.S.C. § 1251(a)(1)-(2) (identifying CWA’s goals). The national policies of the CWA include: (1) the prohibition of “the discharge of toxic pollutants in toxic amounts,” (2) the “develop[ment] and implement[ation]” of “areawide waste treatment management planning processes . . . to assure adequate control of sources of pollutants in each State,” (3) “a major research and demonstration effort . . . to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and

lution control programs, including specifying water quality standards for industrial wastewater and any contaminants in protected waters.⁶⁷ Under the CWA, it is illegal “to discharge any pollutant from a point source into navigable waters” without a permit.⁶⁸ A National Pollutant Discharge Elimination System (NPDES) program permit is required to directly discharge pollutants into a CWA-protected water.⁶⁹ The CWA defines “discharge of pollutants” as the “addition of any pollutant to navigable waters from any point source.”⁷⁰ A “point source” is “any discernible, confined and discrete conveyance, including but not limited to any pipe.”⁷¹ “Navigable waters” is defined as “waters of the United States.”⁷² The CWA definitions for “point source” and “navigable waters” have been an issue in many gun club cases.⁷³

The Supreme Court has not clearly defined what territories are considered “waters of the United States.”⁷⁴ In *Rapanos v. United States*,⁷⁵ a plurality opinion written by Justice Scalia, the United States Supreme Court decided whether four Michigan wetlands were within the definition of “waters of the United States.”⁷⁶ Scalia maintained that “the phrase ‘waters of the United States’ includes only those relatively permanent, standing or continuously flowing bodies of water ‘forming geographic features’ that are described in ordinary parlance as ‘streams[,] . . . oceans, rivers, [and] lakes.’”⁷⁷

the oceans,” and (4) “programs for the control of nonpoint sources of pollution . . . developed and implemented in an expeditious manner so as to enable the goals of this chapter to be met through the control of both point and nonpoint sources of pollution.” *Id.* §§ 1251(a)(3), (5)-(7).

67. *Summary of the Clean Water Act*, *supra* note 64 (discussing CWA pollution control programs).

68. *Id.* (discussing CWA permitting requirement).

69. 33 U.S.C. § 1311(a) (requiring permit for industries and municipal facilities who directly discharge pollutants into streams, lakes, or oceans). The NPDES permit contains limits on the quantity and concentrations of pollutants that may be discharged into water. *Regulatory Permits*, LOTT CLEAN WATER ALLIANCE, <http://www.lottcleanwater.org/permits.htm> (last visited Jan. 22, 2014). The NPDES permit “may require certain levels of treatment for wastewater or impose other operating conditions to ensure that permit limits are met.” *Id.*

70. 33 U.S.C. § 1362(12) (defining discharge of pollutants).

71. 33 U.S.C. § 1362(14) (defining point source).

72. 33 U.S.C. § 1362(7) (defining navigable waters).

73. *Cordiano v. Metacon Gun Club, Inc.*, 575 F.3d 199, 215-19 (2d Cir. 2009) (analyzing definitions of point source and navigable waters).

74. *See generally* *Rapanos v. United States*, 547 U.S. 715 (2009) (resulting in split decision over what constituted CWA waters).

75. 547 U.S. 715 (2009).

76. *Id.* at 729 (outlining facts of case).

77. *Id.* at 739 (quoting WEBSTER’S NEW INTERNATIONAL DICTIONARY 2882 (2d ed.)) (defining water of United States). The plurality did not think that the CWA

In addition, the plurality found if a “wetland has a continuous surface connection with that water [of the United States], making it difficult to determine where the ‘water’ ends and the ‘wetland’ begins,” the wetland is protected by the CWA.⁷⁸

In contrast, Justice Kennedy, in his concurring opinion, found “waters of the United States” include wetlands that have a “‘significant nexus’ to waters that are or were navigable in fact or that could reasonably be so made.”⁷⁹ A “significant nexus” is found when the wetland “significantly affect[s] the chemical, physical, and biological integrity of other covered waters more readily understood as ‘navigable.’”⁸⁰ Most courts apply Kennedy’s “significant nexus” test, although anything that satisfies the plurality’s test or Kennedy’s test is considered a water of the United States.⁸¹

D. National Environmental Policy Act

Senator Henry “Scoop” Jackson and his committee staff are largely responsible for the origination of NEPA; the committee “focus[ed] on the need for federal legislation that emphasized planning and conceived of the natural environment as a complex, integrated system.”⁸² Today, some consider NEPA the “most influential and vital environmental law.”⁸³ Political scientist Dr. Lynton

covered “channels through which water flows intermittently or ephemerally, or channels that periodically provide drainage for rainfall.” *Id.* at 716.

78. *Id.* at 742 (identifying when wetland is covered under CWA).

79. *Id.* at 759 (Kennedy, J., concurring) (citing *Solid Waste Agency of N. Cook Cty. v. Army Corps of Eng’rs*, 531 U.S. 159, 167, 172 (2001)) (discussing significant nexus test’s origin).

80. *Rapanos*, 547 U.S. at 780 (Kennedy, J., concurring) (explaining significant nexus test).

81. Ryan Fortin, Comment, *Rapanos v. United States—A Historical Perspective on the Recent Decline in “Judicial Pioneering” in Wetlands Regulation*, 33 WM. MITCHELL L. REV. 1225, 1275 (2007) (stating most courts adopt significant nexus test); *Rapanos*, 547 U.S. at 810 (Stevens, J., dissenting) (asserting meeting either test is sufficient). The *Rapanos* dissent argued that any “wetlands adjacent to tributaries of traditionally navigable waters are waters of the United States.” *Rapanos*, 547 U.S. at 787 (Stevens, J., dissenting) (internal quotation marks omitted). The dissent stated that the U.S. Army Corps of Engineers definition of “‘adjacent’ as ‘bordering, contiguous, or neighboring,’” was “reasonable”. *Id.* at 805-06 (Stevens, J., dissenting). The dissent also found that it was reasonable for the U.S. Army Corps of Engineers to state that “[w]etlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are ‘adjacent wetlands.’” *Id.* (Stevens, J., dissenting) (citing 33 C.F.R. § 328.3(c) (2004)) (internal quotation marks omitted).

82. Lazarus, *supra* note 34, at 1514 (discussing NEPA’s origins).

83. Jason J. Czarnecki, *Defining the Project Purpose Under NEPA: Promoting Consideration of Viable EIS Alternatives*, 70 U. CHI. L. REV. 599, 600 (2003) (describing NEPA as influential law); see also Bradley C. Karkkainen, *Toward A Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 COLUM. L.

Keith Caldwell explained in front of the Senate Committee “why he thought it was essential for NEPA to be more than merely hortatory and have ‘an action-forcing, operational aspect.’”⁸⁴ An action-forcing, operational aspect would be, for example, a “formal requirement that federal agencies consider the environmental impacts of their actions as part of their planning process.”⁸⁵

Section 101 of NEPA “extoll[s] the nation to move in bold new directions.”⁸⁶ Section 101(a) of NEPA states in relevant part “it is the continuing policy of the Federal Government . . . to use all practical means and measures . . . to create and maintain conditions under which man and nature can exist in productive harmony.”⁸⁷ Furthermore, section 101(b) states it is the federal government’s responsibility “to use all practicable means, consistent with other essential considerations of national policy,” to meet many environmental and health related goals.⁸⁸

NEPA is also praised for furthering environmental accountability by “requiring agencies to generate, consider, and release information on the expected environmental consequences of proposed actions.”⁸⁹ An Environmental Impact Statement (EIS) is a required outline of a proposed project’s environmental impacts and “must include discussion of a wide range of alternatives to an agency’s proposed course of action.”⁹⁰ The alternatives chosen must meet

REV. 903, 904 (2002) (relaying fact that NEPA has been hailed as one of nation’s most important environmental laws, although some have criticized it). NEPA critics claim the act “imposes costly, dilatory, and pointless paper-shuffling requirements on federal agencies and, indirectly, on private parties.” Karkkainen, *supra*, at 904.

84. Lazarus, *supra* note 34, at 1514-15 (summarizing Caldwell’s statement that NEPA should require actions that protect environment).

85. *Id.* at 1515 (discussing history of NEPA’s procedural mandate).

86. *Id.* at 1514 (explaining reason why NEPA is popular regulation).

87. National Environmental Policy Act § 101, 42 U.S.C. § 4331(a) (2012) (discussing NEPA’s goals).

88. *Id.* § 4331(b) (stating federal government’s responsibility under NEPA). NEPA outlines objectives such as (1) “fulfill[ing] the responsibilities of each generation as trustee of the environment for succeeding generations,” (2) “assur[ing] for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings” and (3) “attain[ing] the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.” *Id.*

89. Czarnezki, *supra* note 83, at 600 (explaining how NEPA furthers environmental responsibility).

90. *Id.* (arguing EIS requirements emphasize NEPA’s goals to use all practicable means to better environment and to study and discuss various projects’ environmental impacts).

the environmental goals in section 101(b).⁹¹ The chosen alternatives are then subject to an in-depth analysis of their environmental impacts after an agency “determin[es] the scope of issues to be addressed and . . . identif[ies] the significant issues related to a proposed action.”⁹² An agency does not need “to analyze the environmental consequences of alternatives it has in good faith rejected as too remote, speculative, or . . . impractical or ineffective.”⁹³ In addition, an agency needs to consider only those alternatives that are “significantly distinguishable from the alternatives already considered.”⁹⁴

Furthermore, section 102(2)(C) of NEPA mandates all federal agencies must generate and submit an EIS before beginning “major Federal actions significantly affecting the quality of the human environment.”⁹⁵ Major federal “actions include projects financed, conducted, assisted, regulated, or approved by a federal agency.”⁹⁶ An EIS should contain the following with respect to the proposed action:

- (i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposed action, (iv) the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of

91. See *id.* (discussing alternatives); 42 U.S.C. § 4331(b) (outlining act’s goals).

92. 40 C.F.R. § 1501.7 (2012) (defining and outlining scoping process).

93. *Colo. Env’tl. Coal. v. Dombeck*, 185 F.3d 1162, 1174 (10th Cir. 1999) (quoting *Pueblo Council v. United States*, 975 F.2d 1437, 1445 (10th Cir. 1992)) (internal quotation marks omitted) (explaining required amount of review for alternative that is too remote); see also *Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc.*, 435 U.S. 519, 551 (1978) (holding government must only consider feasible alternatives under NEPA).

94. *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 708–09 (10th Cir. 2009) (stating government must only consider alternatives that are significantly different from other alternatives already discussed).

95. *Czarnecki*, *supra* note 83, at 601 (quoting 42 U.S.C. § 102(2)(C)) (internal quotation marks omitted) (outlining EIS requirement for federal agencies); see also 40 C.F.R. § 1508.18 (discussing major federal action requirement). Major federal action is defined as action that “includes actions with effects that may be major and which are potentially subject to Federal control and responsibility.” 40 C.F.R. § 1508.18.

96. *Czarnecki*, *supra* note 83, at 601 (detailing aspects of major federal action); see also 40 C.F.R. § 1508.18(a) (listing additional components of major federal action).

resources which would be involved in the proposed action should it be implemented.⁹⁷

When analyzing an EIS, the federal agency must reflect on three questions: “[f]irst, what is the purpose of the proposed project . . . ? Second, given that purpose, what are the reasonable alternatives to the project? And third, to what extent should the agency explore each particular reasonable alternative?”⁹⁸ While NEPA outlines clear goals for the regulation, it is unclear where the act specifies that it is “subject to judicial enforcement through litigation.”⁹⁹ There is no mention of any court enforcement in the law’s contents or legislative history.¹⁰⁰ NEPA drafters instead preferred to promote discussions between the agencies and branches as the way to enforce the EIS requirements.¹⁰¹ It appears Congress had not considered “the kind of heightened judicial role in the enforcement of NEPA subsequently embraced by the federal judiciary.”¹⁰²

III. LEAD CASINGS AND GUN CLUBS

The environmental effects of lead casings have been widely litigated and debated, including the extent to which the casings harm humans, wildlife, and the environment.¹⁰³ Gun firing ranges have been the subject of many complaints concerning lead casings in the environment; in fact, seven hundred military firing ranges across the country have been involved in intensive cleanup measures after

97. National Environmental Policy Act of 1969 § 102, 42 U.S.C. § 4332 (2)(C) (2012) (outlining EIS requirements).

98. Czarnecki, *supra* note 83, at 601-02 (citing *Simmons v. United States Army Corps of Eng’rs*, 120 F.3d 664, 668-69 (7th Cir. 1997)) (stating three questions that should be considered by government when analyzing project alternatives).

99. Lazarus, *supra* note 34, at 1515 (explaining how no language in NEPA points to judicial enforcement of act’s requirements). The government has won every single NEPA case that the Supreme Court has heard. *Id.* at 1507.

100. *Id.* at 1515 (stating that nothing in NEPA’s legislative history points to any possible congressional intent of judicial enforcement).

101. *Id.* (explaining how Congress thought NEPA should be enforced).

102. *Id.* (finding Congress probably did not envision any heightened role for courts in enforcing NEPA).

103. *See generally* *Cordiano v. Metacon Gun Club, Inc.*, 575 F.3d 199 (2d Cir. 2009) (reviewing allegation that disposal of lead at gun club violated RCRA and CWA); *Connecticut Coastal Fishermen’s Ass’n v. Remington Arms Co.*, 989 F.2d 1305 (2d Cir. 1993) (hearing allegation that lead shot and clay target debris were deposited in violation of CWA and RCRA); *see also* JANE HOULIHAN & RICHARD WILES, ENVIRONMENTAL WORKING GROUP, LEAD POLLUTION AT OUTDOOR FIRING RANGES 1 (2001), available at <http://static.ewg.org/reports/2001/LeadPollution-AtOutdoorFiringRanges.pdf> (claiming firing ranges are one of biggest causes of lead pollution in United States).

the dangers of lead became apparent.¹⁰⁴ Meanwhile, private firing ranges, despite placing “more lead into the environment than nearly any other major industrial sector in the U.S.,” are exempt from many EPA regulations as a result of the influence and protests from groups such as the National Rifle Association (NRA).¹⁰⁵ Despite the federal government’s lack of control over private firing ranges, very few states are taking action to prevent environmental harm from lead bullets, and there is no present federal law that addresses lead dangers at outdoor shooting ranges.¹⁰⁶

Many outdoor firing ranges, due to various regulatory exemptions, continue to add to the already dangerous levels of lead without any penalty.¹⁰⁷ In 2007, approximately eight thousand “public and private recreational shooting ranges [were] contaminated with hundreds of tons of lead from bullets” in the United States.¹⁰⁸ Gun clubs could easily reduce the level of lead contamination “[i]f firing ranges were to implement even the most basic safety standards, such as regular removal of lead bullets and casings from the soil, the safe disposal of lead waste, and shooting over land instead of water.”¹⁰⁹

104. See HOULIHAN & WILES, *supra* note 103, at 1 (finding nation’s firing ranges represent major potential source of lead in water and wildlife). Lead on gun club sites could lead to potential liability for property owners who are in close proximity to the gun club because, among other reasons, lead is being blown onto their property. *Id.*

105. *Id.* (stating that shooting ranges are likely one of biggest sources of lead pollution in United States); Paul Bedard, *EPA Surrenders to NRA on Gun Control Issue*, U.S. NEWS (Aug. 27, 2010), <http://www.usnews.com/news/washington-whispers/articles/2010/08/27/epa-surrenders-to-nra-on-gun-control-issue-epa-rejects-attempt-to-regulate-lead-in-bullets-after-nra-protests> (reporting EPA claims it does not have jurisdiction to ban lead use in bullets and shotgun shells). In 2010, seven days before the EPA made its decision to deny a petition from environmental groups to ban lead ammunition, the NRA requested that the EPA oppose the ban. Bedard, *supra*. The NRA suggested the lead ammunition ban request “was a back door attempt to limit hunting and impose gun control.” *Id.*

106. Adams, *supra* note 6 (finding lack of corrective legislation to curtail lead pollution at American gun ranges). Firing ranges are exempt from almost all major pollution control laws in the United States, including the EPA’s lead reporting requirements, the CWA, and RCRA. *Id.* Tennessee also has no law addressing lead contamination at firing ranges. Anne Paine, *Spent Ammo’s Harm to Environment is Debated*, THE TENNESSEAN (Feb. 11, 2010), <http://www.tennessean.com/article/20100211/NEWS0201/2110347/Spent-ammo-s-harm-environment-debated>.

107. See Adams, *supra* note 6 (reporting that firing ranges are arguably toxic waste sites).

108. *Id.* (quoting Oak Ridge National Laboratory metallurgist Rick Lowden on the scope of lead contamination from shooting ranges in United States).

109. *Id.* (reporting ways lead toxicity at firing ranges could be reduced).

A. Background of Lead Ammunition and Gun Clubs

Gun users are not the only ones at risk to the dangers of lead; their families and friends may be at risk too due to the chemical characteristics of lead in bullets.¹¹⁰ The neurotoxin potency of lead can cause it to accumulate in soft tissue and bones.¹¹¹ Further, lead poisoning can result from “the shaved lead particles that pass through the barrel [of a gun], from dust and vaporized lead gases in the air surrounding the firing range, or from handling bullets or spent casings.”¹¹² When a gun fires, the bullets “emit lead particles that are then inhaled, absorbed into the skin or disposed of in community landfill facilities.”¹¹³ Someone who works or frequently shoots at firing ranges can pass the exposure on to family and friends because the lead dust can attach itself easily to one’s body and possessions.¹¹⁴

Even the act of “inhaling at a local firing range can easily cause lead particles to be inhaled in to the lungs.”¹¹⁵ Firearm-related activities can, moreover, cause lead poisonings through less conspicuous means; for example, “lead found in soil at firing ranges will be in the form of various amounts of dust, small fragments, and nearly intact bullets and pellets.”¹¹⁶ In some instances, shooting a single lead bullet can leave approximately four hundred fragments.¹¹⁷ Likewise, the spent ammunition will liquefy as “rain leaches through the soil,” and, “[d]epending on soil type and pH, varying

110. *See id.* (discussing toxicity of lead).

111. *Id.* (providing characteristics of lead); Paine, *supra* note 106 (stating lead is highly toxic soft metal that is now banned in gasoline and paint).

112. Adams, *supra* note 6 (discussing how one can receive lead poisoning). Ammunition is generally made with lead, unless it is clearly marketed as lead-free. *Id.* Lead “bullets contain lead, zinc, copper and antimony; the primer is made up of lead antimony, lead styphnate, zinc, copper, barium and tetazene.” *Id.* Further, “[l]ead styphnate and elemental lead dust are able to attach themselves readily to clothes, hair and skin, and can be passed to another person.” *Id.*

113. *Id.* (explaining how firing ranges put ecosystem and environment in danger of lead pollution).

114. *Id.* (stating risk to firing range employees, firearm instructors, frequent shooters, and their families). Some construction workers in California that repair or do other work at firing ranges have fallen victim to “serious lead poisoning,” which they have inadvertently brought home and passed on to their children. *Id.*

115. *Id.* (explaining how easily lead poisoning can occur at firing ranges). Once lead particles come into the atmosphere, “[a]irborne residue and gases discharged from lead projectiles are easily absorbed by the body.” *Id.*

116. HOULIHAN & WILES, *supra* note 103, at 4 (discussing forms lead can take in soil at firing ranges).

117. Brett Prettyman, *Prizes for Utah Hunters Who Use Non-Lead Bullets or Turn in Gut Piles*, SALT LAKE TRIBUNE (last updated Oct. 18, 2013, 8:23 PM), <http://www.sltrib.com/sltrib/news/57001329-78/lead-condors-hunters-utah.html.csp> (discussing risks of lead bullet fragmentation).

amounts of lead can move off the site” to impact neighboring waters.¹¹⁸ Furthermore, public drinking water and private well water near firing ranges could be contaminated by the lead.¹¹⁹ For example, the EPA would find a day’s drinking water in Salt Lake City, Utah, unsafe if it was contaminated by single bullet from a .22-caliber rifle.¹²⁰ The public can also be subjected to lead through dust particles that float out of the range and pollute the nearby air and soil.¹²¹

Even limited exposure to lead could have serious health consequences.¹²² Very low levels of lead are linked to slowed growth, anemia, and permanent damage to the brain and nervous system, which could lead to a lower I.Q.¹²³ More significantly, lead can be fatal: “children born of parents either of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders, or die within their first year.”¹²⁴ There is also an increasing amount of proof linking lead poisoning, especially when children are exposed, to “violent criminal behavior,” including “violent gun crime[s].”¹²⁵

Even a minimal amount of daily shooting at a range results in significant lead pollution.¹²⁶ According to the Environmental Working Group’s findings, if a firing range “has 15 customers each day, each of whom shoots 50 rounds or bullets, [it] would create 100 pounds of lead pollution in 7.5 days, or 4,800 pounds of lead

118. HOULIHAN & WILES, *supra* note 103, at 4 (detailing how lead can move off firing range onto other property).

119. *Id.* (relaying private well water has possible lead contamination from soil leaching).

120. *Id.* at 2 (showing that just one bullet can have dangerous effects).

121. *Id.* at 4 (discussing danger of lead particles traveling off firing range).

122. See Learn About Lead, ENVTL. PROT. AGENCY, <http://www2.epa.gov/lead/learn-about-lead#effects> (last updated July 22, 2013) (listing health effects from limited lead exposure).

123. *Id.* (stating lead exposure can lead to learning and hearing problems in children).

124. VIOLENCE POLICY CTR., *supra* note 4, at 8-9, 11 (stating effects of lead on developing fetuses). Lead can also cause fertility-related issues. *Id.*

125. Monbiot, *supra* note 4 (explaining lead at very low levels can have permanent impacts). There is no other known correlation between the numbers of violent crimes peaking twenty years after the number of lead poisonings peak. *Id.* A study that examined youth in Cincinnati concluded “young people prosecuted for delinquency are four times more likely than the general population to have high levels of lead in their bones.” *Id.* Further, “[a] meta-analysis . . . of 19 papers found no evidence that other factors could explain the correlation between exposure to lead and conduct problems in young people.” *Id.*

126. HOULIHAN & WILES, *supra* note 103, at 1 (discussing yearly effect of “modest” amount of daily shooting at firing range).

contamination in a year.”¹²⁷ Only two industries, metals mining and manufacturing and waste recovery operations, release more lead per year.¹²⁸ These facts are concerning, as lead was called the “number one environmental threat to the health of children in the United States” by the Secretary of the United States Department of Health and Human Services in 1991.¹²⁹

Despite the large potential dangers of lead, some outdoor firing ranges escape liability from environmental violations through loopholes.¹³⁰ In 2001, President Bush announced that his administration would maintain President Clinton’s lead reporting requirements, which forces those “facilit[ies] that release[] at least one hundred pounds of lead or lead compounds a year to” notify the appropriate government agency of the lead pollution.¹³¹ Private firing ranges, however, are exempt from these requirements, even though “[a] small firing range can emit 100 pounds of lead to the environment . . . in a matter of days.”¹³² Private firing ranges are also exempt from RCRA, the Clean Air Act (CAA), and the CWA.¹³³

127. *Id.* at 5 (estimating how much lead firing ranges put into environment per year).

128. *Id.* (reporting firing ranges are one of largest lead polluters). Firing ranges put more lead into the environment than chemical and chemical plant manufacturing, stone, clay, and glass manufacturing, electric utilities, and electrical equipment manufacturing. *Id.*

129. *An Introduction to Indoor Air Quality (IAQ)*, ENVTL. PROT. AGENCY, <http://www.epa.gov/iaq/lead.html> (last updated June 21, 2012) (quoting Secretary of Department of Health and Human Services) (internal quotation marks omitted) (noting lead’s significant health risks). According to the EPA, “[H]umans are exposed to lead[] through air, drinking water, food, contaminated soil, deteriorating paint, and dust.” *Id.*

130. HOULIHAN & WILES, *supra* note 103, at 2 (describing CWA and RCRA gun club loopholes).

131. John King, Bush to Leave Clinton Lead Standards in Place, CNN (Apr. 17, 2001, 1:11 PM), <http://edition.cnn.com/2001/ALLPOLITICS/04/17/bush.lead/index.html> (stating Clinton Administration’s lead reporting requirement required more businesses to report lead releases into environment). The lead reporting requirements force industries in the United States to report the extent of their lead pollution to a public government database called the Toxics Release Inventory. HOULIHAN & WILES, *supra* note 103, at 4.

132. HOULIHAN & WILES, *supra* note 103, at 4-5 (calculating how long it would take firing range to reach lead reporting threshold). Assuming that fifteen shooting range visitors a day shot fifty bullets at the same shooting range, there would be “100 pounds of lead pollution in [seven-and-a-half] days, [and] 4,800 pounds of lead contamination in a year.” *Id.*

133. Adams, *supra* note 6 (describing firing range exemption of RCRA); Blackstone, *supra* note 32 (discussing firing range exemption of CAA and CWA). The military is able to avoid liability from state and local regulations because “domestic military bases [are considered] federal reservations.” Blackstone, *supra* note 32. This military loophole is problematic because the DOD is possibly “the world’s largest polluter,” as it deposits “more contaminants into the environment than the top five chemical companies in the U.S. combined.” *Id.* Further, in 2011,

The RCRA loophole exists “because the EPA does not interpret the act of firing bullets into the soil or water as ‘discarding’ lead” under RCRA.¹³⁴ Furthermore, the EPA permits “firing ranges near water bodies to operate without the pollution discharge permits that are required under the [CWA] for all other lead-polluting industries.”¹³⁵ As a result of the CWA loophole, private outdoor ranges may pollute nearby bodies of water without obtaining a permit.¹³⁶ Despite the possibility that private ranges contaminate land at a much higher level than what prompts Superfund cleanups at military and industrial ranges, private ranges are not required to clean up any lead pollution from the bullets, unless they are forced to do so by court order after litigating the matter.¹³⁷ The United States military is, however, required to engage in Superfund cleanups on approximately seven hundred million military firing ranges in the United States.¹³⁸ As a result of these exemptions for private ranges, the United States has “thousands of highly contaminated toxic waste sites” that likely require significant cleanup located around the country in the form of outdoor firing ranges.¹³⁹

B. Lead Bullets and Federal Regulations

Courts do not always awarded relief to individuals injured from lead contaminants originating from gun clubs.¹⁴⁰ For example, in

the General Accounting Office estimated that the United States military uses “1.8 billion rounds of small-arm ammunition a year,” a number that “has more than doubled” since 2006. Andrew Buncombe, *US Forced to Import Bullets from Israel as Troops Use 250,000 for Every Rebel Killed*, BELFAST TELEGRAPH (Jan. 10, 2011), <http://www.belfasttelegraph.co.uk/news/world-news/us-forced-to-import-bullets-from-israel-as-troops-use-250000-for-every-rebel-killed-28580666.html>. The increasing rate of use of small-arm ammunitions, “an estimated 250,000 for every insurgent killed,” is making it difficult for United States ammunition manufacturers to match the high demand. *Id.* Some estimate that, from 2002 to 2005, the United States has used six billion bullets in combat. *Id.*

134. Adams, *supra* note 6 (reporting firing ranges are allowed to operate no matter how much lead contamination occurs).

135. HOULIHAN & WILES, *supra* note 103, at 2 (explaining CWA exemption for outdoor gun clubs).

136. Blackstone, *supra* note 32 (explaining consequence of CWA exemption from NPDES permitting requirements).

137. HOULIHAN & WILES, *supra* note 103, at 2, 5 (reporting outdoor gun ranges have much freedom when it comes to cleaning up lead on site).

138. *Id.* at 1-2 (comparing military firing ranges to private firing ranges). The pollution at private firing ranges can be forty-eight times worse than what “triggers strict reporting requirements for industrial polluters.” *Id.* at 4.

139. *Id.* at 5 (providing number of firing ranges that are highly contaminated).

140. See *Cordiano v. Metacon Gun Club, Inc.*, 575 F.3d 199, 202 (2d Cir. 2009) (denying RCRA and CWA claims against gun club); *Potomac Riverkeeper, Inc. v. Nat’l Capital Skeet & Trap Club, Inc.*, 388 F. Supp. 2d 582, 584 (D. Md.

Cordiano v. Metacon Gun Club,¹⁴¹ residents living in proximity to a local gun club were unsuccessful in proving claims alleging the shooting range violated the CWA and RCRA by discharging lead into a *Rapanos* waterway of the United States.¹⁴² The United States Court of Appeals for the Second Circuit held the berm and the entire shooting range on the club's property were not United States waterways and spent ammunition was not a RCRA hazardous waste.¹⁴³

The case involved a Connecticut gun range located near "137 acres of woods, meadows, wetlands, and mountainside."¹⁴⁴ The plaintiffs, the Simsbury-Avon Preservation Society (SAPS), provided evidence that the property was suffering from lead contamination by including a SAPS member's statement that there was "a 'tremendous amount of spent ammunition on the ground.'"¹⁴⁵ The plaintiffs also relied on the gun club's acknowledgement in a similar suit that "[t]housands of pounds of lead are deposited at the [s]ite."¹⁴⁶ The gun club claimed the property was properly maintained and subject to "'regular clean-ups,' where members rake the range to collect materials such as spent casings and munitions."¹⁴⁷

The Second Circuit's analysis in *Cordiano* illustrates how shooting ranges have avoided liability arising from or relating to viola-

2005) (denying CWA claim against skeet and trap club and finding summary judgment is not proper on RCRA claim against club). *But see* *Stone v. Naperville Park Dist.*, 38 F. Supp. 2d 651, 653 (N.D. Ill. 1999) (finding CWA violation against city, city park district, and sportsman's club). The Naperville, Illinois range in *Stone* was alleged to have dumped as much as 230 tons of lead over fifty years on a tiny segment of land in a park by a nearby high school. Linda Young, *Park Shooting Range Reopens After State Conducts Lead Tests*, CHI. TRIB. (June 17, 1997), http://articles.chicagotribune.com/1997-06-17/news/9706170087_1_reopens-lead-groundwater. The *Stone* court found that the gun club needed a NPDES permit because the shooting facility and firing stations were a point source from where lead shot and airborne clay targets would be sent into waters of the United States. *Stone*, 38 F. Supp. 2d at 655-56.

141. 575 F.3d 199, 202 (2d Cir. 2009).

142. *Id.* at 202 (finding insufficient evidence to conclude that accumulating lead is risk to environment).

143. *Id.* at 208, 216 (stating court's holding). A berm is "a flat strip of land, raised bank, or terrace bordering a river or canal." *Definition of Berm in English*, OXFORD DICTIONARIES, http://oxforddictionaries.com/us/definition/american_english/berm (last visited Jan. 22, 2014).

144. *Cordiano*, 575 F.3d at 202 (describing topography of gun club property).

145. *Id.* at 203 (describing plaintiffs' lead accumulation).

146. *Id.* (internal quotation marks omitted) (explaining gun club's admission in a related suit).

147. *Id.* (outlining gun club's defense that it conducted cleanups in last ten years prior to suit).

tions of RCRA and CWA.¹⁴⁸ After examining the facts, the court considered the plaintiffs' RCRA claims concerning the gun site; namely that the gun site operated a hazardous waste disposal facility without a RCRA permit and that such a disposal of spent lead ammunition "may present an imminent and substantial endangerment."¹⁴⁹ In regard to the hazardous waste permit claim, the court stated that the plaintiffs must "allege and prove" the gun site's lead is a RCRA discarded material in order to be successful.¹⁵⁰ According to the EPA, however, "[s]pent rounds of ammunition and target fragments are not . . . 'discarded material' within the meaning of the regulation, because they have not been 'abandoned,' . . . [but] come to rest on land . . . as a result of their proper and expected use."¹⁵¹

The court held the EPA's interpretation was consistent with provisions containing exceptions for commercial chemical products used for their ordinary purpose and military munitions used for their intended functions.¹⁵² Therefore, the Second Circuit granted deference to the EPA's findings because the findings were consistent and reasonable.¹⁵³ In response to the imminent and substantial endangerment claim, the court found that the plaintiffs

148. *See id.* at 206-07 (explaining why lead bullets at shooting range are not covered under RCRA).

149. *Cordiano*, 575 F.3d at 209 (citing 42 U.S.C. § 6972(a)(1)(B)) (outlining plaintiffs' imminent and substantial endangerment claim).

150. *Id.* at 206 (citing 40 C.F.R. § 261.2(a)(2)(i)(A) (2012)) (defining discarded material). A discarded material is any material which is "[a]bandoned," "[r]ecycled," "[c]onsidered inherently waste-like," or "[a] military munition." 40 C.F.R. § 261.2(a)(2)(i)(A)-(D) (2012). Moreover "[m]aterials are solid waste if they are abandoned by being [] disposed of." *Id.* § 261.2(b)(1).

151. *Cordiano*, 575 F.3d at 207 (citing *Simsbury-Avon Pres. Soc'y, LLC v. Metacon Gun Club, Inc.*, No. 3:04 Civ. 803(JBA), 2005 WL 1413183, at *5 (D.Conn. June 14, 2005)) (internal quotation marks omitted) (outlining why EPA does not believe spent rounds and target fragments are RCRA discarded material). *But see Connecticut Coastal Fishermen's Ass'n v. Remington Arms Co.*, 989 F.2d 1305, 1317 (2d Cir. 1993) (finding lead shot is RCRA hazardous waste).

152. *Id.* at 208 (citing 40 C.F.R. §§ 261.2(c)(ii), 266.202(a),(b)) (laying out and explaining exceptions to RCRA disposal). The chemical product exemption states that "commercial chemical products . . . are not solid wastes if they are applied to the land and that is their ordinary manner of use." 40 C.F.R. § 261.2(c)(ii). The military munition exception states that "[a] military munition is not a solid waste when . . . [u]sed for its intended purpose," but an "unused military munition is a solid waste when . . . [t]he munition is abandoned by being disposed of." *Id.* § 266.202(a)-(b).

153. *Cordiano*, 575 F.3d at 206-09 (noting consistency of EPA's decision not to apply RCRA to objects that are applied to land when used in conjunction with their normal use); *see also* *Long Island Soundkeeper Fund, Inc. v. N.Y. Athletic Club*, No. 94 Civ. 0436(RPP), 1996 WL 131863, at *8-9 (S.D.N.Y. Mar. 22, 1996) (presenting EPA's argument that lead munitions discharged at shooting range are not RCRA solid waste); *see also Connecticut Coastal Fishermen's Ass'n*, 989 F.2d at 1316

raised insufficient evidence to pass summary judgment as the harm accusations were “speculative”; thus, the plaintiffs’ RCRA claim failed on both counts.¹⁵⁴

The Second Circuit next discussed the plaintiffs’ CWA claim.¹⁵⁵ First, the court addressed whether the berm on the gun club’s property was a jurisdictional wetland.¹⁵⁶ It found that even though the berm at the gun club was extended onto land classified as a wetland, the berm itself could not be considered a wetland.¹⁵⁷ Nevertheless, the court assumed the area bordering the shooting range to the north and east and some “unspecified portion[s]” of the shooting range constituted a CWA wetland.¹⁵⁸ Consequently, the court moved on to determine whether the plaintiffs provided sufficient evidence to pass summary judgment on the claim the gun club shot lead munitions into CWA wetlands from a point source.¹⁵⁹

The court considered two potential point sources on the gun club’s site: the berm and the shooting range.¹⁶⁰ With respect to the

(explaining EPA’s argument that lead shot is not RCRA hazardous waste because it is used for its intended purpose).

154. *Cordiano*, 575 F.3d at 214-15 (discussing plaintiff’s imminent and substantial endangerment claim).

155. *Id.* at 215 (providing general statutory background of CWA provision at issue); see 33 U.S.C. § 1311(a) (2012) (prohibiting discharge without NPDES permit).

156. *Cordiano*, 575 F.3d at 216 (citing *Rapanos v. United States*, 547 U.S. 715, 761 (2009)) (providing CWA definition of wetland).

157. *Id.* at 217-18 (holding berm was not CWA wetland). Even though, in order to expand the berm, the gun club was required to obtain a permit to fill part of the gun range that was considered a wetland, this is not enough to consider the berm a CWA wetland. *Id.* at 217. The lands that the berm was located on were once “part of an aquatic system,” though they are now on “dry land.” *Id.* Thus, the berm was not a wetland for CWA purposes. *Id.*

158. *Id.* at 218 n.5 (finding plaintiffs have provided some evidence that these areas are jurisdictional wetlands). The court found that, as to the unspecified parts of the shooting range, the gun club had a 1990 Corps permit for the berm expansion providing that “[t]he firing range consists of the firing line, a mowed field (*a portion of which is wetland*) and a berm to stop bullets.” *Id.* (internal quotation marks omitted). The court noted, “[w]ith respect to the northern and eastern borders of the range, Metacon’s Environmental Stewardship Plan concedes that ‘[a] vernal pond is located directly in back of the backstop berm, and wetlands border the range immediately to the North and extend East beyond the berm for approximately 100 yards.’” *Id.* Furthermore, the gun club’s president “refer[red] to the 1990 Corps permit in a document attached to a 2006 affidavit, which states: ‘Metacon applied for an Army Corps Permit since *there is a federal wetland* located behind the berm, to the east of the shooting range.’” *Id.*

159. *Id.* at 218 (outlining plaintiffs’ final CWA claim).

160. *Id.* (explaining what items plaintiffs allege to be point sources). The defendant gun club claims there was insufficient evidence to prove the existence of any point source on the gun club property. *Id.*

200 VILLANOVA ENVIRONMENTAL LAW JOURNAL [Vol. XXV: p. 177

berm, the court found “vague” reports concerning possible “surface water runoff and windblown dust from the berm . . . insufficient to raise a material issue of fact” as to whether the berm was a point source.¹⁶¹ Regarding the firing line of the shooting range, the court concluded it did not need to reach a decision as to whether the firing range was a point source.¹⁶² There was no evidence lead was discharged from the firing line into CWA wetlands.¹⁶³ Therefore, the plaintiffs’ CWA claims were similarly unsuccessful.¹⁶⁴ The *Cordiano* court’s holdings are fairly consistent with rulings from other jurisdictions and demonstrate the existence of federal loopholes applying to gun clubs.¹⁶⁵ The RCRA loophole rests upon the EPA’s refusal to classify lead ammunition as a RCRA hazardous waste.¹⁶⁶ The CWA loophole is based on finding (1) there is no point source on a shooting range and (2) the shooting range itself is not a point source.¹⁶⁷ These loopholes make it difficult for plain-

161. *Id.* at 222, 224 (stating why berm is not point source). *But see* *Stone v. Naperville Park Dist.*, 38 F. Supp. 2d 651, 655 (N.D. Ill. 1999) (finding that trap shooting range is CWA point source). The *Stone* court found a trap shooting range is a point source because the “whole purpose” of a shooting range is to “discharge pollutants” such as lead shot, and it is the only activity that occurs on the “shotfall zone.” *Id.* at 655. The *Cordiano* court stated that if it were to rule that the plaintiffs had submitted enough evidence that showed that the berm was a point source, then it would mean “that runoff or windblown pollutants from any identifiable source, whether channeled or not, are subject to the CWA permit requirement.” *Cordiano*, 575 F.3d at 224. The court ruled that there was not enough proof to show “lead has leached from the berm into ground water” or that the lead has drifted, via leaching, from the berm to the gun club wetlands. *Id.* at 222-23. The *Cordiano* court holding does not prevent a berm source from ever being considered a point source if there is evidence to support the claim. *Id.* at 224.

162. *Cordiano*, 575 F.3d at 225 (stating court does not need to reach issue on whether firing line of shooting range is point source under CWA).

163. *Id.* (finding lack of evidence that shooting range targets are on or close to CWA wetlands). The plaintiffs, furthermore, produced “no evidence that soil samples drawn from the shooting range lawn, and indicating elevated levels of lead, were drawn from or near jurisdictional wetlands.” *Id.* The *Cordiano* court held that even presuming that there was a CWA wetland somewhere on the shooting range, there was a lack of evidence that lead was fired into those wetland areas; thus, there was a lack of evidence for a reasonable fact finder to determine that lead was shot from the firing line of the shooting range into CWA wetlands. *Id.*

164. *Id.* (affirming district court’s decision).

165. *See* *Connecticut Coastal Fishermen’s Ass’n v. Remington Arms Co.*, 989 F.2d 1305 (2d Cir. 1993) (finding no CWA violation against defunct gun club but found RCRA violation based on classification of lead as hazardous waste); *Long Island Soundkeeper Fund, Inc. v. N. Y. Athletic Club*, 1996 WL 131863 (S.D.N.Y. Mar. 22, 1996) (finding CWA violation after classifying shooting range as point source and finding lead shot and clay-target debris to be CWA pollutants). The *Connecticut Coastal Fishermen’s Ass’n* court also found RCRA was not violated as lead shot and clay-target debris are not RCRA solid wastes. *Id.*

166. *Cordiano*, 575 F.3d at 208 (finding lead shot is not RCRA solid waste).

167. *Id.* at 225 (finding no point source on shooting range property and not reaching issue of whether shooting range itself is point source).

tiffs to find relief from potential environmental and health risks posed by lead bullets.¹⁶⁸

C. The Rise of Lead-Free Bullets

Despite the holding in *Cordiano*, many recognize lead bullets as hazardous in the United States as well as in other countries.¹⁶⁹ Armies in Scandinavia, for example, started exchanging their entire supply of lead bullets with non-toxic bullets.¹⁷⁰ Lead-free bullets are made of steel and are completely free of lead and other poisonous heavy metals.¹⁷¹ The United States Geological Survey's National Wildlife Health Center, along with several environmental groups, claims lead pellets used for hunting may poison birds and other creatures that inadvertently eat pellets believing them to be a source of food.¹⁷² Moreover, the United States military has acknowledged lead found in bullets can be hazardous to public health and has removed the remains of spent lead bullets from a large number of ranges.¹⁷³ Moreover, the state of California requires hunters to use lead-free ammunition near the California condor's natural habitat because the "iconic and extremely endangered" condor has been particularly affected by exposure to and poisoning from lead bullets.¹⁷⁴ Still, for many, lead bullets are preferable because lead bullets are less expensive, "eas[ier] to [mold] into bullet shapes," heavier, and have "a lubricating effect on gun barrels when fired."¹⁷⁵

168. Adams, *supra* note 6 (discussing dangers of lead bullets at gun clubs).

169. See Angus Crawford, Should Armies Use Lead-Free Bullets?, BBC News (Aug. 6, 2012, 10:04 PM), <http://www.bbc.co.uk/news/magazine-19116438> (outlining dangers of lead bullets from around world).

170. *Id.* (reporting lead-free bullet manufacturers are encouraging England to use lead-free bullets).

171. *Id.* (discussing components of lead-free bullets).

172. Paine, *supra* note 106 (explaining harm lead bullets have on wildlife). As to wildlife, "[l]ead has devastating effects on wildlife that mistake lead shotgun pellets for food or grit and ingest it." VIOLENCE POLICY CTR., *supra* note 4, at 8. Moreover, waterfowl use "bits of stone and gravel to help grind up food in their gizzards." *Id.* Waterfowl could suffer "a slow and agonizing death" from lead poisoning if there is lead mixed in with the grit they ingest. *Id.*

173. Paine, *supra* note 106 (reporting United States military acknowledges problems with lead bullets).

174. *Condor Poisonings*, *supra* note 26 (explaining reasons behind ban). Since their reintroduction began in 1992, at least fifteen southern California condors suffered lead poisoning and one died in 2008. *Id.* These poisonings are not trivial, as "[l]ead poisoning is the main threat to the survival of California condors." Pretzman, *supra* note 117.

175. Crawford, *supra* note 169 (explaining why lead bullets are preferred over lead-free bullets).

Although many countries and states have supported the use of lead-free bullets as an alternative to standard bullets, lead-free bullets still have their flaws.¹⁷⁶ For instance, Norwegian soldiers have “report[ed] fever[s], headaches and joint pains” following their use of lead-free bullets; consequently, the Norwegians returned to lead ammunition.¹⁷⁷ Some have blamed these health effects on new assault rifles and new ammunition that “caused increases in emissions of carbon dioxide, ammonia and hydrogen cyanide.”¹⁷⁸ Nammo, an ammunition manufacturer, argues that the problem of increased emissions has been resolved by a redesign effort coordinated with the Norwegian Defence Research Establishment and Armed Forces.¹⁷⁹ The redesigned ammunition, according to Nammo, has been used by the Swedish Armed Forces, and no person has reported health issues related to emissions from firing the ammunition.¹⁸⁰

In March of 2012, approximately one hundred environmental groups requested the EPA to ban or limit lead used in the manufacturing of bullets and shotgun pellets for hunting and other recreation.¹⁸¹ These environmental groups argued lead ammunition used by hunters: (1) “puts about [three thousand] tons of lead into the environment annually,” (2) “causes the death of [twenty] million birds each year from lead poisoning,” and (3) “contributes [to] unacceptable levels of the metal in . . . people’s diets” when individuals consume animals shot by lead ammunition.¹⁸² In contrast, gun

176. *See id.* (discussing issues with lead-free bullets).

177. *Id.* (discussing negative health effects from using lead-free bullets).

178. *Id.* (describing why lead-free bullets were causing soldiers’ health problems).

179. *We Have Improved Our Lead-Free Ammunition*, NAMMO, <http://www.nammo.com/News/We-have-improved-our-lead-free-ammunition/> (last visited Jan. 22, 2014) (discussing corrective measures taken to prevent negative health effects resulting from use of lead-free bullets).

180. *Id.* (claiming no known issues with redesigned lead-free ammunition).

181. CTR. FOR BIOLOGICAL DIVERSITY, PETITION TO THE ENVIRONMENTAL PROTECTION AGENCY TO REGULATE LEAD BULLETS AND SHOT UNDER THE TOXIC SUBSTANCES CONTROL ACT 2, 16 (2012), *available at* http://www.biologicaldiversity.org/campaigns/get_the_lead_out/pdfs/TSCA_ammunition_petition_3-13-12.pdf (laying out arguments from 101 environmental groups on why lead ammunition is bad for environment). Over seventy-five terrestrial species of birds are subjected to lead poisoning from spent ammunition. *Id.* at 3. Since the federal government banned lead ammunition for hunting waterfowl in 1991, ducks, geese, and swans have enjoyed protection from lead poisoning. *Id.* at 3. Eagles and mourning doves are still in danger of suffering the deadly effects of lead poisoning, either directly or from feeding on infected prey. *Id.*

182. Douglas M. Main, *Zeroing In on Lead in Hunters’ Bullets*, N.Y. TIMES (Mar. 5, 2012, 3:14 PM), <http://green.blogs.nytimes.com/2012/03/15/zeroing-in-on-lead-in-hunters-bullets/> (stating ban requested by environmental groups would

advocates argued prohibiting lead bullets would increase the overall price of ammunition.¹⁸³ It is estimated that lead is contained in ninety-five percent of the ammunition used for hunting and recreation, and “there is no ready alternative at a similar price.”¹⁸⁴

The EPA determined, as it had in a similar petition in 2010, lead ammunition is exempted from regulation under the Toxic Substances Control Act (TSCA).¹⁸⁵ Further, a bill preventing the EPA from regulating lead in ammunition has stalled in the Senate.¹⁸⁶ The Center for Biological Diversity (CBD), an environmental organization, disagrees with the EPA’s interpretation and intends to continue to seek a remedy in court; the CBD argues, “the law is very clear that [the] EPA has the responsibility to protect wildlife and people from toxic lead exposure.”¹⁸⁷

not restrict weapons belonging to law enforcement or military). Environmental groups also sought to ban metal usage in fishing tackles and weights. *Id.* One of the largest birds at risk from lead ammunition use is the “endangered California condor, a scavenger that may ingest lead while eating the remains of animals shot with lead bullets.” *Id.*

183. *See id.* (reporting some argue that use of lead-free ammunition would result in higher ammunition costs).

184. *Id.* (relaying belief that there is no proper alternative to lead ammunition). Some hunters and environmental groups, however, argue that non-lead copper bullets are sufficient, especially because they do not shatter into pieces like lead does. *See id.*

185. Letter from James Jones, Acting Assistant Administrator, EPA, to Jeff Miller, CTR. FOR BIOLOGICAL DIVERSITY (Apr. 9, 2012) [hereinafter Jones Letter], available at http://www.epa.gov/oppt/chemtest/pubs/response_4.9.12.pdf (explaining why petition was rejected); *see also* CTR. FOR BIOLOGICAL DIVERSITY, PETITION TO THE ENVIRONMENTAL PROTECTION AGENCY TO BAN LEAD SHOT, BULLETS, AND FISHING SINKERS UNDER THE TOXIC SUBSTANCES CONTROL ACT 1 (2010), available at http://www.biologicaldiversity.org/campaigns/get_the_lead_out/pdfs/Final_TSCA_lead_ban_petition_8-3-10.pdf (requesting ban for lead shot, bullet, and fishing sinkers under TSCA). The EPA claims that lead ammunition cannot be regulated under TSCA, as it is “an article” that is subject to the tax imposed by 26 U.S.C. § 4181. Jones Letter, *supra*; 15 U.S.C. § 2602 (2012); 26 U.S.C. § 4181. The EPA also found that the 2012 petition has no new information and is not a new petition under Section 21 of TSCA. Jones Letter, *supra*. The CBD had to file a second petition because it failed to meet a deadline to legally challenge the first petition’s denial. *EPA Rejects Center for Biological Diversity’s Second Shot at Banning Lead Ammunition*, MICHEL & ASSOCIATES, P.C., <http://michellawyers.com/2012/epa-rejects-center-for-biological-diversity-second-shot-at-banning-lead-ammunition/> (last visited Jan. 22, 2014).

186. *Sportsmen’s Act Hits Roadblock in the U.S. Senate*, SPORTSMEN’S DAILY (Dec. 13, 2012), <http://www.ussportsmen.org/hunting/sportsmens-act-hits-roadblock-in-the-u-s-senate/> (stating Sportsmen’s Act of 2012 stalled because Senate leadership decided not to act). The bill likely died because of a proposed duck stamp price increase from fifteen to twenty-five dollars. Ben Lamb, *U.S. Senate Kills Sportsmen’s Act of 2012 Over \$10 Duck Stamp Increase*, OUTDOOR LIFE (Nov. 28, 2012), <http://www.outdoorlife.com/blogs/open-country/2012/11/biggest-anti-hunting-group-us-senate.>

187. Chad Love, *EPA Rejects New Petition to Federally Ban Lead Ammo and Fishing Tackle*, FIELD & STREAM (Apr. 10, 2012), <http://www.fieldandstream.com/blogs/>

IV. GUN AND AMMUNITION MANUFACTURING PLANTS

Gun and ammunition manufacturing plants are some of the largest industrial polluters in the United States.¹⁸⁸ One reason for this high amount of pollution is the manufacturers of metallic lead products do not have any air pollution control measures in place.¹⁸⁹ Consequently, past and present lead manufacturing sites around the United States have been or currently are in violation of the CAA, the CWA, and RCRA, and have been subjected to expensive CERCLA cleanup.¹⁹⁰

The Ithaca Gun Factory site in Ithaca, New York, one of the most environmentally unsafe gun manufacturing sites in the United States, has proved to be a challenge to representatives from the New York State Department of Environmental Conservation (NYS-DEC), Cornell University, the EPA, the City of Ithaca, developers, and engineers, who all sought to find corrective solutions for the site for at least fifteen years.¹⁹¹ The elevated levels of lead at the site “were attributed directly to almost [one hundred] years of manufacturing and testing conducted by the Ithaca Gun Factory.”¹⁹² Although the 2.1-acre property has not manufactured guns or ammunition since 1986, evidence uncovered over the last ten years has shown that the site still contains asbestos, lead, arsenic, mercury, and uranium.¹⁹³

In 2003, the EPA predicted that it would cost approximately four million dollars to remove 2,370 tons of contaminated soil after

field-notes/2012/04/epa-rejects-new-petition-ban-lead-ammo-and-fishing-tackle (quoting CBD’s Jeff Miller) (explaining CBD will look to courts for assistance in lead ammunition regulation).

188. Patch, *supra* note 19 (describing ammunition manufacturer as one of largest polluters in Iowa); see Butler, *supra* note 19 (reporting ammunition manufacturer is in top twenty list of biggest American polluters of 2010).

189. PAC. ENVTL. SERVICES, BACKGROUND REPORT AP-42 SECTION 12.17: MISCELLANEOUS LEAD PRODUCTS 3, available at <http://www.epa.gov/ttnchie1/ap42/ch12/bgdocs/b12s17.pdf> (last visited Jan. 22, 2014) (describing lead manufacturing’s lack of emission controls). In the ammunition manufacturing process, lead is “melted and alloyed before it is cast, sheared, extruded, swaged, or mechanically worked.” *Id.* at 2.

190. For a discussion of past and present pollution at lead manufacturing sites, see *infra* notes 191-241 and accompanying text.

191. *Gun Factory Building Hazardous History*, *supra* note 50 (identifying parties attempting to clean up site).

192. *Id.* (reporting approximate measurement of lead shot at site was ten tons).

193. *Id.* (stating most hazardous actions were committed at site more than thirty five years prior). Since the Ithaca Gun Club went bankrupt in 1986, the site has gone through approximately six owners. Molly O’Toole, *Clean-up, Construction to Rejuvenate Ithaca Gun Site*, CORNELL DAILY SUN (Nov. 30, 2007), <http://web.archive.org/web/20120213104033/http://cornellsun.com/node/26431>.

finding “lead concentrations ‘as high as [twenty-one] percent.’”¹⁹⁴ After the site underwent a 4.8 million dollar cleanup that utilized Superfund resources, it was re-contaminated despite the NYSDEC warnings that some soil was still contaminated and could possibly undo cleanup efforts and re-contaminate other areas.¹⁹⁵ Disturbingly, post-cleanup soil tests on the property had lead concentrations up to “460 times higher than the 2004 cleanup goal originally set by the EPA.”¹⁹⁶ Some claim the EPA did not live up to its promise of cleaning up the contaminated site; samples taken from the site in 2006 demonstrated that lead levels in the area only decreased from 215,000 to 189,000 parts per million.¹⁹⁷ IFR Development, the new site owner, has continued the decontamination process, and the NYSDEC encourages feedback from the community in order to assist the cleanup.¹⁹⁸

In Iowa, the ammunition manufacturer PMX is “one of the most notorious corporate polluters in Iowa.”¹⁹⁹ In 2009, PMX ranked fifth among Iowa corporations for most cancer-causing chemicals released, depositing 322 pounds of chemicals into an

194. *Gun Factory Building Hazardous History*, *supra* note 50 (finding City of Ithaca was required to contribute 150,000 dollars to cleanup). The previous owner of the factory buildings on the site, State Street Associates, was ordered to pay 165,000 dollars. *Id.* Fall Creek Redevelopment, a group that planned on buying and redeveloping the site, paid 50,000 dollars, but the Ithaca Gun Factory was not fiscally liable for any of the cleanup after it filed bankruptcy. *Id.* In a 1998 sample taken from a nearby area, the NYSDEC “found lead levels as high as 215,000 parts per million, more than 500 times the level recommended of 400 parts per million.” *Id.*

195. *Id.* (reporting site was re-contaminated after cleanup).

196. *Id.* (discussing environmental risks that remained on site despite environmental cleanup). The chain link fence at the site was “peeled back” and had barbed wire that had “fallen.” Molly O’Toole, *Clean-Up Attempts Leave Contaminants*, CORNELL DAILY SUN (Nov. 29, 2007), <http://web.archive.org/web/20120419175311/http://cornellsun.com/node/26402> [hereinafter *Clean-Up Contaminants*]. The factory can also “be entered through several unlocked doors” or “an area where the brick of a wall has crumbled.” *Id.* Further, “[i]mmense vats, rusty and eroding, still hold some unidentifiable, brightly colored chemical substances.” *Id.* A “distinctly metallic and chemical smell” is noticeable on the site. *Id.* In 2006, following a fire in the building that was caused by displaced persons that lit a mattress on fire, the Ithaca Fire Department closed all entrances to the site to prevent further fires. *Id.*

197. *Clean-Up Contaminants*, *supra* note 196 (reporting New York assemblywoman and her firm collected soil samples that provide some proof EPA did not do what it assured it would do).

198. *New Cleanup Application for Former Ithaca Gun Company Site*, YOUR NEWS NOW (Jan. 16, 2013, 4:58 PM), http://centralny.ynn.com/content/top_stories/630836/new-cleanup-application-for-former-ithaca-gun-company-site/ (reporting NYSDEC was looking for community feedback on cleanup until February 15, 2013).

199. Patch, *supra* note 19 (discussing PMX’s pollution statistics).

Iowa creek.²⁰⁰ In that same year, it also ranked sixth among Iowa corporations for releasing 215 pounds of developmental toxicants and fourth in Iowa for releasing 215 pounds of reproductive toxicants.²⁰¹ Moreover, the latest statistics from the EPA show that PMX released 148,363 pounds of copper compounds, 134,987 pounds of zinc compounds, and 222 pounds of lead compounds into the environment in 2011.²⁰²

PMX's ammunition division, Precision Made Cartridges (PMC), "produces one of the most popular brands of ammunition for the AR-15-type gun."²⁰³ Interestingly, the .223 caliber Bushmaster semi-automatic rifle, an AR-15 type gun, was used in the Newtown School shooting and three other mass shootings since 1999.²⁰⁴

200. *Id.* (reporting PMX dropped 322 pounds of cancer-causing chemicals into Willow Creek); ENVIRONMENT IOWA, INDUSTRIAL POLLUTION IN IOWA WATERWAYS I, available at <http://cdn.publicinterestnetwork.org/assets/fd87b55f901d776fb48c14a681b63a34/Industrial-Pollution-in-Iowa-Waterways.pdf> (last visited Jan. 22, 2014) (collecting pollution statistics for Iowa companies and water bodies in 2009).

201. Patch, *supra* note 19 (stating discharge of both developmental and reproductive toxicants was in Willow Creek).

202. *Facility Profile Report*, ENVTL. PROT. AGENCY, http://iaspub.epa.gov/triexplorer/-release_fac_profile?TRI=52404PMXND5300W&year=2011&trilib=TRIQ1&FLD=&FLD=RE-LLBY&FLD=TSFDSP&OFFDISPD=&OTHDISP= &ONDISPD=&OTHOFFD= (last updated Mar. 2013) (showing Facility Profile Report for PMX); see also Patch, *supra* note 19 (referencing 2011 EPA statistics on PMX pollution). PMX also had a total release of 1,931 nickel compounds in 2011. *Facility Profile Report*, *supra*.

203. Patch, *supra* note 19 (indicating that bulk order of 1,000 .223 caliber PMC rounds are sold at low cost of 413 dollars). The PMC's ammunition is marketed to allow shooters to be prepared "for any situation that involves high-volume shooting without compromising downrange results." *Bronze Line – Rifle*, PMC AMMUNITION, <http://pmcammo.com/wp/ammo/rifle/bronze-line-rifle/> (last visited Jan. 22, 2014). The PMC advertises its bronze product line as "cost-effective" ammunition. *Id.*

204. Patch, *supra* note 19 (stating that Bushmaster is AR-15 style gun); Matthew Mosk, *Newtown Shooting: Bushmaster Under Fire*, ABC NEWS (Dec. 18, 2012), <http://abcnews.go.com/Blotter/newtown-shooting-bushmaster-fire/story?id=18008602> (finding that Bushmaster gun has been involved in four mass shootings since 1999). The Bushmaster was used in the Beltway sniper shootings that resulted in ten deaths in the District of Columbia metropolitan area. *Id.* An AR-15 was allegedly used by James Holmes in the Aurora movie theater shooting that killed twelve. Erica Goode, *Popular AR-15 Style Rifle Used in Recent Mass Killings*, SEATTLE TIMES (Dec. 16, 2012, 7:27 PM), http://seattletimes.com/html/-nationworld/2019920283_shootinggunsxml.html. Jacob Roberts also used the gun when he killed two people before killing himself in a Portland, Oregon shopping mall. *Id.* The Bushmaster rifle is banned under California's assault weapons ban. See Greg Roumeliotis & Sakthi Prasad, *Newtown Backlash Prompts Bushmaster Rifle Maker Sale*, REUTERS (Dec. 18, 2012, 1:28 PM), <http://www.reuters.com/article/2012/12/18/us-cerber-us-freedomgroup-idUSBRE8BH08F20121218>. For a further discussion of the AR-15 semi-automatic assault rifle, see Lee Ferran & Shushannah Walshe, *Newtown Massacre: What is a Bushmaster .223?*, ABC NEWS (Dec. 17, 2012), <http://abcnews.go.com/Blotter/newtown-massacre-bushmaster-223/story?id=18000884>.

The manufacturing of large amounts of bullets for the high-capacity AR-15 magazine could explain why PMX produces some of the highest levels of lead and metal pollutants.²⁰⁵

Even some government-owned ammunition plants are creating large environmental problems.²⁰⁶ For example, the RAAP site in Virginia released the second most pollutants in United States' waterways in 2010, dumping 12,006,602 pounds of pollutants into a local river.²⁰⁷ The ammunition plant, which manufactures "propellants and ammunition for the U.S. military," is currently under scrutiny for its pollution of nearby drinking water.²⁰⁸ At the time of this writing, the Agency of Toxic Substances and Disease Registry (ATSDR) was in the process of investigating possible drinking water contamination near the RAAP site.²⁰⁹ On January 24, 2013, citizens held a community meeting near the plant to discuss the possible contamination; one community member "brought a plastic jug filled with his tap water" as proof of contamination.²¹⁰ Some environmental groups worry that there is even an air pollution problem related to an "open" site "where waste is incinerated."²¹¹ The

205. See HOULIHAN & WILES, *supra* note 103, at 2 (explaining lead ammunition production's effect on the environment). Lead ammunition's production could have grave effects on the environment as "[t]he amount of lead used in bullet production over a period of four years would be enough to contaminate the entire State of Rhode Island at Superfund levels, to a depth of one foot." *Id.*

206. Butler, *supra* note 19 (identifying RAAP as top twenty polluter in 2010); MINN. POLLUTION CONTROL AGENCY, *supra* note 58, at 1 (stating that TCAAP site is to blame for a pair of contaminated groundwater plumes that impact drinking water).

207. Butler, *supra* note 19 (reporting this discharge was probably legal). Sixty percent of American waterways are not safeguarded under CWA. *Id.* The number one waterway polluter in 2010 was AK Steel Corporation, which dumped 24,305,396 pounds of pollutants into the Ohio River. *Id.* RAAP is currently the number one toxic emissions source in Virginia, but "most of those emissions involve nitrates released into the river as part of the plant's treated wastewater." Laurence Hammack, *Water at Radford Arsenal Concerns Federal Agency*, ROANOKE TIMES (Jan. 12, 2013), <http://ww2.roanoke.com/news/roanoke/wb/318954>.

208. Hammack, *supra* note 207 (reporting RAAP was built during World War II on New River's banks). RAAP sits on an approximately 7,000 acre property. *Id.*

209. Laurence Hammack, *Meeting Focuses on Quality of Water Near Radford Army Ammunition Plant*, ROANOKE TIMES (Jan. 25, 2013), <http://ww2.roanoke.com/news/roanoke/wb/319460> [hereinafter Hammack, *Radford Meeting*] (reporting ATSDR mission is to investigate whether community around plant was exposed to harmful chemicals). The ATSDR is an arm of the United States Centers for Disease Control and Prevention. *Id.*

210. *Id.* (reporting that meeting was held at Belview Elementary School near plant). United States Representative Morgan Griffith also attended the meeting. *Id.*

211. *Id.* (stating that Environmental Patriots of New River Valley expressed concerns over air pollution from plant). The Environmental Patriots of New River Valley are responsible for getting the drinking water investigation started. *Id.* The

ATSDR's investigation into the drinking water will continue and will not involve any examination of the air in the area.²¹² In addition, residents in the area surrounding the RAAP site are concerned that remnants of hazardous waste, which are "the leftovers" from ammunition manufacturing, "were dumped on the plant's sprawling grounds decades ago . . . before current environmental regulations took effect."²¹³ As a result, citizens living near the RAAP site suspect that the hazardous waste found its way into residential wells near the plant.²¹⁴ The EPA has located pollutants such as "TNT, DNT, nitroglycerin, lead, chromium, cadmium, perchlorates, and volatile materials" near the site.²¹⁵ The EPA claims that most of the dumping grounds no longer pose a danger to the public or the environment.²¹⁶ Although EPA monitoring reports revealed little evidence of drinking water pollution, the EPA discovered seventy-seven areas where hazardous waste was once stored, eleven of which needed soil cleanup or removal because the level of contaminants was high.²¹⁷ Moreover, the RAAP site has also faced possible fines following an "equipment breakdown," which caused a small acid leak into the New River.²¹⁸

Similarly, TCAAP, a 2,383-acre plant that has produced ammunition since 1942, also caused groundwater and soil supply contamination in the Minneapolis-St. Paul metropolitan area.²¹⁹ TCAAP's

Sierra Club has also expressed concern over air pollution occurring on the site. Hammack, *supra* note 207.

212. Hammack, *Radford Meeting*, *supra* note 209 (explaining ATSDR's planned water quality investigation at RAAP site).

213. Hammack, *supra* note 207 (discussing concerns of those living near RAAP site).

214. *Id.* (stating EPA and local Department of Environmental Quality monitoring found little evidence to support water pollution concerns).

215. Hammack, *Radford Meeting*, *supra* note 209 (identifying contaminants in waste at RAAP).

216. Hammack, *supra* note 207 (discussing whether dumping grounds create public or environmental danger). Past dumping sites on the plant's property include an "acid wastewater lagoon, a TNT wastewater treatment unit, [and] an asbestos disposal trench." *Id.*

217. *Id.* (stating tainted soil required actions). Actions taken to fix highly contaminated soil present at eleven sites on the property included digging soil and moving it off the site. *Id.* Despite the groundwater contamination in 2011, the EPA thought that "data [did] not suggest that off-site groundwater ha[d] been impacted." *Id.*

218. Jeff Sturgeon, *Radford Army Ammunition Plant May Be Fined for Acid Leak into River*, ROANOKE TIMES (Nov. 10, 2012), <http://ww2.roanoke.com/news/roanoke/wb/316537> (discussing local Department of Environmental Quality "notice of violation" stated plant's discharge into river violated its pH permit).

219. *Twin Cities Army Ammunition Plant*, GLOBALSECURITY.ORG, <http://www.globalsecurity.org/military/facility/aap-twincities.htm> (last visited Jan. 22, 2014) [hereinafter *TCAAP*] (discussing environmental studies focusing on TCAAP). En-

property consists of a wildlife habitat and “is one of the largest in a series of habitats . . . that stretches from the Mississippi River . . . to a northerly chain of lakes.”²²⁰ During World War II, the plant produced more than four billion rounds of ammunition.²²¹ From 1950 to 1957, the plant produced “3.5 billion rounds of small arms ammunition, 3.2 million 195-mm artillery shell metal parts, and 715,000 155-mm shell metal parts.”²²² During the Vietnam War, the plant produced more than ten billion rounds of various types of ammunition.²²³ In the late 1960’s, the plant built “[a]n enclosed range” on site “to proof test cartridges.”²²⁴

Manufacturing activities conducted at TCAAP have had grave effects on the safety of drinking water across numerous Minnesota communities.²²⁵ As part of TCAAP’s manufacturing process, “chlorinated solvents, also known as volatile organic compounds (VOCs), were used as degreasers.”²²⁶ The disposal of large amounts of chlorinated solvents in “sandy areas within the TCAAP

environmental studies in 1981 determined that contamination that originated from the plant made its way into the Minneapolis-St. Paul groundwater supply. *Id.*; see also *United States v. Pennsylvania Envtl. Hearing Bd.*, 584 F.2d 1273, 1277-78 (3d Cir. 1978) (finding that independent contractor was not government agency under CWA and thus was not eligible for sovereign immunity from Pennsylvania pollution sanctions). The independent contractor in *Pennsylvania* had a relationship with the federal government that was similar to the relationship TCAAP had from 1942 to 1946 and 1950 to 2005. *Compare id.* at 1278-79 (stating private companies should be recognized as independent contractors and not as government agency), with *MINN. POLLUTION CONTROL AGENCY*, *supra* note 58, at 1 (stating ownership of TCAAP went back to Federal Cartridge Company in 1950 and was run by Army contractors until plant’s closure in 2005).

220. *TCAAP*, *supra* note 219 (discussing surrounding wildlife). The property is also near a wildlife management area. *Id.* Preserving large habitats and wildlife travel corridors between TCAAP and the wildlife management area is important when it comes to “conserving the biological richness of species.” *Id.*

221. *Id.* (outlining ammunition production by plant during World War II).

222. *Id.* (stating how much ammunition plant produced from 1950 to 1957).

223. *Id.* (outlining how much ammunition plant produced during Vietnam War). Following World War II, TCAAP “engaged in repacking ammunition and demilitarizing unusable ammunition.” *Id.* In 1947, the repacking program was completed and, in 1951, the demilitarization program was completed. *Id.* From August 1958 to December 1965, the plant was put on standby and began manufacturing ammunition again by September 1966. *Id.* From 1971 to 1974, “[t]he plant was placed on layaway status in several stages.” *Id.* From 1942 until 1946, the Federal Cartridge Company operated the plant, until the United States Army took over operations from 1946 to 1950. *Minn. Pollution Control Agency*, *supra* note 58, at 1. In 1950, Federal Cartridge Company regained control of operations and Army contractors continued operating TCAAP until it was no longer a production facility in 2005. *Id.*

224. *TCAAP*, *supra* note 219 (describing activities conducted on TCAAP site).

225. See *MINN. POLLUTION CONTROL AGENCY*, *supra* note 58, at 1 (discussing effect TCAAP’s manufacturing has on nearby drinking water).

226. *Id.* (reporting that trichloroethylene (TCE) was primary VOC used).

property was the source for the two off-site [trichloroethylene] TCE plumes.”²²⁷ In order to safeguard groundwater from surface contamination, a clay layer impedes the “downward movement of water” in a majority of locations on the TCAAP property.²²⁸ However, the TCE disposal area did not have a protective clay layer to prevent the TCE from leaking into groundwater used primarily as drinking water for neighboring areas.²²⁹

Moreover, “[i]n 1981, the [Minnesota Pollution Control Agency (MPCA)] and the Minnesota Department of Health sampled more than 150 drinking water wells” in locales near TCAAP and determined TCAAP was responsible for the pollution.²³⁰ As a result, the MPCA requested aid from the EPA to supply “emergency drinking water to . . . the affected communities.”²³¹ Since 1980, the EPA has taken various steps to guarantee clean drinking water to those communities, including funding “a granulated activated carbon (GAC) filtration system” that will assist in cleaning local municipal water systems and well water; however, “the groundwater throughout the area will take a long time to reach drinking water standards.”²³²

In addition to water contamination, TCAAP’s manufacturing also resulted in soil impurity that required an expensive cleanup.²³³ Not surprisingly, the most prevalent contaminants were “[a]mmunition-related heavy metals[] [such as] copper, lead, and mercury.”²³⁴ VOCs and polychlorinated biphenyls were also pre-

227. *Id.* (describing how TCE plumes were created off-site). A TCE plume can be described as “an area of degraded water in a stream or aquifer resulting from migration of a contaminant [TCE].” *Contamination Plume*, REPUBLIC OF SOUTH AFRICA DEP’T OF WATER AFFAIRS, http://www.dwa.gov.za/Groundwater/Groundwater_Dictionary/index.html?introduction_contamination_plume.htm (last visited Jan. 22, 2014).

228. MINN. POLLUTION CONTROL AGENCY, *supra* note 58, at 1 (detailing movement of water around TCAAP).

229. *Id.* at 1-3 (describing how TCE contamination occurred).

230. *See id.* at 3 (describing how TCAAP was proven to be source of contamination of drinking water).

231. *Id.* (outlining how local residents near TCAAP received safe drinking water).

232. *Id.* (stating EPA remediation efforts). The EPA provided all known private well owners in the nearby towns of New Brighton, St. Anthony, and Arden Hills with safe drinking water by connecting them to municipal water or other means at the Army’s expense. *Id.* The Army states that it will continue to fund the remediation of New Brighton’s municipal water supply and also conduct monthly tests on the water. *Id.*

233. TCAAP, *supra* note 219 (describing soil issues caused by TCAAP’s manufacturing operations).

234. *Id.* (outlining ammunition-related contaminants at TCAAP).

sent in the soil.²³⁵ The Army, the EPA, and the MPCA partnered and were able to lead an effective soil cleanup by: (1) “install[ing] . . . soil vapor extracting systems to remove VOCs from soils” at some sites, (2) using incineration at others, and (3) utilizing “an innovative soil washing and soil leaching technology” at the rest of the sites on TCAAP property.²³⁶

Ramsey County’s Board of Commissioners recently purchased the 430-acre TCAAP site, Minnesota’s largest Superfund site, in a 28.5 million dollar deal with the federal government.²³⁷ The Ramsey County government intends to clean up the final thirty acres of “solvent-heavy soil.”²³⁸ The remaining cleanup will cost 22.6 million dollars.²³⁹ Once cleaned, Ramsey County hopes to use the land to develop and create real property; however, as of October 2013, no developers had signed on to use the land.²⁴⁰ The Minnesota Vikings, a National Football League team, is partly responsible

235. *Id.* (listing less prevalent soil contaminants at TCAAP). Polychlorinated biphenyls are troublesome cancer-causing wastes that do not chemically decompose easily. *Polychlorinated Biphenyls (PCBs)*, ENVTL. PROT. AGENCY, <http://www.epa.gov/epawaste/hazard/tsd/pcbs/about.htm> (last updated Apr. 8, 2013).

236. TCAAP, *supra* note 219 (discussing technologies used to cleanup soil). The soil vapor extracting systems “effectively reduc[ed] VOC migration to the groundwater.” *Id.* The metal contamination in the soil was redressed by new cleanup technology. *Id.* Lead extraction technology operates by using both oil leaching supplemented by soil washing. *Id.* Lead extraction is cheaper than “conventional cleanup technologies for metals that either contain or transfer the contamination.” *Id.* In lead extraction, “metals are recovered and recycled at a smelter, eliminating the long-term liability associated with existing metals cleanup alternatives such as landfilling, solidification, or stabilization.” *Id.* An estimated 15,000 tons of soil was treated using the lead extraction technology at one contamination site on the property. *Id.* Soil washing is described as “a physical separation process that removes large metallic particles from soil (based on density),” and “the process ultimately results in a reduction of soil volume.” *Id.* Additionally, “[s]oil leaching is a chemical process that involves adding an acid to the soil to remove metals by dissolving the remaining smaller metallic particles and ionic metals.” *Id.*

237. Duchschere, *supra* note 50 (describing purchase of 430-acres of TCAAP land).

238. *Id.* (describing government’s intentions for contaminated land).

239. *Id.* (reporting 22.6 million dollars of 28.5 million dollar deal will go to cleanup).

240. Sarah Horner, et al., *Ramsey County Bets Big On TCAAP Development*, TWINCITIES.COM (Oct. 19, 2013), http://www.twincities.com/ramseycounty/ci_24340715/ramsey-county-bets-big-tcaap-development (reporting Ramsey County would get some money back by selling TCAAP site after site is cleaned). One reason why developers are hesitating to purchase the property is because they are worried about the lingering soil and water pollution on the land. *Id.* Those that oppose Ramsey County buying the site believe that because the federal government created the contamination, the federal government should be the one that spends the money to clean it up. Duchschere, *supra* note 50.

for bringing “scrutiny and spotlight” to the site when the team looked at TCAAP as a potential site for its stadium.²⁴¹

V. HUNTING AND TARGET SHOOTING

A. Hunting Facts and Figures

A common argument against having strong gun control in the United States is that the Second Amendment’s right to bear arms includes the right to hunt.²⁴² Advocates of this argument cite positive effects hunting has on the environment, including animal population control and increased conservation efforts funded by the proceeds from hunting licenses.²⁴³ Hunting can also have negative effects on species, however, including species extinction, animal anxiety leading to long-term stress on a population, and animal deafness.²⁴⁴

Generally, the number of hunters in the United States has dwindled over the last few years.²⁴⁵ In 2012, there were around 14.5 million hunters in the United States, down from 15.7 million in 1991.²⁴⁶ At the state level, the number of hunters in New Jersey declined by fifty-four percent since 1980, and only one percent of the state’s population hunts today.²⁴⁷ The number of hunters in Pennsylvania dropped twenty-three percent since 1980, and only ten percent of Pennsylvania’s population still hunts today.²⁴⁸ Curi-

241. *Id.* (reporting TCAAP’s connection with Minnesota Vikings). The Minnesota Vikings wanted to build a stadium at the TCAAP site but did not have enough funds to do so. *Id.* Furthermore, the Vikings had to win state approval for private-public partnership to rebuild a stadium in downtown Minneapolis. *Id.* The county’s deputy manager stated, “[w]e felt like the time and effort we invested [in the stadium campaign] should not go to waste.” *Id.* (quoting Heather Worthington, Ramsey County’s deputy manager) (internal quotation marks omitted).

242. Gordon, *supra* note 11 (describing arguments for Second Amendment). Owning guns only for the purpose of hunting is common in the United States. Chastain, *supra* note 16.

243. Chuck Robert, *Gun Control & the Effects on Wildlife*, eHow, http://www.ehow.com/info_8469452_gun-control-effects-wildlife.html (last visited Jan. 22, 2014) (outlining positive effects of hunting).

244. *Id.* (stating negative effects of hunting).

245. Ben Moyer, *Support for Hunting, Fishing Remains Strong Even as Participation Wanes*, PITTSBURG POST-GAZETTE (Jan. 2, 2011, 12:00 AM), <http://www.post-gazette.com/stories/sports/hunting-fishing/support-for-hunting-fishing-remains-strong-even-as-participation-wanes-280101/> (discussing statistics and approval ratings of hunting in United States).

246. *Id.* (finding gun ownership has declined since 1991).

247. *Id.* (finding work and reduced free time are blamed for fewer hunters today). California’s hunting population dropped forty-five percent since 1980 and now only one percent of its current population hunts. *Id.*

248. *Id.* (describing Pennsylvania’s hunting population).

ously, approval ratings of hunting have grown.²⁴⁹ One study revealed that in 2006, seventy-eight percent of American adults polled “approved” of hunting, compared to seventy-three percent in 1995.²⁵⁰ Disapproval of hunting decreased from twenty-two percent in 1995 to sixteen percent in 2006.²⁵¹ Interestingly, eighty-five percent of Americans that participated in a national survey expressed approval of “‘hunting for meat,’ and [eighty-one] percent approve[d] of ‘hunting as wildlife management,’ but only [twenty-eight] percent expressed approval for ‘hunting for a trophy.’”²⁵²

B. Hunting at the State Level

Despite current popular approval of hunting, some state courts have found that hunting may have a significant environmental impact.²⁵³ In *Mountain Lion Coalition v. California Fish & Game Commission*,²⁵⁴ the California First District Court of Appeal was asked to determine whether the California Fish and Game Commission (CFGC) and its Environmental Impact Document (EID) complied with the California Environmental Quality Act (CEQA).²⁵⁵ The case centered on the CFGC’s 1987 regulations, which authorized the recreational hunting of mountain lions for the first time in California in sixteen years.²⁵⁶

The Mountain Lion Coalition, among other groups, successfully petitioned the San Francisco County Superior Court for an October 7, 1987, peremptory writ of mandate that postponed the hunting regulations and required the CFGC to comply with the CEQA by preparing and publishing a proper EID.²⁵⁷ The petition alleged that the CFGC’s hunting allowance “involved uncertain ef-

249. *Id.* (noting many Americans approve of hunting).

250. Moyer, *supra* note 245 (stating number of Americans that approve of hunting).

251. *Id.* (stating number of Americans that disapprove of hunting).

252. *Id.* (giving number of Americans that approve of different hunting goals).

253. *Mountain Lion Coal. v. Fish & Game Com.*, 263 Cal. Rptr. 104, 108 (Ct. App. 1989) (stating trial court found mountain lion hunt can have substantial environmental impacts); *see also* *Wildlife Alive v. Chickering*, 17 Cal. 3d 190, 206 (1976) (finding hunting can be both positive and negative for environment).

254. 263 Cal. Rptr. 104, 108 (Ct. App. 1989).

255. *Id.* at 105 (stating issue in case was CEQA compliance).

256. *Id.* (giving factual background of case).

257. *Id.* (stating procedural background of case). A proper EID “contain[s] a legally sufficient analysis of the cumulative impact associated with conducting such a hunt.” *Id.* The writ stated that if the CFGC wanted to allow the hunt, it would have to draft a cumulative impact analysis that is consistent with the CEQA and circulate this analysis for public review. *Id.*

fects and unknown risks of dropping the mountain lion population below self-sustaining levels, and it could result in cumulatively significant impacts on the environment.”²⁵⁸

One month later, the CFGC filed “a return to the peremptory writ,” consisting of “a four-page cumulative impact analysis” finding that mountain lion hunting would have no negative consequences on the overall mountain lion levels, the mountain lion’s natural surroundings, or the environment in general.²⁵⁹ The plaintiffs quickly challenged the finding on numerous counts.²⁶⁰ They were especially concerned that the CFGC’s report “lack[ed] detail and specific references to concrete data supporting the conclusions reached” and that the CFGC disregarded or inappropriately responded to the public concerns raised in the challenge.²⁶¹ The National Park Service (NPS) was troubled that its requirement to safeguard mountain lions within the park would be undermined by the hunt because mountain lions were likely to wander outside of parks.²⁶² To alleviate its concern, the NPS wanted “buffer zones” implemented that prohibited the hunting of mountain lions outside park boundaries, but the CFGC neither responded to this request nor implemented the buffer zone.²⁶³ In a January 22, 1988, order, the San Francisco County Superior Court again informed the CFGC that it could not adopt the mountain lion hunting regulation until the CFGC complied with the CEQA and published a “legally sufficient” impact analysis.²⁶⁴

258. *Id.* (outlining allegations in petition). The petition also accused the CFGC of drafting and publishing an unsatisfactory document that did not mention these environmental issues before the hunt was allowed, as required by the CEQA. *Id.*

259. *Mountain Lion*, 263 Cal. Rptr. At 105 (stating CFGC believed it followed court’s order). The CFGC submitted a four-page cumulative impact analysis that claimed that the mountain lion hunt would have no adverse environmental impact. *Id.* The CFGC believed it had followed the court’s order, as the report was circulated for public input and the public’s written comments were reviewed. *Id.*

260. *Id.* at 106 (explaining plaintiffs’ challenge of CFGC’s findings).

261. *Id.* (outlining plaintiffs’ complaint concerning CFGC’s EID). For example, the plaintiffs alleged that letters sent from the NPS from April 8, 1987, to November 10, 1987, expressed concerns that the hunting would occur in areas next to numerous national parks. *Id.*

262. *Id.* (explaining why NPS was not supporting CFGC’s hunt).

263. *Id.* at 106 (reporting CFGC never addressed NPS’s concerns). The plaintiffs also claimed that the CFGC failed to respond to complaints that the mountain lion hunt could disrupt scientific “research on the ecological balance of wild horses, mule deer[,] and mountain lions in the Inyo National Forest.” *Id.*

264. *Mountain Lion*, 263 Cal. Rptr. at 106. (finding CFGC’S cumulative EA was not legally sufficient). The court outlined what is required in an appropriate analysis: (1) an acceptable cumulative EA cannot be “conclusionary” and must be supported by scientific evidence, (2) a proper analysis “must include data generated

Instead of appealing the decision, on January 11, 1988, the CFGC issued a "Statement of Purpose for Regulatory Action" that advanced a mountain lion hunting regulation "virtually identical" to the suspended 1987 regulation.²⁶⁵ On February 1, 1988, CFGC published a draft EID for the public to critique.²⁶⁶ The CFGC published a final EID after receiving public feedback and approved the new mountain lion hunting regulations on April 8, 1988.²⁶⁷

The court decided to include the 1988 mountain lion hunt regulations in the preemptory writ of mandate involving the 1987 mountain lion hunt regulations; as a result, the court found that the cumulative impact analysis was still insufficient.²⁶⁸ After reviewing the 1988 draft EID that was published for public review, the court found that the CFGC did not appropriately discuss numerous topics in the court's original 1987 order, including a discussion of the "short-term and long-term impacts of the 1987 wildfires in California" that destroyed 750,000 acres.²⁶⁹ This time, the CFGC appealed the decision, rather than publish the final EID for public input or prepare a new impact analysis.²⁷⁰

The CFGC's appeal claimed that the proposed mountain lion hunt is consistent with the CEQA and asserted that the trial court incorrectly based its decision on the CFGC's draft EID alone.²⁷¹

from meaningful research on the short-term and long-term impacts of the 1987 wildfires in California," (3) the "analysis must assume that mountain lion hunting seasons will be approved for several years after 1987," (4) the analysis should discuss the likelihood of the hunt to affect animal populations within the national parks, the Inyo National Forest, and wildlife on other federal lands, and (5) the final analysis is required to "develop more specific information on the impacts resulting from the loss of even a few individual lions on those lions' social groups." *Id.* at 106-07. The court wanted significant public participation and required that any "analysis must first be circulated for further public review and commentary for a length of time sufficient to satisfy the requirements of [the] [CEQA]" before the court would review it again. *Id.* at 107. The court also ordered "that all significant environmental points raised by the public had to be responded to in writing, with each response supported by scientific and empirical data." *Id.*

265. *Id.* at 107 (describing 1988 mountain lion hunt proposal).

266. *Id.* (describing background of CFGC's EID process).

267. *Id.* (giving background of 1988 regulations authorizing mountain lion hunt).

268. *Id.* (explaining why 1988 hunting regulations did not comply with court's writ of mandate).

269. *Mountain Lion*, 263 Cal. Rptr. at 107 (stating court's findings in regard to hunting regulations adopted in 1988). The court did not reach the issue of whether the final EID, which had more "analysis and documentation," was more legally sufficient than the draft EID because CFGC did not publish the final EID for public input. *Id.*

270. *Id.* (reporting CFGC decided to appeal instead of take other action).

271. *Id.* at 107-08 (outlining CFGC's grounds for appeal). Challenging the district court's requirement, the CFGC argued that, under the CEQA, there is no

The California First District Court of Appeal disagreed, finding the 1988 regulation draft EID was “woefully inadequate” considering “the unambiguous nature of the court’s order.”²⁷² Specifically, the EID gave the 1987 California wildfires “ cursory treatment,” concluding that “accidental fires will produce benefits for lions through improved forage conditions for deer and corresponding increases in deer numbers in affected areas.”²⁷³ The CFGC, thus, “chose to circulate a document that simply swept the serious criticisms of th[e] project under the rug” instead of “squarely addressing the subjects that were set out in the court’s order and submitting their environmental conclusions to public scrutiny.”²⁷⁴ According to the court, it was “impossible” for an interested public to assist completely in analyzing the environmental impacts resulting from the hunt.²⁷⁵ The court also stated that requiring public review is “the strongest assurance of the adequacy of the EI[D],” and courts look for “adequacy, completeness, and a good faith effort at full disclosure” in the preparation of an EID.²⁷⁶

requirement that the cumulative environmental impact analysis needs to be published for public review before the court can review it. *Id.* at 108.

272. *Id.* at 108 (finding 1988 draft EID did not contain enough information).

273. *Id.* (internal quotation marks omitted) (stating superior court rejected same wildfire analysis in earlier order). In discussing the mountain lion hunt’s consequences on national parks and the Inyo National Forest, the draft EID only stated “the proposed action will not significantly effect [sic] State and federal park land uses.” *Id.* (internal quotation marks omitted). Further, when discussing future hunts and consequences on the environment, “the draft EID cite[d] a population model used to predict long-term trends, and then state[d], ‘evaluations with the model indicate no long-term negative impacts on the local populations as a direct result of the proposed action.’” *Id.*

274. *Mountain Lion*, 263 Cal. Rptr. at 108-09 (citing *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.*, 231 Cal. Rptr. 748 (Cal. 1986)) (finding draft EID sought only to avoid disclosing important environmental considerations known to CFGC).

275. *Id.* at 108-09 (explaining effect weak draft EID had on public).

276. *Id.* at 109 (quoting *Sutter Sensible Planning, Inc. v. Board of Supervisors*, 122 Cal. App. 3d 813, 823 (Cal. Ct. App. 1981)) (internal quotation marks omitted) (explaining importance of including adequate information of cumulative impacts during public review of EID); accord CAL. CODE REGS. tit. 14, § 15151 (2013) (citing *San Franciscans for Reasonable Growth v. City and County of San Francisco*, 151 Cal. App. 3d 61, 79 (Cal. Ct. App. 1984)) (discussing what courts look for in an EID). A cumulative impact analysis does not have to consist of “technical perfection.” *Mountain Lion*, 263 Cal. Rptr. at 109. In addition, “[a] cumulative impact analysis which understates information concerning the severity and significance of cumulative impacts impedes meaningful public discussion and skews the decision-maker’s perspective concerning the environmental consequences of the project, the necessity for mitigation measures, and the appropriateness of project approval.” *Citizens to Preserve the Ojai v. County of Ventura*, 222 Cal. Rptr. 247, 253 (Cal. Ct. App. 1985).

The California First District Court of Appeal declined to analyze the final EID version because it was never published for public feedback.²⁷⁷ The court did not want a “deficient analysis in the draft EID to be bolstered by a [final EID] that was never circulated for public comment,” as this would allow the CFGC “to follow a procedure which deviated substantially from the terms of the writ” and would result in the court “subverting the important public purposes of CEQA.”²⁷⁸ If the CFGC wanted to try to pass a mountain lion hunt regulation again, the analysis it submits must be introduced to the public in a way that fosters discussion on the issues involved.²⁷⁹ Due in large part to the CFGC’s inability to draft an EID that complied with the CEQA in *Mountain Lion*, the hunting of mountain lions, an animal that has recently received increased protection in California, still remains illegal at the time of this writing.²⁸⁰

C. Hunting at the Federal Level

In a comparable federal case, *Wildlife Fund for Animals v. Hall*,²⁸¹ involving a legally valid Environmental Assessment (EA), various animal rights activists sued the United States Fish and Wildlife Service (FWS), claiming it did not comply with NEPA “when it failed to consider the cumulative [environmental] impact of the 1997 to 2005 opening and expansion of hunting on sixty National Wildlife Refuges.”²⁸² In 2006, the United States District Court for the District of Columbia ruled in the plaintiffs’ favor and, in re-

277. *Mountain Lion*, 263 Cal. Rptr. at 110 (explaining why court will not look at final EID).

278. *Id.* (explaining why allowing consideration of final EID would be wrong).

279. *Id.* at 1053 (describing how CFGC could attempt to authorize mountain lion hunt at later time).

280. Jim Carlton, *California Official Under Fire for Mountain-Lion Hunt*, WALL ST. J. (Mar. 2, 2012, 2:39 AM), <http://online.wsj.com/article/SB10001424052970203986604577-255732262230236.html> (reporting hunting mountain lions in California is illegal); see also CAL. CODE REGS. tit. 14, § 15088.5 (2012) (codifying aspects of *Mountain Lion*); Laila Kearney, *Mountain Lion Protections Strengthened in California*, REUTERS (Mar. 5, 2013, 2:29 PM), <http://www.reuters.com/article/2013/03/05/us-usa-cougars-california-idUSBRE92405T20130305> (outlining increased protection of mountain lions in California). There is an exception, however, which allows mountain lions “to be killed by special permit when they are deemed to pose a threat to public safety, livestock or other wildlife that are protected as endangered species.” Kearney, *supra* note 280. In 2012, the CFGC’s president was photographed controversially with a carcass of a mountain lion that he hunted and killed. Carlton, *supra*.

281. 777 F. Supp. 2d 92 (D.D.C. 2011) (holding FWS did not comply with NEPA requirements when it opened national wildlife refuges to hunting).

282. *Id.* at 94 (describing parties in case); see also *Brady Campaign to Prevent Gun Violence v. Salazar*, 612 F. Supp. 2d 1, 25 (D.D.C. 2009) (finding law that

sponse, the FWS ordered each impacted refuge to conduct another “cumulative” EA and review its choice to expand hunting.²⁸³ After completing the revised EA, the plaintiffs again alleged that the FWS “did not properly identify and measure the cumulative impact of hunting across the Refuge System” and thus the FWS’s EA was not consistent with NEPA or the district court’s earlier order.²⁸⁴ Congress has identified a number of “priority general public use[s]” for the refuges since the Refuge System was created, including “hunting, fishing, wildlife observation, wildlife photography, [and] environmental education.”²⁸⁵ Congress, however, has tried to lessen the harmful effects of expanding activities on the refuges by requiring the FWS to: (1) “provid[e] for the conservation of fish, wildlife, plants, and their habitats,” (2) “monitor[] the status and trends of fish, wildlife, and plants in each refuge,” and (3) “ensure[] the biological integrity, diversity, and environmental health of the system.”²⁸⁶ Thus, hunting is only allowed on the refuges after a long process that involves: (1) drafting a Hunting Plan and a Compatibility Determination; (2) generating a NEPA document; and (3) “publish[ing] a proposed and final rule in the Federal Register.”²⁸⁷

allowed people to carry concealed guns in national parks and wildlife refuges will have some environmental impacts).

283. *Hall*, 777 F. Supp. 2d at 96-97 (explaining FWS’s actions after court’s ruling). The court found that both the MBHFs, which only discussed the implications of migratory bird hunting, and the Endangered Species Act’s Section 7 (Section 7) consultation process, which “only requires agencies to consider the cumulative impact of non-federal actions,” were not identical to a NEPA environmental review. *Id.* The court gave the FWS more time to complete a new NEPA analysis and held off on canceling the hunting rules. *Id.*

284. *Id.* at 94 (stating plaintiffs’ claim on appeal). The refuge system in *Hall* contained more than 540 wildlife refuges throughout all fifty states, totaling ninety-five million acres. *Id.* at 95. The “[s]ystem is home to more than 700 species of birds and 220 species of mammals, and provides habitat for more than 250 threatened and endangered species.” *Id.*

285. *Id.* at 95 (quoting 16 U.S.C. § 668dd(a)(3)(C)) (internal quotation marks omitted) (listing permitted recreational activities on refuges).

286. *Id.* (quoting 16 U.S.C. §§ 668dd(a)(3)-(4)) (internal quotation marks omitted) (explaining how Congress tried to lessen effects of increased recreation on refuge property).

287. *Id.* (explaining process that must be completed to allow hunting). The NEPA document requirement is met with either a completed EA and a Finding of No Significant Impact (FONSI), or an EIS and Record of Decision. *Id.* Moreover, “[c]ompatible wildlife-dependent recreational uses within refuges ‘should be facilitated, subject to such restrictions or regulations as may be necessary, reasonable, and appropriate.’” *Id.* (quoting 16 U.S.C. § 668dd(a)(3)(D)). The court noted that “[b]etween 1997 and 2005, the [FWS] issued nine final rules creating or expanding recreational hunting opportunities on sixty wildlife refuges.” *Id.* Such rules were subject to years of litigation. *Id.*; see, e.g., *Fund for Animals v. Williams*, 391 F. Supp. 2d 132 (D.D.C. 2005) (hearing 2005 complaint); *Fund For Animals v. Hall*, 448 F. Supp. 2d 127, 129 (D.D.C. 2006) (ruling on 2006 complaint).

After the District Court for the District of Columbia granted the FWS the chance to complete a new EA in 2006, the FWS engaged in a lengthy process to correct their deficient EA.²⁸⁸ The process included “a bottom-up approach to measuring the overall cumulative impact of hunting,” with each refuge conducting its own individual EA.²⁸⁹ Next, the FWS reviewed each refuge’s analysis and subsequently reported on the regional and national impacts of hunting on the refuges.²⁹⁰ In addition, the FWS’s Acting Deputy Director sent a “guidance memorandum to all seven Regional Directors” requiring them to include a “cumulative impact section” in their respective EAs.²⁹¹

In June 2007, the FWS generated the revised EAs and again found that hunting on the refuges would not have a significant environmental impact on the overall environment.²⁹² The district court first agreed that the FWS’s bottom-up EA was reasonable because “each refuge consider[ed] and reconsider[ed] the environ-

288. *Hall*, 777 F. Supp. 2d at 97-98 (stating district court granted FWS time to revise its analysis instead of vacating hunting rules).

289. *Id.* at 97 (explaining “bottom-up” approach).

290. *Id.* (describing process of “bottom-up” approach). Some FWS employees objected that the bottom-up approach might not fulfill the requirements of NEPA and the United States District Court for the District of Columbia’s order. *Id.* By contrast, other FWS employees believed a bottom-up approach would create a clearer picture of the impact of hunting than a top-down approach. *Id.*

291. *Id.* at 98 (explaining guidance memorandum). The Acting Deputy Director at the FWS, Kenneth Stansell, put the “primary responsibility” on the individual refuges to complete the cumulative impact analysis. *Id.* Stansell’s guidance memorandum prompted each refuge to discuss the following in their cumulative impact analysis:

1. the area in which the effects of the proposed project will be felt;
2. the impacts that are expected in that area from the proposed project;
3. other actions—past, present, and proposed, and reasonably foreseeable—that have had or are expected to have impacts in the same area;
4. the impacts or expected impacts from these other actions; and
5. the overall impact that can be expected if the individual impacts are allowed to accumulate.

Id.

292. *Id.* at 101 (explaining each EA resulted in FONSI). The FWS thought it now satisfied NEPA and motioned for “an Order requiring the Parties to [] submit a notice stipulating dismissal of this case as moot.” *Id.* (internal quotation marks omitted). The plaintiffs still wished to vacate the final rules, claiming that “the net results of this [bottom-up] approach are individual, site specific [EAs] that contain lengthier sections entitled ‘cumulative effects,’ but that once again fail to actually analyze cumulative or synergistic impacts of opening dozens of Refuges to hunting.” *Id.* at 101-02 (internal quotation marks omitted). Further, according to the plaintiffs, the revised EA were “post hoc justifications for decisions already made” and “the refuges were on a forced march to churn out [EAs] approving preexisting hunts with (at most) minor tweaks while determining that they had no significant impacts.” *Id.* at 102 (internal quotation marks omitted). The plaintiffs were also unsatisfied with how the EA did not “meaningfully grapple with the cumulative impact of hunting across the entire refuge system.” *Id.* at 102-03.

mental impacts of its individual hunts on an annual-and sometimes seasonal-basis.”²⁹³ The court was not persuaded, however, that the plaintiffs should have a hunting-free refuge available to them.²⁹⁴ Accordingly, the court held that the plaintiffs were “not entitled to an inviolate sanctuary for their preferred uses.”²⁹⁵

Next, in deciding whether the refuges considered consequences outside the boundaries of their property when analyzing the cumulative environmental effect of hunting on hunted and non-hunted migratory birds, the court looked at whether the refuges went beyond the Migratory Bird Hunting Framework (MBHF).²⁹⁶ To begin their bottom-up approach analysis, the refuges investigated and discussed the localized consequences hunting would have on migratory birds.²⁹⁷ For example, during its investigation of the effects of expanding waterfowl hunting, the Sacramento River National Wildlife Refuge discussed alternative effects hunters may have on waterfowl and other non-hunted species, aside from killing them.²⁹⁸

293. *Hall*, 777 F. Supp. 2d at 105 (discussing “bottom-up” approach’s adequacy). According to the plaintiffs, non-hunting visitors will be troubled by loud shooting, dead animal bodies, “and a general reduction in the amount of animals to observe.” *Id.* The guidance memorandum, however, required each individual refuge to discuss “whether the cumulative impact of ‘the proposed hunt conflicts with other refuge wildlife-dependent recreational programs such as wildlife observation, wildlife photography, wildlife interpretation, environmental education, or fishing’ and whether ‘the proposed hunt [will] have any impacts upon general public, nearby residents, and refuge visitors.’” *Id.* Before the DeSoto National Wildlife Refuge in Iowa approved pheasant and turkey hunting on the Refuge, the Refuge discussed how hunters would affect other visitors:

With the high levels of visitation on DeSoto Refuge, conflicts between user groups have arisen. Experience has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) is an effective tool in eliminating conflicts between user groups. The youth and disabled turkey hunt, archery turkey hunt, and the youth pheasant hunt coincide with no other hunt season. These hunts are also very limited in the number of hunters. They are also held in areas where the general public is not actively doing another consumptive or non-consumptive activity. Therefore, other wildlife-dependent [sic] recreation would continue with no significant changes.

Id.

294. *Id.* at 105-06 (stating plaintiffs’ argument that no refuge allowed for hunting-free wildlife observation).

295. *Id.* at 106 (stating plaintiffs are not entitled to have refuge centered around their uses).

296. *Id.* (examining evidence that effects on migratory birds were considered).

297. *Id.* (holding refuges considered local impact of migratory birds).

298. *Hall*, 777 F. Supp. 2d at 106 (examining waterfowl hunting analysis at Sacramento River National Wildlife Refuge). Due to the difficulty of traveling around the Sacramento River National Wildlife Refuge, a hunter would be re-

The Sacramento River Refuge analyzed the Service's "regional- and flyway-level data" and discovered, at the regional level, California's estimated population of breeding ducks experienced a forty-nine percent rise between 2004 and 2005.²⁹⁹ At the flyway-level, the Sacramento Refuge found that the combined waterfowl hunting on the Sacramento River Refuges and the Delevan, Colusa, and Sutter Refuges "only represented 1.7 percent of the Pacific Flyways duck harvest and only 0.37 percent of the national total."³⁰⁰ In response to these statistics, the Sacramento River Refuge compelled the use of non-lead ammunition, decreased hunting limits, and prohibited hunting throughout the animals' mating seasons.³⁰¹ The District Court for the District of Columbia found that limiting hunters' daily bag limits to seven ducks and four geese would guarantee only minimal impact to the waterfowl population.³⁰² Thus, the court ruled that these restrictions would protect the waterfowl population.³⁰³

Third, the court considered whether, as plaintiffs contend, the bottom-up approach ignored the "overall disturbance impact" that an overall hunting increase on non-endangered species would have on endangered species.³⁰⁴ The court considered whether the Savannah Refuge should have analyzed the collective environmental consequences of hunting at four neighboring refuges where the endangered wood stork has its natural surroundings.³⁰⁵ The Savannah Refuge determined that "non-hunted-wildlife . . . have very

quired to use a boat to get to the refuge. *Id.* As a result, the Sacramento Refuge mentioned that on top of "existing recreational boating, '[b]oating activity associated with hunting during the fall and winter can alter wildlife distribution, reduce use of particular habitats or entire areas by waterfowl and other birds, alter feeding behavior and nutritional status, and cause premature departure from areas.'" *Id.* at 106-107.

299. *Id.* at 107 (outlining regional-level data considered by Sacramento River National Wildlife Refuge).

300. *Id.* (considering Sacramento Refuge's flyway-level data). The flyway-level analysis is composed of an analysis of the FWS's national-level data in the MBHFs. *Id.* Migratory birds in the Atlantic, Central, Mississippi, and Pacific United States flyways are monitored using the MBHF's. *Id.*

301. *Id.* (identifying bag limits).

302. *Id.* (holding that migratory bird analysis was proper). A bag limit is a law that informs hunters and fisherman of how many animals of a certain species that they can hunt, kill, and retain in their possession. *Bag Limit Law & Legal Definition*, US LEGAL, <http://definitions.uslegal.com/b/bag-limit/> (last visited Jan. 22, 2014).

303. *Hall*, 777 F. Supp. 2d at 107 (finding migratory bird analysis was proper).

304. *Id.* (internal quotation marks omitted) (outlining plaintiffs' endangered species claim).

305. *Id.* at 108 (outlining plaintiffs' claim concerning endangered wood stork). The Savannah Refuge is positioned on the South Carolina-Georgia border. *Id.*

limited home ranges” and hunting will not have a regional impact on species, but will have local consequences on species population.³⁰⁶ At the local level, the Refuge discovered “[d]isturbance to wood storks should be minimal since peak use times by this species will be outside the hunt season.”³⁰⁷ The district court accordingly held that the refuges’ bottom-up approach for identifying cumulative environmental harms was consistent with the district court’s order, NEPA, and related regulations.³⁰⁸

D. Rationalizing the Outcomes of *Mountain Lion* and *Hall*

The dissimilar outcomes of *Mountain Lion* and *Hall* can be explained in terms of the different approaches the government agency took; the approach in *Mountain Lion* was haphazard and rushed with little scientific support, while the approach in *Hall* involved a lengthy process that included scientific investigation and data gathering in order to uncover hunting’s effects on the refuges.³⁰⁹ In *Mountain Lion*, the EID did not analyze the effects mountain lion hunting would have on national parks nor the research that was conducted in a national forest.³¹⁰ In addition, the revised EID used the same wildfire analysis that was initially rejected by the lower court.³¹¹ Finally, while the CFGC cited a population study and found that the hunt would not have a negative effect on the mountain lion population, it offered no explanation as to how it reached this conclusion.³¹²

In contrast, in *Hall*, the public was able to provide appropriate input after reviewing the detailed and accurate EA.³¹³ The FWS went through a lengthy examination process that included a debate about how best to revise the EA and follow the lower court’s or-

306. *Id.* (finding no regional effect possible on wood stork).

307. *Id.* (internal quotation marks omitted) (explaining why local effect on wood stork would be minimal). The Savannah Refuge found that hunting would not harm the wood stork after communications with the South Carolina and Georgia Departments of Natural Resources. *Id.*

308. *Hall*, 777 F. Supp. 2d at 109 (holding that FWS’s “bottom-up” approach was appropriate).

309. *See Mountain Lion Coal. v. Cal. Fish & Game Comm’n*, 263 Cal. Rptr. 104, 104-07 (Ct. App. 1989) (summarizing CFGC’s EID creation process); *Hall*, 777 F. Supp. 2d at 105-09 (discussing FWS’s EA).

310. *Mountain Lion*, 263 Cal. Rptr. at 108 (discussing legal errors in CFGC’s EID).

311. *Id.* at 108-09 (discussing how CFGC did not follow superior court’s order).

312. *Id.* (discussing vague conclusions in CFGC’s EID).

313. *Hall*, 777 F. Supp. 2d at 105-09 (discussing how FWS’s EA was acceptable).

der.³¹⁴ In addition, the FWS cited and explained scientific data and described how the data tied into their final conclusion that hunting would have no significant impact on the refuges.³¹⁵ Finally, the FWS took a “hard look” at hunting’s effect on the local, regional, and national level, and the EA included the relevant information the public would need to give adequate feedback.³¹⁶

The holdings in *Mountain Lion* and *Hall* show that if a government agency fails to follow proper procedure when determining whether broadening gun use will have an environmental impact, the proposed regulations will likely be invalid under NEPA or an equivalent state statute.³¹⁷ Similarly, if a government agency finds that particular gun regulations will cause no harm, but that finding is not clearly supported by fact, not appropriately submitted for public review, or is speculative or vague, it is likely that the requirements under NEPA or an equivalent state statute will not be met, and the regulation will not stand.³¹⁸ In contrast, if the proposed gun use regulation’s harm findings are based on scientific fact and the public’s reasonable environmental concerns are addressed in an EIS or similar required informational document after final agency findings are detailed in a public review process, then it is likely that the agency has made the requisite hard look and the proposed regulations will survive judicial scrutiny.³¹⁹

E. Target Shooting at the State Level

Some state statutes provide an avenue for courts to find that merely shooting guns at firing ranges can have a negative environmental impact.³²⁰ In *Citizens for a Safe Grant v. Lone Oak Sportsmen’s Club, Inc.*,³²¹ a Minnesota case involving this type of statute, a pri-

314. *Id.* at 97-103 (detailing process FWS used to follow lower court’s order).

315. *Id.* at 106-09 (explaining scientific data FWS relied on).

316. *Id.* at 108 (finding NWS took hard look at cumulative impacts of hunting on refuges).

317. See generally *id.* (upholding hunting regulations when NEPA requirements were followed); *Mountain Lion*, 263 Cal. Rptr. at 104-10 (finding hunting regulations were invalid when court order was not followed and CEQA requirements were not met).

318. See *Mountain Lion*, 263 Cal. Rptr. at 106-08 (stating CEQA requirement that final CIA findings be based on fact).

319. See *id.* at 107-08 (discussing CEQA’s public review requirement); *Hall*, 777 F. Supp. 2d at 104 (stating NEPA’s hard look requirement).

320. See *Citizens for a Safe Grant v. Lone Oak Sportsmen’s Club, Inc.*, 624 N.W.2d 796, 806 (Minn. Ct. App. 2001) (finding loud gun noise can have negative effects on the environment).

321. 624 N.W.2d 796, 806 (Minn. Ct. App. 2001).

vate gun club and NRA affiliate, was accused of violating MERA.³²² The plaintiffs, Citizens for a Safe Grant, were a non-profit corporation comprised of families who owned residential properties and lived in proximity to the shooting ranges owned by Lone Oak Sportsmen's Club, Inc.³²³

On April 2, 1985, Ordinance 57, which controlled "the use of firearms and weapons in the Town of Grant," was enacted by the Grant Town Board (GTB).³²⁴ On May 24, 1988, a plaintiff voiced his complaints to the GTB concerning automatic firearms being fired at the shooting range, stating that he was subjected to bullets and shotgun pellets flying above his head and landing on his premises.³²⁵ In response, the GTB wrote to the gun club, warning that the club would lose its gun-range permit pending additional grievances.³²⁶ As a result, the gun club ceased permitting automatic weapons on its property; however, that did not quell the complaints as plaintiffs continued to find bullets on their property and heard loud noise from the firing range at all hours.³²⁷ On March 3, 1999, the plaintiffs "filed a declaratory-judgment action" alleging, among other things, that the gun club acted inconsistent to MERA.³²⁸

After a six-day trial, the Washington County District Court found for the plaintiffs in their MERA claim and determined that the gun club did not "follow many of the NRA's safety recommendations and guidelines."³²⁹ The court also found that the gun club

322. *Id.* at 800 (describing defendant). The gun club bought eleven acres of land so that it could build four ranges on thirteen acres of land. *Id.* The club was surrounded by suburban homes and had "[a] protected wetland . . . located off the northwest corner of the club property." *Id.* at 800-01.

323. *Id.* at 801 (describing plaintiffs).

324. *Id.* (providing Ordinance 57's background). The ordinance "specifically incorporated the NRA's guidelines for shotgun ranges, outdoor pistol ranges, outdoor high-power rifle ranges, and outdoor small-bore rifle ranges." *Id.* The ordinance also altered the gun club permit requirement "from a special-use permit to a conditional-use permit." *Id.*

325. *Id.* at 801 (stating one plaintiff's complaints).

326. *Lone Oak*, 624 N.W.2d at 801-02 (stating repercussions gun club would face if complaints continued).

327. *Id.* at 802 (outlining continuing complaints). The gun club was only open from 9 AM to 8 PM or sunset and only allowed its members to fire weapons on its property. *Id.* at 801. The plaintiffs claimed that the gun club was either not abiding by its hours of operation or not keeping its property secure because weapons were being fired on the gun club's property during closing hours. *Id.* at 802. The plaintiffs further claimed that the GTB did not properly administer its gun club permitting ordinances, as the gun club was functioning without an active conditional-use permit. *Id.*

328. *Id.* at 802 (summarizing plaintiffs' claims against gun club).

329. *Id.* (giving procedural history). The trial proceedings also involved a trip to the gun club property so that the attorneys and the court could look at the property in person. *Id.*

did not try to make the club more secure as it did not ensure its own members behaved in a safe manner or suggest ways in which the club could be made safer.³³⁰ As a result, the court issued a preliminary injunction that prevented the club from operating the shooting range; the court agreed to withdraw the injunction if the gun club presented “a detailed proposal” within twelve months on how to enhance the safety of the club.³³¹ On appeal, the Minnesota Court of Appeals reviewed the trial court’s factual findings in determining whether there was a MERA violation.³³² The trial court’s factual findings included (1) some plaintiffs overheard ammunition from “high-powered automatic, weapons” striking their trees, (2) some plaintiffs remained indoors and closed their windows to avoid the loud sounds of shooting, (3) some plaintiffs went to the store when rifle shooting commenced in order to avoid the loud noise, and (4) some plaintiffs, out of trepidation of being struck by stray bullets, refused to use one-third of their seventeen-acre property due to worries of being struck by stray bullets.³³³

Next, the Minnesota Court of Appeals decided whether there was a basis for the trial court to find that the gun club “violated MERA by endangering wildlife and creating noise pollution.”³³⁴ The first requirement to establish a prima facie case under MERA is “a potential plaintiff must first identify ‘the existence of a protectable natural resource.’”³³⁵ The next requirement is “[t]he plaintiff must . . . show that the defendant’s conduct violates an ‘environmental quality standard, limitation, rule, order, license, stipulation agreement, or permit promulgated or issued by’ a state regulatory agency.”³³⁶ The court noted, however, that state laws may not always stay current with environmental issues, therefore, “the statute also provides that a plaintiff may bring a claim if the defendant has

330. *Id.* at 802 (affirming district court’s finding that gun club inadequately monitored its members). Because the gun club is surrounded by residential property and protected wetlands, it would be “impossible” for the gun club to be made safe pursuant to NRA rules. *Id.*

331. *Lone Oak*, 624 N.W.2d at 802. (repeating relief Washington County District Court granted to plaintiffs).

332. *Id.* at 804 (reviewing trial court’s factual findings).

333. *Id.* (outlining trial court’s factual findings). One plaintiff was also “showered by shotgun pellets while in his yard.” *Id.* Some anxiety-ridden plaintiffs did not leave their property or even permit their grandchildren to go outside because of the club’s activities. *Id.*

334. *Id.* at 805 (outlining gun club’s MERA appeal).

335. *Id.* (quoting *White v Minnesota Dep’t of Natural Res.*, 567 N.W. 2d 724, 737 (Minn. Ct. App. 1997)) (explaining how to establish MERA prima facie case).

336. *Lone Oak*, 624 N.W.2d at 805 (quoting MINN. STAT. § 116B.04 (2000)) (stating second MERA prima facie case requirement).

caused or is 'likely to cause the pollution, impairment, or destruction of the air, water, land or other natural resources.'"³³⁷ The defendant can establish an affirmative defense to the prima facie case by proving that there is "no feasible and prudent alternative and the conduct at issue is consistent with and reasonably required for promotion of the public health, safety, and welfare."³³⁸

Due to a lack of evidence showing a correlation between lead bullets and a negative effect on animals, the Minnesota Court of Appeals held that a MERA violation could not be found on that basis.³³⁹ Despite that plaintiffs arguing it was a possibility that birds around the gun club consumed the lead bullets, they did not provide concrete proof.³⁴⁰ Similarly, there was a lack of evidence to establish that lead levels rose in "the protected wetland or the ground water" because "[n]o soil testing for lead ha[d] been conducted on either the Gun Club property or [p]laintiffs' property."³⁴¹

The plaintiffs, however, still prevailed on their MERA claim due to strong evidence of "degradation of quietude" from "impulsive sound."³⁴² In reaching this conclusion, the court noted that in 1977, the Minnesota Supreme Court found that a skeet-shooting club, White Bear, violated MERA by degrading the environment even though the MPCA had not issued sound regulations for skeet

337. *Id.* (quoting MINN. STAT. § 116B.04) (explaining how plaintiff can bring MERA claim even though there was no environmental regulation violation). To determine if the second part of the MERA prima facie case has been met, courts have created a five prong test:

- (1) The quality and severity of any adverse effects of the proposed action on the natural resources affected;
- (2) Whether the natural resources affected are rare, unique, endangered, or have historical significance;
- (3) Whether the proposed action will have long-term adverse effects on natural resources, including whether the affected resources are easily replaceable (for example, by replanting trees or restocking fish);
- (4) Whether the proposed action will have significant consequential effects on other natural resources (for example, whether wildlife will be lost if its habitat is impaired or destroyed);
- (5) Whether the affected natural resources are significantly increasing or decreasing in number, considering the direct and consequential impact of the proposed action.

Id. at 805-06.

338. *Id.* at 806 (quoting MINN. STAT. § 116B.04) (internal quotation marks omitted) (discussing how defendant can rebut prima facie case).

339. *Id.* at 806 (finding gun club's activities did not endanger wildlife).

340. *Id.* (considering plaintiffs' evidence that birds may ingest lead bullets).

341. *Lone Oak*, 624 N.W.2d at 806 (internal quotation marks omitted) (stating why plaintiffs could not show that lead affected wetlands and groundwater).

342. *Id.* (internal quotation marks omitted) (explaining why plaintiffs still succeeded on MERA argument).

shooting.³⁴³ The Minnesota Court of Appeals found that even though the Minnesota legislature “exempted ‘skeet, trap or shooting clubs’” from MPCA authority following *Minnesota Pub. Interest Research Grp. v. White Bear Rod & Gun Club*,³⁴⁴ *White Bear* is still good law because the Minnesota “legislature did not exempt shooting sports clubs from MERA claims, only from MPCA’s regulatory authority.”³⁴⁵ The plaintiffs therefore were permitted to show that, similar to *White Bear*, the “sporadic gunfire” from the shooting range was measured at different locales near the shooting range to be between seventy to ninety decibels, which “was twice the normal decibel range of the surrounding area.”³⁴⁶ The decibel level, a measurement that the gun club’s expert witness did not object to, was known to have the ability to result in “unreasonable material acoustical degradation to the environment.”³⁴⁷ The gun club, therefore, could not contradict the plaintiffs’ prima facie case and its appeal failed.³⁴⁸

As discussed above, Minnesota courts have utilized MERA to allow civil suits for not only gun noise, but also for contamination from lead ammunition that has “a toxic effect on waterfowl and wildlife which feed and nest in the area.”³⁴⁹ MERA, as a state law, is

343. *Id.* (citing *Minnesota Pub. Interest Research Grp. v. White Bear Rod & Gun Club*, 257 N.W.2d 762, 768-71 (Minn. 1977)) (discussing established precedent).

344. 257 N.W.2d 762 (Minn. 1977) (finding sufficient evidence that gun club operation would have materially adverse effect on environment).

345. *Lone Oak*, 624 N.W.2d at 806 (explaining why MERA continues to cover skeet, trap, and shooting clubs).

346. *Id.* (citing *White Bear*, 257 N.W.2d at 771) (examining appropriate decibel ranges). In *White Bear*, shooting that was between 65 to 70 decibels was held to be “far in excess of that considered permissible to avoid health threats and degradation of the environment.” *White Bear*, 257 N.W.2d at 771.

347. *Lone Oak*, 624 N.W.2d at 806 (mentioning effect of loud gun fire on environment).

348. *Id.* (denying gun club’s MERA argument). In addition, the court ruled on the gun club’s argument that a permanent injunction was improper and found that a permanent injunction was indeed the appropriate “remedy to restrain a continuous and repeatedly threatened trespass.” *Id.* at 806-07. Accordingly, the injunction seemed to be the only possible answer to the plaintiffs’ fears. *Id.* at 807. Furthermore, the Minnesota Court of Appeals mentioned that the trial court found numerous places where the gun club had failed, including: (1) no blockade to keep out intruders; (2) no posted warning for passersby that informed them that they are approaching a shooting range; (3) no “sound abatement” devices; (4) no containment devices for bullets so they do not leave the property; and (5) failure to abide by “NRA safety guidelines for shooting ranges in inhabited areas because there is not enough setback between the firing line and [plaintiffs’] properties.” *Id.* The court was not persuaded the gun club was secure just because there were no injuries in its 50 year history. *Id.*

349. *White Bear*, 257 N.W.2d at 766-67 (discussing court interpretation of MERA).

“unique” in that it expands on federal laws.³⁵⁰ MERA is also “noteworthy” because, unlike federal laws, which largely exempt lead pollution from gun clubs, it has a distinctive degradation of sound clause that is applied to outdoor firing ranges.³⁵¹

VI. FUTURE OF GUNS AND AMMUNITION

In the wake of the outrage following the Sandy Hook tragedy, gun laws at the federal and state level will continue to be enacted and debated, especially with the emergence of 3D-printed firearms.³⁵² It appears, however, that gun laws that might have a positive influence on the environment will take a backseat as the EPA and Congress seem to be influenced in part by the NRA’s political power.³⁵³ The most likely environmental regulation addressing the impact of guns appears to be one that will resolve the question of whether the EPA can regulate lead shot and bullets.³⁵⁴ With The Sportsmen’s Act of 2012 and a 2013 version of The Sportsmen’s Act, the Senate was unsuccessful in its attempt to amend the law to clarify that the EPA lacks the power to regulate lead shot and bul-

350. See David G. Cotter, *Outdoor Sport Shooting Ranges Under the Environmental Gun-the Final Assault or Merely A Manageable Dilemma?*, 20 T.M. COOLEY L. REV. 453, 474 (2003) (stating why MERA is unique).

351. See *id.* (stating why MERA is noteworthy); Blackstone, *supra* note 32 (discussing why firing ranges are exempt from CAA and CWA); MINN. STAT. § 116B.02 (2000) (including “quietude” under definition of “natural resources”).

352. See *Transcript: President Obama At Sandy Hook Prayer Vigil*, NPR (Dec. 16, 2012, 10:39 PM), <http://www.npr.org/2012/12/16/167412995/transcript-president-obama-at-sandy-hook-prayer-vigil> (transcribing President Obama’s prayer vigil where he promised to prevent another gun-related tragedy like what occurred at Sandy Hook); Cheryl K. Chumley, *S. Dakota Signs Law Letting Teachers Carry Guns in Classrooms*, WASH. POST (Mar. 8, 2013), <http://www.washingtontimes.com/news/2013/mar/8/s-dakota-signs-law-letting-teachers-carry-guns-cla/> (summarizing law that allows teachers to carry guns in school); Michael Zennie, *3D Printed Plastic Rifle Successfully Fires 14 Rounds - As Gun Advocates Predict it will Force Changes in the Law*, DAILY MAIL (Aug 9, 2013, 1:13 PM), <http://www.dailymail.co.uk/news/article-2387624/Gun-advocates-expect-flood-3D-printed-guns-result-U-S-law-changes-Canadian-designed-plastic-rifle-successfully-fires-14-rounds.html> (discussing effect 3D-printed guns will have on law). President Obama called for stricter gun laws again following a September 16, 2013 mass shooting at a Washington D.C. naval yard. *Obama Calls for Strong Gun Control Measures*, THE HINDU BUS. LINE (Sept. 18, 2013), <http://www.thehindubusinessline.com/news/international/obama-calls-for-stronger-gun-laws-after-massacre/article5140579.ece>.

353. Bedard, *supra* note 105 (claiming EPA surrendered to NRA and refused to ban lead in ammunition); see also *EPA Again Rejects Petition to Ban Lead Ammo*, NRA (Apr. 13, 2012), <http://web.archive.org/web/20130705144927/http://www.nrahuntersrights.org/Article.aspx?id=6400> (reporting “NRA-backed” legislation has been introduced in Congress).

354. See *You Must Act Now to Stop the EPA from Regulating Your Ammunition*, NRA INSTITUTE FOR LEGISLATIVE ACTION (Nov. 30, 2012), <http://www.nraila.org/250142> (outlining environmental act that stalled in Senate).

lets altogether.³⁵⁵ In addition, the Act would have simultaneously allowed for polar bear importation from designated populations in Canada and would have expanded and enhanced hunting on federal public land.³⁵⁶

With regard to individual states, a new Colorado bill, which may have had an indirect impact on pollution originating from gun and ammunition manufacturers, was defeated in the state senate in March.³⁵⁷ The Colorado bill would have established parameters of civil liability for individuals that manufacture or sell semiautomatic rifles “if they ‘negligently entrusted’ an assault-style weapon to someone whom they ‘reasonably should have known might use the weapon’ to cause harm.”³⁵⁸ The liability measure, however, conflicts with federal law.³⁵⁹

On March 20, 2013, Governor John Hickenlooper of Colorado “signed bills that require background checks for private and online gun sales and ban ammunition magazines that hold more than [fifteen] rounds.”³⁶⁰ As a result of these laws, four gun-related Colorado companies and four Outdoor Channel television programs

355. *Id.* (requesting help in convincing Congress to finish work on bill and clear procedural hurdle); *Sportsmen’s Act Introduced in Senate*, WILDLIFE SOC’Y NEWS (July 24, 2013), <http://news.wildlife.org/featured/sportsmens-act-introduced-in-senate/> (outlining proposed 2013 Sportsmen’s Act).

356. Rich, *House Approves Sportsmen’s Heritage Act; Not All Sportsmen Approve*, SPOKESMAN-REVIEW (Apr. 17, 2012, 5:06 PM), <http://www.spokesman.com/blogs/-outdoors/2012/apr/17/house-approves-sportsmens-heritage-act-not-all-sportsmen-approve/> (discussing some environmental impacts if Sportsmen’s Act passed); Sportsmen’s Heritage Act of 2012, H.R. 4089, 112th Cong. (2012) (outlining Sportsmen’s Act of 2012); Sportsmen’s Act, S. 1335, 113th Cong. (2013), *available at* <http://www.gpo.gov/fdsys/pkg/BILLS-113s1335pcs/pdf/BILLS-113s1335pcs.pdf> (outlining 2013 Sportsmen’s Act). The 2012 Sportsmen’s Act would have also permitted the hunting on national monuments under the United States Bureau of Land Management’s jurisdiction. Rich, *supra*.

357. See Tim Hoover, *Colorado Gun Bills: Senate Committee Passes Liability-for-Guns Bill*, DENVER POST (Mar. 4, 2013, 6:17 PM), http://www.denverpost.com/breakingnews/ci_22716905/-colorado-gun-bills-senate-committee-takes-up-liability (discussing Colorado’s bill that would hold some gun manufacturers liable for crimes committed with guns they manufactured). The bill provides exceptions for handguns, shotguns, and bolt-action rifles. *Id.*

358. *Id.* (explaining when gun manufacturers would be held liable).

359. Barnini Chakraborty, *Colorado Democrats Want Gun Manufacturers Held Liable for Crimes Committed with Their Guns*, FOX NEWS (Feb. 7, 2013), <http://www.foxnews.com/-politics/2013/02/07/colorado-democrats-want-gun-sellers-manufacturers-held-liable-for-crimes/> (discussing possible issues with gun manufacturer liability bill). The eight bills also include measures for universal background checks for the private sale of guns. *Id.* The bills also try to remedy mental health issues related to gun violence. *Id.*

360. Ivan Moreno, *Colorado Governor Signs Landmark Gun Bills*, DENVER POST (Mar. 20, 2013, 1:45 AM), http://www.denverpost.com/breakingnews/ci_22829705/-colo-governor-sign-landmark-gun-bills (discussing bills signed by democrat Colorado Governor Hickenlooper). The bills went into effect on July 1, 2013. *Id.*

have planned to relocate some or all of their operations out of the state.³⁶¹ In addition, some state senators in states such as New Jersey and New York are also proposing laws that limit the amount of ammunition a gun magazine can hold and the amount of ammunition a person can stockpile from online purchases.³⁶²

On August 8, 2013, Governor Chris Christie of New Jersey signed ten bills into law that, among other things, increase penalties for various gun crimes.³⁶³ Governor Christie, however, vetoed another bill on his desk that would ban .50 caliber weapons.”³⁶⁴ Additionally, in New York, a January 2013 law that “expands a ban on military-style weapons, requires mental health professionals to report threats, limits magazines to seven bullets, taxes bullets and creates a registry” has forced a firearm manufacturer to move to Pennsylvania.³⁶⁵ Interestingly, Maryland has had “about the toughest” gun laws in the United States since the Firearm Safety Act

Colorado citizens that previously owned high-capacity magazines are able to keep them. *Id.*

361. Grace Hood, *Colorado's New Gun Laws Send Businesses Packing*, NPR (Apr. 29, 2013, 3:23 AM), <http://www.npr.org/2013/04/29/177806894/gunmaker-says-colorados-new-laws-will-send-it-packing> (discussing opposition to Colorado's new gun laws). Governor Hickenlooper has been sued after signing these gun control bills into law. Matt Ferner, *Gun Lobby Sues Gov. John Hickenlooper Over New Gun Control*, HUFFINGTON POST (Sept. 18, 2013, 4:47 PM), http://www.huffingtonpost.com/2013/09/18/colorado-gun-control_n_3950000.html?utm_hp_ref=politics.

362. *Scalia Opens Door for Gun-Control Legislation, Extends Slow Burning Debate*, FOX NEWS (July 30, 2012), <http://www.foxnews.com/politics/2012/07/29/scalia-opens-door-for-gun-control-legislation/> (discussing proposed laws that make it illegal to stockpile ammunition through internet purchases); Ashley Killough, *Lautenberg to Revive Gun Control Bill*, CNN (Dec. 17, 2012, 12:50 PM), <http://politicsticker.blogs.cnn.com/2012/12/17/lautenberg-to-revive-gun-control-bill/> (discussing Lautenberg's proposed bill that would ban sale of magazines capable of holding ten or more rounds of ammunition). Senator Dianne Feinstein proposed to go further, as she is attempting to ban assault rifles again. Killough, *supra*. Sixty percent of Americans favor a ban of high-capacity magazines and fifty-seven percent favor a ban of semi-automatic assault weapons, according to a CNN/ORC International Poll taken in August 2012 after the Aurora shooting. *Id.*

363. Hank Kalet, *Christie Signs Extensive Package of Gun-Control Bills into Law*, NJ SPOTLIGHT (Aug. 9, 2013), <http://www.njspotlight.com/stories/13/08/09/christie-signs-extensive-package-of-gun-control-bills-into-law/> (explaining state of recently passed New Jersey gun bills).

364. Phillip Rucker, *Christie Vetoes New Jersey Gun Ban*, WASH. POST (Aug. 16, 2013, 9:54 PM), <http://www.washingtonpost.com/blogs/post-politics/wp/2013/08/16/christie-vetoes-new-jersey-gun-ban/> (describing bill Governor Christie vetoed).

365. Jim Fitzgerald, *Firearms Manufacturer in NY Says New Gun Control Law Fueled Planned Move to Pa.*, STARTRIBUNE (Aug. 7, 2013, 2:00 PM), <http://www.startribune.com/politics/national/218717401.html> (discussing effect gun control law has on New York firearm manufacturer).

(FSA) became law on October 1, 2013.³⁶⁶ The FSA, which was passed in response to the Sandy Hook tragedy, bans the sale of assault weapons, limits magazines to ten rounds, and “requires fingerprinting, firearms training and licensing and renewal fees.”³⁶⁷ Laws and bills of this kind can indirectly limit the amount of lead dispensed into the environment.³⁶⁸

In addition, conservative-leaning Justice Antonin Scalia stated during a 2012 television interview that the Second Amendment does allow some room for gun-control legislation.³⁶⁹ In early 2013, Justice Scalia predicted that the gun control debate would go to the Supreme Court in the form of a challenge surrounding one of President Obama’s suggested new gun control laws.³⁷⁰ One of those suggested laws, a ten round maximum magazine capacity limit, could also have environmental benefits considering the amount of lead spent ammunition produces.³⁷¹ Further, former EPA Administrator Lisa Jackson recently departed from the EPA, putting the EPA’s new direction in question as she was replaced by Gina McCarthy on July 18, 2013.³⁷² A large number of sportsmen’s groups ap-

366. Linh Bui, *Md. Gun Applications Boom As Stricter Laws Loom*, CBS BALTIMORE (Sept. 6, 2013, 6:40 PM), <http://baltimore.cbslocal.com/2013/09/06/gun-applications-up-in-md-ahead-of-stricter-gun-laws/> (reporting on Maryland’s new tough gun law).

367. *Id.* (discussing requirements of new Maryland gun law).

368. See Crawford, *supra* note 169 (reporting that lead is favored in many cases for ammunition manufacturing).

369. *Scalia Opens Door for Gun-Control Legislation, Extends Slow Burning Debate*, *supra* note 362 (reporting Justice Scalia believes there is room for gun control legislation).

370. Paul Bedard, *Antonin Scalia Says Gun Control is Heading to Supreme Court*, WASH. EXAMINER (Feb. 13, 2013, 11:30 AM), <http://washingtonexaminer.com/antonin-scalia-says-gun-control-is-heading-to-supreme-court/article/2521413> (reporting Justice Scalia’s prediction about future gun control laws). The Supreme Court will hear a Second Amendment case, *Abramski v. United States*, which concerns limitations on the straw purchase of firearms. Bob Adelman, *The Validity of “Straw Man” Gun Sales Goes to Supreme Court*, THE NEW AMERICAN (Jan. 23, 2014, 3:04 PM), <http://www.thenewamerican.com/usnews/crime/item/17464-supreme-court-to-determine-the-validity-of-straw-man-gun-sales>.

371. Jennifer Steinhauer, *Pro-Gun Lawmakers Are Open to Limits on Size of Magazines*, N.Y. TIMES (Feb. 18, 2013), http://www.nytimes.com/2013/02/19/us/politics/lawmakers-look-at-ban-on-high-capacity-gun-magazines.html?_r=0 (discussing number of politicians that seem to support limiting magazine sizes). Some constitutional lawyers argue that, based on prior Supreme Court case law, there is no Second Amendment issue to limiting magazine size. *Id.*

372. *EPA Considering Banning Lead Bullets*, *supra* note 26 (stating former EPA administrator Lisa P. Jackson banned bear hunting in New Jersey); Juliet Eilperin, *EPA Head Lisa P. Jackson to Resign Post*, WASH. POST (Dec. 27, 2012), http://articles.washingtonpost.com/2012-12-27/national/36015378_1_pollution-from-power-plants-epa-head-gina-mccarthy (discussing Lisa P. Jackson’s resignation and EPA’s future); Bryan Walsh, *The Administrator: New EPA Head Gina McCarthy Has the Toughest Job in D.C.*, TIME (July 22, 2013), <http://science.time.com/2013/07/22/>

prove of McCarthy's appointment, as she is "a passionate advocate for reconnecting children with nature and outdoor education."³⁷³ As more becomes known about the benefits of lead-free ammunition, more states could require its use.³⁷⁴ For example, Southern Utah already has a volunteer program that gives licensed hunters "vouchers to exchange their lead-based bullets for copper ones."³⁷⁵ Moreover, after the presumed lead poisoning connected death of an endangered California condor in Utah, wildlife advocates are calling for all hunters throughout Utah to use lead-free ammunition.³⁷⁶ Utah hopes to protect California condors with its recently instituted incentive program that will allow hunters that show they are using lead-free ammunition to enter a raffle for a brand new rifle or all-terrain vehicle.³⁷⁷ Concerns for the same bird in Central and Southern California have led to a ban of lead hunting ammunition in not only the condor's range, but also the entire state of California.³⁷⁸ It appears, however, that for the time being, the EPA will

the-administrator-new-epa-head-gina-mccarthy-has-the-toughest-job-in-d-c/#ixzz2bVQhfiHx (identifying new EPA administrator).

373. Miles Grant, *Sportsmen Groups Ask Senate to Approve Gina McCarthy for EPA*, NAT'L WILDLIFE FED'N (July 9, 2013), <https://www.nwf.org/News-and-Magazines/Media-Center/News-by-Topic/Global-Warming/2013/07-09-13-Sportsmen-Groups-Ask-Senate-to-Approve-Gina-McCarthy-for-EPA.aspx> (explaining sportsmen groups' support for McCarthy).

374. See *Condor Poisonings*, *supra* note 26 (detailing California's requirement of lead-free ammunition use when hunting); Crawford, *supra* note 169 (stating lead-free ammunition manufacturer is attempting to convince United Kingdom to use lead-free ammunition).

375. Ladd Egan, *Condor's Death Renews Call For Lead-Free Bullets*, KUTV, http://www.kutv.com/news/top-stories/stories/vid_3547.shtml (last visited Jan. 22, 2014) (explaining Utah's voucher program).

376. *Id.* (explaining wildlife advocates' call for lead-free bullets).

377. Prettyman, *supra* note 117 (outlining Utah's reward program for hunters who use lead-free ammunition). Since 2005, Arizona has been granting hunters the option of receiving two boxes of lead-free ammunition of their choice at no cost. *Id.*

378. Larry Bernstein, *With Ban on Lead in Hunters' Bullets, California Hopes to Protect Condors*, WASH. POST (Oct. 20, 2013), http://www.washingtonpost.com/national/health-science/with-ban-on-lead-in-hunters-bullets-california-hopes-to-protect-condors/2013/10/20/2e375388-3829-11e3-ae46-e4248e75c8ea_story.html (stating California is first state to ban lead in hunting ammunition); *California Condor*, CAL. DEP'T. OF FISH AND WILDLIFE, <http://www.dfg.ca.gov/wildlife/hunting/condor/> (last visited Jan. 22, 2014) (detailing ban of lead ammunition in some parts of California). The lead ban extends to the hunting of deer, bear, wild pig, elk, pronghorn antelope, coyotes, ground squirrels, and other non-game wildlife in areas designated as a California condor range. *Id.* The California condor is one of the world's most endangered species with 169 untamed birds left, eighty-seven of which are in California. *Condor Poisonings*, *supra* note 26.

not take a hard stance on correcting the large environmental impacts of lead ammunition mentioned in this Comment.³⁷⁹

While gun control regulation is not motivated by environmental concerns, such concerns should not be completely ignored as guns and ammunition, absent relevant environmental regulation, have the potential to cause hidden, silent harm to humans and to even create more crime.³⁸⁰ The EPA has said “that there is no ‘demonstrated safe concentration of lead in blood.’”³⁸¹ One study examined “[g]roups of children . . . from the womb to adulthood” and found that “higher childhood blood lead levels are consistently associated with higher adult arrest rates for violent crimes.”³⁸² There is also no other known connection to explain why violent crime peaked approximately twenty years after the number of cases of lead poisonings peaked.³⁸³ The United States government might consider looking to other countries’ policies to see how they are handling lead and whether lead pollution really is partly to blame for the amount of violent crime in the United States.³⁸⁴ If the correlation between lead and violent crime is valid, the EPA must end

379. See Bedard, *supra* note 105 (finding EPA followed NRA’s request and did not regulate lead-bullets after NRA protests).

380. See Kevin Drum, *America’s Real Criminal Element: Lead*, MOTHER JONES, <http://www.motherjones.com/print/208586> (last visited Jan. 22, 2014) (outlining various studies on lead’s effects); *Learn About Lead*, *supra* note 122 (listing lead’s health effects). One study found that high levels of lead during childhood “is associated with region-specific reductions in adult gray matter volume.” Kim M. Cecil, et al., *Decreased Brain Volume in Adults with Childhood Lead Exposure* (2008), available at <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.0050112#abstract0>. The prefrontal cortex, a section of the brain that helps control aggression, is one region of the brain affected by a “permanent loss of [adult] gray matter.” Drum, *supra*.

381. Drum, *supra* note 380 (finding ten micrograms per deciliter can reduce IQ by as much as seven points). 2.5 percent of children in the United States have lead at levels above five micrograms per deciliter. *Id.* Further, “childhood lead exposure at nearly *any* level can seriously and permanently reduce IQ.” *Id.*

382. *Id.* (explaining study that finds relationship between lead and violent crime). Further, over the last 50 years, the lead in gasoline could be responsible for up to ninety percent of the changes in violent crime rates. *Id.* In addition, violent crime could be more prevalent in big cities because of the number of cars in a “small area,” which had previously caused “high densities of atmospheric lead during the postwar era.” *Id.* Moreover, the crime rate gap in big cities and small cities has disappeared “as lead levels in gasoline decreased.” *Id.* During the warmer months, old lead from gasoline that goes into soil still gets sent back up to the atmosphere through resuspension. *Id.*

383. Monbiot, *supra* note 4 (explaining connection between lead and violent crime).

384. See Drum, *supra* note 380 (examining lead data and crime data from other countries). Lead data and crime data collected from Australia, Canada, Great Britain, Finland, France, Italy, New Zealand, and West Germany all peak twenty years apart. *Id.* No country has been an exception to the pattern of crime numbers peaking twenty years after the number of lead poisonings. *Id.*

the exemptions and loose enforcement that allows for high amounts of lead pollution in water, soil, and elsewhere.³⁸⁵ As one article states, “[w]e can either attack crime at its root by getting rid of the remaining lead in our environment, or we can continue our current policy of waiting [twenty] years and then locking up all the lead-poisoned kids who have turned into criminals.”³⁸⁶

*Jeffrey F. Hall-Gale**

385. See Adams, *supra* note 6 (claiming firing ranges are exempt from almost every major pollution control law); Jones Letter, *supra* note 185 (explaining EPA’s refusal to regulate lead ammunition); VIOLENCE POLICY CTR., *supra* note 4, at 5-25 (discussing study of lead’s health effects).

386. Drum, *supra* note 380 (reporting lead cleanup could be one crime prevention tool that is inexpensive and effective). It would cost roughly ten billion dollars to clean up lead-infected soil nationwide. *Id.* The treatment of lead soil nationally could result in economic benefits as high as 150 billion dollars a year, assuming it causes crime to drop by ten percent. *Id.* A ten percent drop in crime is “reasonable” if lead-contaminated soil is treated “seriously.” *Id.*

* J.D. Candidate, 2014, Villanova University School of Law; B.A., 2011, Saint Joseph’s University.