

Contamination at U.S. Military Bases: Profiles and Responses

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There is an epidemic of toxic contamination at U.S. military bases. Toxins arise from a combination of military-affiliated operations, industrial sources, and natural causes. Pathways for recovery through litigation are particularly limited for veterans who bring suit against the federal government because of judicial interpretations of the Federal Tort Claims Act that preserve sovereign immunity. Benefits offered through the Department of Veteran Affairs are available to veterans who demonstrate a connection between their illness and military service. These benefits are insufficient or unavailable in most cases. A reexamination of presumed medical connection policies is needed for veterans exposed to toxic chemicals, and a new policy framework is proposed.

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I. INTRODUCTION

Implicit in the social agreement that allows for an all-volunteer military is the promise that society will care for veterans and their families long after a war ends.¹ Too often, however, the mere act of living on or near a military base results in exposure to dangerous toxins that slowly poison military service members, their families, and nearby communities. Pollution at military bases is so widespread and endemic that more than two-thirds of all Superfund sites listed by the Environmental Protection Agency (EPA)—nearly nine hundred sites in all—are military affiliated.² The problem is arguably even more

1. The Department of Veterans Affairs declares as its mission: “To fulfill President Lincoln’s promise ‘To care for him who shall have borne the battle, and for his widow, and his orphan’ by serving and honoring the men and women who are America’s Veterans.” U.S. DEP’T OF VETERANS AFFAIRS, FY 2014-2020 STRATEGIC PLAN 6 (2014), <http://www.va.gov/op3/docs/strategicplanning/va2014-2020strategicplan.pdf>.

2. See NAT’L CANCER INST., REDUCING CANCER RISK: 2008-2009 ANNUAL REPORT FOR PRESIDENT’S CANCER PANEL 77 (2008) (“Nearly 900 Superfund sites are abandoned military

egregious at United States military installations overseas, which are not subject to the EPA's oversight and environmental review process.³

Pollution at military bases is often hidden from view of military members serving there. With the exception of Camp Lejeune in North Carolina, neither the Department of Defense (DOD) nor the Department of Veterans Affairs (VA) has been required to notify service members or veterans that they were exposed to dangerous toxins as part of their military service.⁴ The health impacts of heightened exposure to environmental toxins are unclear, but some studies have shown a higher incidence of certain cancers among veteran populations.⁵ Localized concentrations of illness are particularly common around several military communities known to have environmental toxins.⁶

facilities or facilities that produced materials and products for or otherwise supported military needs.”); see also *Superfund: National Priorities List*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/superfund/superfund-national-priorities-list-npl> (listing total Superfund sites on the National Priority List at 1,323 as of April 4, 2016). Although this devastating statistic demonstrates the far reaching impact of pollution at U.S. military facilities, the Comprehensive Environmental Response, Compensation, and Liability Act required federal agencies to evaluate their facilities for listing as Superfund sites. 42 U.S.C. § 9620 (2014). As a result, federal facilities as a whole are structurally overrepresented on the Superfund candidate lists.

3. The military infamously used open-air burn pits at many operating bases in Iraq and Afghanistan to dispose of all waste. Joint Base Balad near Baghdad, Iraq reportedly burned two hundred and fifty tons of waste—including batteries, solvents, and electronics—every day. This does not account for the use of toxins such as Agent Orange, depleted uranium shells, or white phosphorus as part of combat operations. Kelley Vlahos, *Veterans of the Burn Pits*, AM. CONSERVATIVE (May 2, 2014), <http://www.theamericanconservative.com/articles/veterans-of-the-burn-pits/>; see also Lauren Walker, *US Military Burn Pits Built on Chemical Weapons Facilities Tied to Soldiers' Illnesses*, GUARDIAN (Feb. 16, 2016), <http://www.theguardian.com/us-news/2016/feb/16/us-military-burn-pits-chemical-weapons-cancer-illness-iraq-afghanistan-veterans> (citing studies linking the use of burn pits at U.S. military bases in Iraq and Afghanistan to severe illnesses).

4. Notification of potential exposure to toxins was an important element of the Camp Lejeune Families Act, discussed in more detail below. The issue of notification occasionally receives broader attention when Congress seeks to require the Department of Defense to notify veterans of likely exposure. See, e.g., Alex Swoyer, *Pentagon Puts Budget Concerns Ahead of Fort McClellan Troops' Welfare*, WASH. TIMES, (Jan. 11, 2015).

5. See Jon R. Anderson, *Alarming Breast Cancer Rates Among Troops*, MILITARY TIMES (Mar. 29, 2013), <http://www.militarytimes.com/story/military/archives/2013/03/29/alarmed-breast-cancer-rates-among-troops/78537072/> (reporting that military women are twenty to forty percent more likely to get breast cancer than other women in the same age groups); see also, *Special Focus on Veterans and Lung Cancer*, LUNG CANCER ALLIANCE, <http://www.lungcanceralliance.org/special-features/special-focus-on-veterans-and-lung-cancer/> (reporting a higher incidence of lung cancer among non-smoking veterans).

6. This paper details the cases of three military bases: Camp Lejeune, North Carolina; Naval Air Station Fallon, Nevada; and Marine Corps Air Station El Toro, California. Additionally, the CDC has researched cancer clusters in Sierra Vista, Arizona, near the Army's Fort Huachuca. See, e.g., CTNS. FOR DISEASE CONTROL & PREVENTION, *STUDIES OF CHILDHOOD LEUKEMIA IN SIERRA VISTA, ARIZONA* (2006), <http://www.cdc.gov/nceh/clusters/sierravista/SierraVistaFindings.pdf>.

The Environmental Justice (EJ) movement should incorporate veterans and military family advocacy into its framework because of the combination of concentrated environmental hazards and social justice concerns. Beyond public health risks, veterans are disproportionately more likely to be the victims of suicide,⁷ homelessness,⁸ and mental illness.⁹ As will be discussed below, veterans are also seriously hamstrung from seeking restitution through civil litigation against the federal government. Additionally, in an all-volunteer military, enlisted recruits often come disproportionately from poor communities.¹⁰ Consistent with the EJ movement's emphasis on community organization, and despite the political lip service given in support of military families, military communities tend to be politically weak, limiting their ability to organize to protect themselves from toxic exposure. The military bans most political activity by active duty service members.¹¹ Additionally, military families are typically transient, preventing them from establishing political roots in one place. Further, civilian communities near military bases are often dependent on the military for their own economic wellbeing.¹² As a result, they may be

7. Han K. Kang et al., *Suicide Risk Among 1.3 Million Veterans Who Were on Active Duty During the Iraq and Afghanistan Wars*, 25 ANNALS OF EPIDEMIOLOGY 96, 96 (2015) ("Veterans exhibit significantly higher suicide risk compared with the US general population.").

8. Jamison Fargo et al., *Prevalence and Risk of Homelessness Among U.S. Veterans*, 9 PREVENTING CHRONIC DISEASE (2012) ("Veterans were overrepresented in the homeless population, compared with both the general and poverty populations, among both men and women.").

9. Ronald C. Kessler et al., *Thirty-Day Prevalence of DSM-IV Mental Disorders Among Nondeployed Soldiers in the U.S. Army*, 71 J. AM. MED. ASS'N PSYCHIATRY 504, 504 (2014) (finding that among a study of U.S. Army soldiers, "30-day DSM-IV disorders appeared to be more prevalent than among sociodemographically matched civilians").

10. Ann S. Tyson, *Youths in Rural U.S. Are Drawn to Military*, WASH. POST (Nov. 4, 2005), <http://www.washingtonpost.com/wp-dyn/content/article/2005/11/03/AR2005110302528.html> ("Many of today's recruits are financially strapped, with nearly half coming from lower-middle-class to poor households.").

11. Dep't of Def. Directive 1344.10, Political Activities By Members of the Armed Forces § 4.1.2. (Feb. 19, 2008) (listing various political activities restricted from active duty military members, such as speaking at a partisan political gathering, publishing letters or articles intended to solicit votes for or against a partisan candidate or cause, performing any duties for a partisan campaign including getting out the vote, or displaying a large partisan sign or banner on one's private vehicle or personal residence on a military installation).

12. One way to determine this economic dependence is by measuring the impact of base closures on local economies. The Government Accountability Office and Congressional Research Service have found that long-term effects of base closures are closely tied to local economic diversification. Rural communities and areas with particularly large or entrenched military bases were most impacted by base closures. U.S. GOV'T ACCOUNTABILITY OFF., GAO-01-1054T, MILITARY BASE CLOSURES: OVERVIEW OF ECONOMIC RECOVERY, PROPERTY TRANSFER, AND ENVIRONMENTAL CLEANUP 5 (2001), <http://www.gao.gov/assets/110/108968.pdf>; TADLOCK COWAN, CONG. RESEARCH SERV., RS22147, MILITARY BASE CLOSURES: SOCIOECONOMIC

reluctant to speak out against military practices. Advocacy in support of veterans and military families has the potential to decrease the hazards military communities are exposed to and to increase the likelihood of recovery in the event of illness or injury.

This paper will profile three military communities with high concentrations of environmental toxins and associated illnesses: Camp Lejeune, North Carolina; Naval Air Station Fallon, Nevada; and Marine Corps Air Station El Toro, California. Although each community has its own story, these three bases represent the range of contaminants in military communities, which can occur from a combination of military-affiliated operations, industrial sources, and natural causes. Next, the paper will explore legal and administrative responses to pollution at greater depth. The history and current legal standing of Camp Lejeune will be emphasized as a result of the advanced nature of litigation and legislation related to that community's efforts to recover from their exposure to toxins. I hope that by profiling these military communities, other communities facing similar situations may be able to better utilize the legal tools available to them in order to recover and heal.

II. COMMUNITY PROFILES

A. *Camp Lejeune, North Carolina*

Camp Lejeune is located on 240 square miles along the North Carolina coast.¹³ The base is the largest Marine Corps installation on the East Coast and home to approximately 170,000 active duty and civilian employees, retirees, and their families.¹⁴ The location enables valuable training in amphibious assault, a central component of the U.S. Marine Corps' combat mission.¹⁵

Camp Lejeune's drinking water has been poisoned for decades by a toxic cocktail of industrial solvents, dry-cleaning chemicals, and gasoline.¹⁶ It has been described as "the worst example of water

IMPACTS 6 (2012) ("Rural areas with less diversified local economies may be more dependent on the base as a key economic asset than urban/suburban economies.").

13. *Marine Corps Base Camp Lejeune*, U.S. MARINE CORPS, <http://www.lejeune.marines.mil/About.aspx> (last visited May 1, 2015).

14. *Id.*

15. Amphibious assault, sometimes referred to as "ship-to-shore," is the mission of attacking and seizing land from the sea.

16. *Camp Lejeune, North Carolina: Chemicals Involved*, AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, http://www.atsdr.cdc.gov/sites/lejeune/chem_descriptions.html (last updated Jan. 16, 2014).

contamination this country has ever seen.”¹⁷ The Agency for Toxic Substances and Disease Registry (ATSDR) estimates that the base’s drinking water greatly exceeded the EPA’s maximum levels for trichloroethylene (TCE), perchloroethylene (PCE), and benzene at multiple wells from August 1953 to February 1987.¹⁸ During this time, more than a million people stationed at Camp Lejeune may have been exposed to hazardous chemicals when they drank, bathed in, and cooked with the toxic water.¹⁹

The sources of the pollution include dumping of chemicals both on- and off-base and from toxins leaking from underground storage tanks.²⁰ TCE was widely used by the military and industry as a solvent and degreasing agent for cleaning engines, among other uses.²¹ The military widely used TCE long before there was public knowledge about its health effects or concern about effective chemical waste disposal.²² The EPA and the International Agency for Research on Cancer classify TCE as a human carcinogen.²³ TCE is associated with several types of cancers, including cancers affecting the kidney, liver, cervix, and lymphatic systems.²⁴ Similarly, long-term exposure to PCE can, among other ailments, “cause leukemia and cancer of the skin, colon, lung, larynx, bladder, and urogenital tract” and “damage the central nervous system, liver, and kidneys.”²⁵

Two water treatment plants at Camp Lejeune—the Hadnot Point and Tarawa Terrace plants—provided dangerously toxic water to Camp

17. *Dan Rather Reports: A Few Good Men, A Lot of Bad Water* (AXS television broadcast Oct. 21, 2008).

18. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, *supra* note 16.

19. S. COMM. ON VETERANS’ AFFAIRS, CARING FOR CAMP LEJEUNE VETERANS ACT OF 2011, S. REP. NO. 112-42, at 5 (2011).

20. *Camp Lejeune, North Carolina: Background*, AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, <http://www.atsdr.cdc.gov/sites/lejeune/background.html> (last updated Jan. 16, 2014).

21. U.S. GOV’T ACCOUNTABILITY OFF., GAO-07-1042T, ENVIRONMENTAL CONTAMINATION: DEPARTMENT OF DEFENSE ACTIVITIES RELATED TO TRICHLOROETHYLENE, PERCHLORATE, AND OTHER EMERGING CONTAMINANTS 2 (2007), <http://www.gao.gov/new.items/d071042t.pdf>.

22. *Id.*

23. *Public Health Statement for Trichloroethylene*, AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, <http://www.atsdr.cdc.gov/PHS/PHS.asp?id=171&tid=30> (last updated Jan. 21, 2015).

24. *Trichloroethylene Hazard Summary*, U.S. ENVTL. PROT. AGENCY (Jan. 2000), <http://www.epa.gov/ttnatw01/hlthef/tri-ethy.html>.

25. *ToxTown: Perchloroethylene*, NAT’L INSTS. OF HEALTH, http://toxstown.nlm.nih.gov/text_version/chemicals.php?id=22 (last updated Mar. 31, 2016).

Lejeune's residents.²⁶ The Hadnot Point Treatment Plant began operation in 1942 and served the mainside barracks and various family housing communities.²⁷ Testing at the Hadnot Point wells in the 1980s found contamination from a range of toxins, including TCE, PCE, benzene, and other volatile organic compounds.²⁸ The most severe contamination was from TCE, which was detected at concentrations as high as 180,000 parts per billion (ppb).²⁹ As a point of comparison, the EPA currently has a maximum contaminant level regulation of 5 ppb and a maximum contaminant level goal of 0 ppb for TCE in national drinking water.³⁰ The benzene contamination was from the nearby Hadnot Point fuel storage facility, where underground storage tanks leaked about 1,500 gallons of fuel into the groundwater supply each month—potentially as much as 1.1 million gallons in total.³¹

The Tarawa Terrace Treatment Plant also supplied drinking water to base family housing and a trailer park community. Tarawa Terrace water was contaminated with PCE from decades of improper disposal of chemicals by an off-base dry-cleaning company, which was located as close as nine hundred feet away from a base water supply well.³² ABC One Hour Cleaners operated a dry-cleaning facility immediately adjacent to Camp Lejeune from 1964 until 2005.³³ The dry cleaner has since gone out of business, leaving the toxic cleanup to be publicly funded and the exposed community without anyone to hold

26. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, *supra* note 20.

27. MORRIS L. MASLIA ET AL., AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, ANALYSES AND HISTORICAL RECONSTRUCTION OF GROUNDWATER FLOW, CONTAMINANT FATE AND TRANSPORT, AND DISTRIBUTION OF DRINKING WATER WITHIN THE SERVICE AREAS OF THE HADNOT POINT AND HOLCOMB BOULEVARD WATER TREATMENT PLANTS AND VICINITIES, U.S. MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA A10-A11 (2013), http://www.atsdr.cdc.gov/sites/lejeune/docs/chapter_A_hadnotpoint.pdf.

28. *Id.* at A17, A18 fig.A8.

29. *Id.* at A17 (“Concentrations of TCE at IRP locations were detected in groundwater ranging from about 1 µg/L to 180,000 µg/L.”).

30. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, *supra* note 23.

31. Allen G. Breed, *After Nearly 30 Years, Camp Lejeune Coming Clean*, YAHOO! NEWS (May 18, 2013), <https://www.yahoo.com/news/nearly-30-years-camp-lejeune-coming-clean-135705504.html>.

32. MORRIS L. MASLIA ET AL., AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, ANALYSES OF GROUNDWATER FLOW, CONTAMINANT FATE AND TRANSPORT, AND DISTRIBUTION OF DRINKING WATER AT TARAWA TERRACE AND VICINITY, U.S. MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA: HISTORICAL RECONSTRUCTION AND PRESENT-DAY CONDITIONS ES3 (2007), http://www.atsdr.cdc.gov/sites/lejeune/docs/TT_Executive_Summary_June142007_508.pdf.

33. *EPA Superfund Program: ABC One Hour Cleaners, Jacksonville, NC*, U.S. ENVTL. PROT. AGENCY, <https://cumulis.epa.gov/supercpad/cursites/csinfo.cfm?id=0402718> (last updated May 16, 2016).

accountable.³⁴ Results from statistical modeling show that PCE concentrations at the Tarawa Terrace plant were as high as 180 ppb,³⁵ thirty-six times higher than the EPA's current maximum contaminant level standard for PCE.³⁶

Despite detecting shocking levels of contaminants in both sets of wells as early as 1980, the contaminated wells stayed in operation for several years and many were not fully shut down until as late as 1987.³⁷ Although there was only limited testing of the wells historically, ATSDR estimates that the Hadnot Point wells exceeded safe standards for contaminants as early as August 1953 and the Tarawa Terrace wells as early as November 1957.³⁸ In other words, for more than three decades during the height of the Cold War, the largest Marine Corps base in the eastern United States was supplying dreadfully toxic drinking water to its service members and their families. It is difficult to determine what exactly caused the slow response by the base leadership in response to tests showing unusually high levels of a known toxin in the base water supply. Some reports indicate that base leadership was not concerned about reports of toxins, either due to a lack of understanding about the potentially vast public health effects of drinking polluted water, recklessness, or a cultural bias that supported being tough in the face of physical threats.³⁹

While there is ample evidence to indicate that Camp Lejeune's leadership was slow to respond and did not consider the tests to represent a significant threat to the health of the Marines on base,⁴⁰ there is little evidence to indicate that the Marine Corps purposefully concealed the condition of the base's water in an effort to deceive environmental regulators or the public. Criticism of base leadership, while certainly understandable, is also impacted by a hindsight bias that assigns blame to those who made decisions with less perfect information

34. *Site Information for ABC One Hour Cleaners*, U.S. ENVTL. PROT. AGENCY, https://cumulis.epa.gov/supercpad/cursites/dsp_ssppSiteData1.cfm?id=0402718 (last updated May 16, 2016) ("The EPA was unable to identify any viable potentially responsible parties for the site.").

35. MASLIA ET AL., *supra* note 32, at ES11.

36. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, PUBLIC HEALTH STATEMENT: TETRACHLOROETHYLENE 9 (2014), <http://www.atsdr.cdc.gov/ToxProfiles/tp18-c1-b.pdf>.

37. Most wells associated with the Hadnot Point plant were closed in 1985, while the Tarawa Terrace plant stayed operational until 1987. MASLIA ET AL., *supra* note 27, at A11, A23.

38. *Id.* at A2; MASLIA ET AL., *supra* note 32, at ES11.

39. See Barbara Barrett, *Warnings About Lejeune's Tainted Water Unheeded for Years*, MCCLATCHY DC (Apr. 18, 2010), <http://www.mcclatchydc.com/news/nation-world/national/article24579808.html>.

40. *Id.*

than is presently available.

B. *Naval Air Station Fallon, Nevada*

The City of Fallon is in northwestern Nevada, approximately one hour's drive east of Reno. Nearby, Naval Air Station (NAS) Fallon is home to a population of approximately 5,000 active duty and civilian employees and family members.⁴¹ NAS Fallon is also home to the U.S. Navy's Naval Strike Air Warfare Center—better known as “Top Gun”—and is one of the premier combat flight training locations in the U.S. military. Eighty-one percent of the state of Nevada is federally owned,⁴² which, combined with the state's relative isolation, makes the skies over Nevada one of the best places in the world for military flight training.⁴³

Despite its storied role in America's legacy of military aviation, Fallon also has the unfortunate distinction of having been investigated as a “cancer cluster” by the Centers for Disease Control and Prevention (CDC).⁴⁴ Fallon garnered a “large scale, costly, multiagency response” after sixteen children in a city of 8,000 were diagnosed with leukemia between 1997 and 2002.⁴⁵ In comparison, at the national average, Fallon would anticipate one case of childhood leukemia every ten years.⁴⁶ The concentration made Fallon “one of the largest pediatric leukemia clusters in U.S. history.”⁴⁷ Officials have determined that the statistical likelihood of Fallon's cluster occurring naturally is less than one in two hundred and thirty-two million,⁴⁸ but the cause of the cancer cluster is

41. *Naval Air Station Fallon, Nevada: Fast Facts*, U.S. DEP'T DEF., http://www.militaryinstallations.dod.mil/pls/psgprod/f?p=132:CONTENT:0::NO::P4_INST_ID,P4_INST_TYPE:3400,INSTALLATION (last updated Feb. 3, 2016).

42. ROSS W. GORTE ET AL., CONG. RESEARCH SERV., R42346, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 3 (2012).

43. In addition to “Top Gun” at NAS Fallon, Nevada is also home to the U.S. Air Force's counterpart programs “Red Flag” and the U.S. Air Force Weapons School hosted at Nellis Air Force Base near Las Vegas. *Nellis Air Force Base*, U.S. AIR FORCE (Jul. 12, 2014), <http://www.nellis.af.mil/About/FactSheets/Display/tabid/6485/Article/284174/nellis-air-force-base.aspx>.

44. See CTRS. FOR DISEASE CONTROL & PREVENTION, CROSS-SECTIONAL EXPOSURE ASSESSMENT OF ENVIRONMENTAL CONTAMINANTS IN CHURCHILL COUNTY, NEVADA 20-22 (2003), http://www.cdc.gov/nceh/clusters/fallon/2_Reportmainbody.pdf.

45. Carol S. Rubin et al., *Investigating Childhood Leukemia in Churchill County, Nevada*, 115 ENVTL. HEALTH PERSPS. 151, 156 (2007).

46. Paul Sheppard et al., *Comparison of Size and Geography of Airborne Tungsten Particles in Fallon, Nevada, and Sweet Home, Oregon, with Implications for Public Health*, 12 J. ENVTL. & PUB. HEALTH 1, 1 (2012).

47. Rubin et al., *supra* note 45, at 156.

48. Craig Steinmaus et al., *Probability Estimates for the Unique Childhood Leukemia*

still unclear. The Fallon community is exposed to multiple sources of toxins: naturally occurring arsenic in the ground water, tungsten in both the air and the water, and benzene from an oil pipeline that supplies the base's jet fuel.⁴⁹

Until recently, Fallon's water had the highest concentration of arsenic of any place in the country.⁵⁰ Fallon draws its water from a basalt aquifer that has supplied the city for more than sixty years.⁵¹ Water from the Fallon aquifer naturally has arsenic at approximately 100 ppb, ten times the EPA's and the Food and Drug Administration's current requirements for safe arsenic exposure.⁵² Arsenic is a known carcinogen, and studies show that drinking high levels of arsenic can increase the risk of bladder, kidney, skin, and lung cancers.⁵³ In 2004, the U.S. Navy and the City of Fallon completed a joint water treatment plant to reduce residents' exposure to arsenic.⁵⁴ The new facility has brought the level of arsenic in the city's drinking water down to below 10 ppb.⁵⁵

The Fallon community is also exposed to high levels of the metal tungsten through both the air and water supply. The public health consequences of exposure to tungsten are largely unknown. Research into the toxic effects of tungsten began in earnest in response to Fallon's cancer cluster designation, however, and "limited reports associate tungsten exposure with reproductive and developmental effects such as decreased sperm motility, increased embryotoxicity, and delayed fetal

Cluster in Fallon, Nevada, and Risks Near Other U.S. Military Aviation Facilities, 112 ENVTL. HEALTH PERSPS. 766, 768 (2004).

49. Sierra Crane-Murdoch, *Fallon, Nevada's Deadly Legacy*, HIGH COUNTRY NEWS (Mar. 9, 2014), <https://www.hcn.org/issues/46.4/fallon-nevadas-deadly-legacy>.

50. *Id.*

51. City of Fallon, NAS Fallon, and the Fallon Paiute-Shoshone Tribe draw water from the same aquifer. ENVTL. PROT. AGENCY, FALLON, NV: POOLING RESOURCES TO CONSTRUCT ARSENIC TREATMENT FACILITY 1-2, https://www.epa.gov/sites/production/files/2015-09/documents/casestudy_fallon.pdf (last visited May 17, 2016).

52. *Chemical Contaminant Rules*, ENVTL. PROT. AGENCY, <https://www.epa.gov/dwreginfo/chemical-contaminant-rules> (last updated Apr. 29, 2016).

53. *Arsenic*, AM. CANCER SOC'Y, http://www.cancer.org/cancer/cancercauses/other_carcinogens/intheworkplace/arsenic (last updated Jul. 18, 2014).

54. ENVTL. PROT. AGENCY, *supra* note 51, at 2; NEV. RURAL WATER ASS'N, CITY OF FALLON WATER CONSERVATION PLAN 6 (2009), <http://water.nv.gov/programs/planning/plans/Fallon.pdf>.

55. ANNUAL CONSUMER CONFIDENCE REPORT FOR 2013 ON THE QUALITY OF DRINKING WATER FOR THE NAVAL AIR STATION FALLON WATER SYSTEM 4 (2013), http://www.cnrc.navy.mil/content/dam/cnrc/cnrsw/NAVFACSW%20Environmental%20Core/Fallon_CCR_2013.pdf.

skeletal ossification in animals.”⁵⁶ Increased tungsten exposure has also been identified at Sierra Vista, Arizona, which is home to both the U.S. Army’s Fort Huachuca and another CDC-investigated childhood leukemia cluster.⁵⁷

While tungsten exists naturally in the arid western United States, its increased concentration in Fallon is also due to industrial contamination. A team of toxicologists from the University of Arizona has detected increased airborne tungsten and cobalt particulates in the air around Fallon, including in the city’s main population centers.⁵⁸ The scientists attribute these samples to a hard-metal industrial facility, operated by the company Kennametal, that uses “tungsten carbide and cobalt to produce tool materials.”⁵⁹ The facility is located within two kilometers of Fallon’s main residential area, meaning that most of Fallon’s families are exposed to elevated long-term airborne tungsten levels.⁶⁰

Another source of contamination involves a possible leak in a gas pipe that supplies jet fuel to the NAS Fallon base. Although difficult to confirm, some residents have reported that the pipe had a leak that ran under Fallon’s elementary school.⁶¹ Jet fuel contains benzene, a known carcinogen, as well as other chemicals not fully tested for their health impacts.⁶² In 2010, a wrongful death suit brought by the parent of a Fallon child who died from leukemia against Kinder Morgan Energy Partners (the pipeline operator) and ExxonMobil (the fuel manufacturer) was settled out of court for an undisclosed amount.⁶³

C. Marine Corps Air Station El Toro, California

Built on nearly 4,700 acres in the heart of Orange County, California, Marine Corps Air Station (MCAS) El Toro was a hub of military aviation activity until its closure in 1999.⁶⁴ Opened in 1943 to

56. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, TOXICOLOGICAL PROFILE FOR TUNGSTEN 12 (2005), <http://www.atsdr.cdc.gov/toxprofiles/tp186.pdf>.

57. CTRS. FOR DISEASE CONTROL & PREVENTION, BIOSAMPLING CASE CHILDREN WITH LEUKEMIA (ACUTE LYMPHOCYTIC AND MYELOCYTIC LEUKEMIA) AND A REFERENCE POPULATION IN SIERRA VISTA, ARIZONA 14 (2006), <http://www.cdc.gov/nceh/clusters/sierravista/SierraVistaReportOnly.pdf>.

58. Sheppard et al., *supra* note 46, at 1.

59. *Id.*

60. *Id.* at 5.

61. Crane-Murdoch, *supra* note 49.

62. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, DRAFT TOXICOLOGICAL PROFILE FOR JP-5, JP-8, AND JET A FUELS 8 (2016), <http://www.atsdr.cdc.gov/toxprofiles/tp121.pdf>.

63. Crane-Murdoch, *supra* note 49.

64. *Former Marine Corps Air Station El Toro*, NAVAL FACILITIES ENG’G COMMAND,

train fighter pilots for the Pacific Theater, it later housed the U.S. Marine Corps' Third Marine Aircraft Wing and supported combat operations during the Korean and Vietnam Wars.⁶⁵

With decades of high-tempo flight activity at MCAS El Toro, the base's environmental condition reflects the standard practices of the time. TCE, the carcinogenic industrial solvent discussed above in reference to Camp Lejeune, was widely used on the base's flight line to clean jet engines between sorties.⁶⁶ Chemical runoff from the base's runways and aircraft maintenance areas washed onto the soil and into the groundwater supply.⁶⁷ As a result of this contamination, the EPA listed MCAS El Toro on the National Priorities List as a Superfund site in 1990.⁶⁸

The contamination at MCAS El Toro not only threatens the health of service members who were directly exposed to TCE as part of their job on the flight line, nor only families who lived and played on the base's contaminated land.⁶⁹ Fifteen years after the closure of MCAS El Toro, a three square mile plume of TCE-contaminated groundwater extends from the base's runways into Irvine, California's groundwater aquifers.

In 2007, Irvine Ranch Water District, Orange County Water District, and the U.S. Department of the Navy began the El Toro Remediation Project. The project pumps 1.3 billion gallons of water from the TCE plume area each year, treats it to remove contaminants, and then uses it for local agricultural irrigation.⁷⁰ The process limits further drifting of the plume into more groundwater areas, and supplies usable water for crop irrigation.⁷¹ The Irvine Ranch Water District estimates it will take forty years to clean up the TCE plume.⁷²

In a positive recent development, the EPA in 2014 removed more

http://www.bracpmo.navy.mil/brac_bases/california/former_mcas_el_toro.html (last updated Oct. 2012).

65. M.L. Shettle, Jr., *Historic California Posts, Camps Stations and Airfields: Marine Corps Air Station, El Toro*, CAL. MIL. DEP'T, <http://www.militarymuseum.org/MCASElToro.html> (last updated Feb. 8, 2016).

66. *El Toro Marine Corps Air Station Superfund Site Profile*, U.S. ENVTL. PROT. AGENCY (Oct. 27, 2014), <https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/CA6170023208>.

67. *Id.*

68. *See id.*

69. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, *supra* note 23.

70. *TCE - El Toro Facts*, IRVINE RANCH WATER DIST., <http://www.irwd.com/construction/tce-el-toro-facts> (last visited May 22, 2016).

71. The TCE concentration of the treated water is not publicly available, but presumably it is diffuse enough to be safely used on crops. Further research should examine the effects of using treated water on the safety of farm workers who tend fields that are irrigated with treated water.

72. IRVINE RANCH WATER DIST., *supra* note 70.

than 1,900 acres of the former MCAS El Toro base from the National Priorities List.⁷³ This improvement reflects \$165 million that local water agencies and the DOD have spent to clean up the land and water around the base.⁷⁴ The newly delisted land is being developed as part of the Orange County Great Park project, which will include nearly 700 acres of public parkland and 9,500 newly built homes.⁷⁵ Six hundred and fifty acres of MCAS El Toro are still listed as a Superfund site, including most of the area affected by the TCE plume.⁷⁶

III. RESPONSES

Injured parties seeking a legal remedy may bring litigation against a private actor or the federal government. Military veterans also have options to receive medical care and disability compensation from the VA. Litigation, in particular, has significant transaction costs and barriers to recovery. Financial recovery available through litigation may, however, be more significant than the fixed compensation available from VA benefits. Moreover, VA benefits are typically only available to veterans (as opposed to their families or civilians), and the application process can often be onerous.

A. *Suing Individual Actors for Toxic Exposure Is Limited by Causation, Statutes of Repose, and Damage-Proof Defendants*

Causation is a central challenge to any litigation involving toxic torts. Plaintiffs must prove not only that the toxin in question can cause the injury (“general causation”), but also that the toxin did in fact cause

73. Tony Barboza, *Much of Old Irvine Air Base is Removed from List of Hazardous Sites*, L.A. TIMES (Jan. 27, 2014), <http://articles.latimes.com/2014/jan/27/local/la-me-0128-el-toro-20140128>.

74. *Id.*

75. *Id.*

76. The bulk of the remaining listed land at the El Toro site is IRP site 24, the location of the original and most contaminated TCE groundwater plume. Compare Pat Brennan, *Area's Removal from Superfund Site Clears Way for Great Park Homes*, ORANGE COUNTY REGISTER (Jan. 28, 2014), <http://www.ocregister.com/articles/superfund-599096-site-list.html?graphics>, with CITY OF IRVINE, GREAT PARK NEIGHBORHOODS DRAFT SUPPLEMENTAL EIR 5.4-13 Fig.5.4-2, (2011), <https://legacy.cityofirvine.org/civica/filebank/blobdload.asp?BlobID=17718>; see also Marc P. Smits, Navy Remedial Project Manager, Installation Restoration Program (IRP) Sites 18 and 24 Update, Presentation Before the Former Marine Corps Air Station (MCAS) El Toro 113th Restoration Advisory Board (Aug. 26, 2015), http://www.bracpmo.navy.mil/content/dam/bracpmo/california/former_marine_corps_air_station_el_toro/pdfs/restoration_advisory_board/2015RAB/ET_20150826_min.pdf (showing that in March 2014, the plume at IRP site 24 registered a maximum TCE concentration of 280 µg/L, compared to the CDC's maximum contaminant goal of 5 µg/L).

the injury (“specific causation”).⁷⁷ Proof of causation is highly dependent on expensive scientific evidence and expert witnesses to show a correlation between the defendant’s actions and the plaintiff’s illness. Toxic tort suits from military families are particularly challenging because military communities often have multiple overlapping layers of severe contamination (was the cancer caused by the TCE runoff, dry-cleaning chemicals, or the gasoline leak?), making it difficult to pin the fault on one source. Further complicating lawsuits by military families is the fact that, because of their being reassigned to new locations every few years, military families often lack long-term exposure to a single source of contamination. Yet, with pollution as common as it is at military bases, moving between military bases is not likely to reduce total toxic exposure.

State statutes of repose may also limit private recovery. In 2014, the Supreme Court held that a North Carolina statute of repose preempts the federal statute of limitations in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, more commonly known as the “Superfund law”).⁷⁸ The federal statute of limitations creates a three-year window for bringing a lawsuit based on the “date of the discovery of the loss and its connection with” the defendant’s activity.⁷⁹ North Carolina, meanwhile, had a separate statute of repose that limited liability for claims brought more than ten years after the “last act . . . of the defendant giving rise to the cause of action.”⁸⁰ The Court held that CERCLA was written in a manner that defers to a state’s statute of repose, when one exists.⁸¹

Although statutes of repose are intended to promote justice by preventing defendants from being surprised by lawsuits for actions that occurred years in the past, they do so at the expense of injured plaintiffs. This is particularly costly in the case of toxic exposure because the diseases can take many years to manifest. While CERCLA’s statute of limitations would not start measuring time until the illness was discovered and was connected to the polluter’s actions, a statute of repose starts measuring time at the last moment the pollution occurred. In effect, plaintiffs who suffer from diseases that are latent for many

77. John P. Manard, Jr. & J. Alan Harrell, *Toxic Tort Litigation*, in ENVIRONMENTAL LITIGATION: LAW AND STRATEGY 281, 301 (Cary Perlman ed., 2009).

78. *CTS Corp. v. Waldburger*, 134 S. Ct. 2175, 2180 (2014).

79. Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, § 112(d)(2)(A), 100 Stat. 1613, 1647 (1986).

80. N.C. GEN. STAT. ANN. § 1-52 (West 2016).

81. *CTS Corp.*, 134 S. Ct. at 2185-89.

years are limited from seeking justice under a statute of repose.

Following the Supreme Court's new ruling regarding the North Carolina statute of repose, an Eleventh Circuit panel applied the ruling to a consolidated set of proceedings brought by victims and survivors of pollution at Camp Lejeune.⁸² The court held that North Carolina's statute of repose did apply to the plaintiffs' claims, with no exception for latent diseases.⁸³ In October 2015, the Supreme Court denied a petition for a writ of certiorari to hear an appeal of the Eleventh Circuit's ruling.⁸⁴

Legal remedies may also be limited because the polluter cannot be identified, no longer exists, or is damage-proof. In some situations, the source of the pollution is simply unknown. The pollution may have happened decades in the past and injuries may have sat latent for years. In other cases, such as the Camp Lejeune families impacted by PCE pollution from ABC Dry Cleaning, the injured families have no recourse because the company at fault no longer exists. Even if ABC Dry Cleaning did still exist, it is highly doubtful that it would have the resources to properly compensate the thousands of families impacted by their pollution.

Plaintiffs who continue to live in a contaminated area and who face the threat of ongoing pollution by a private actor can also bring a claim based on the property law doctrine of nuisance. A private nuisance is "a nontrespassory invasion of another's interest in the private use and enjoyment of land."⁸⁵ Nuisance theory would be most pertinent to a situation like in Fallon, Nevada, where residents continue to be faced with ongoing tungsten particulate pollution by a privately-owned metal factory. Liability under nuisance theory requires "balancing the gravity of the harm against the utility of the conduct."⁸⁶ While nuisance claims can result in either injunction or damages, a factory in a small town such as Fallon would likely be able to continue operation while paying damages to plaintiffs to compensate them for loss of value to their property.⁸⁷

82. *Bryant v. United States*, 768 F.3d 1378, 1385 (11th Cir. 2014), *cert. denied*, 136 S. Ct. 71 (2015); *see also* *In re Camp Lejeune*, 763 F. Supp. 2d 1381 (J.P.M.L. 2011) (order consolidating cases in Federal District Court of North Georgia).

83. *Bryant*, 768 F.3d at 1385.

84. *Bryant v. United States*, 136 S. Ct. 71 (2015).

85. Restatement (Second) of Torts § 821D (1979).

86. Restatement (Second) of Torts § 822 cmt. k (1979).

87. *See, e.g., Boomer v. Atl. Cement Co.*, 26 N.Y.2d 219, 226 (1970) (finding a cement factory liable for nuisance, the court imposed monetary damages based on the conclusion that an injunction would create extreme hardship for the factory owners).

In limited situations, a claim for public nuisance may also be brought against the polluter. Whereas a private nuisance degrades another party's private use and enjoyment of land, a public nuisance is "an unreasonable interference with a right common to the general public."⁸⁸ This doctrine imposes liability for activities that "affect the health of so many persons as to involve the interests of the public at large."⁸⁹ Public nuisance doctrine has claimed a recent resurgence as a vehicle outside of the Clean Air Act and Clean Water Act to hold polluters liable for environmental damage.⁹⁰ Since public nuisance claims seek to defend rights "common to the general public," they typically need to be brought by a public official or a government regulatory agency. Some jurisdictions allow private citizens to petition the local government in order to force the government to bring suit on the public's behalf.⁹¹

B. The Department of Defense May Be Immune from Liability for Pollution Caused by Military Operations

The Federal Tort Claims Act (FTCA) waives sovereign immunity and provides a federal right of action in cases of negligence by federal government employees that occur during the course of their employment. Claims brought under the FTCA are limited by discretionary immunity for policy decisions by government officials,⁹² and governmental immunity for injuries to service members that arise out of their military service.⁹³

1. Courts are split over whether discretionary immunity applies in cases of water contamination at military bases.

Federal courts are split over whether pollution at military bases and notification of off-base residents about known pollution falls within the

88. Restatement (Second) of Torts § 821B (1979).

89. Restatement (Second) of Torts § 821B cmt. g (1979).

90. See generally John E. Bryson & Angus Macbeth, *Public Nuisance, the Restatement (Second) of Torts, and Environmental Law*, 2 *ECOLOGY L.Q.* 241 (1972) (analyzing the addition of the public nuisance cause of action to the *Restatement (Second) of Torts* in the context of environmental litigation and finding a role for public nuisance lawsuits covering water and air pollution).

91. See Richard Drury, *Moving a Mountain: The Struggle for Environmental Justice in Southeast Los Angeles*, in *CREATIVE COMMON LAW STRATEGIES FOR PROTECTING THE ENVIRONMENT* 187 (Clifford Rechtschaffen & Denise Antolini eds., 2007).

92. See *Berkovitz v. United States*, 486 U.S. 531, 536-37 (1988) (using a two-step analysis for determining whether discretionary conduct applies).

93. *Feres v. United States*, 340 U.S. 135, 144 (1950).

discretionary function of government employees. Due to the prevalence of contamination at military bases nationwide, there are numerous cases in which property owners near a military base bring suit against the government for pollution resulting from military operations. Among the federal circuits, the Tenth Circuit is one of the most consistent about preserving discretionary immunity and the Ninth Circuit is the most consistent about discarding discretionary immunity.⁹⁴ Cases from these two circuits will be explored in more detail below.

Three cases within the U.S. Court of Appeals for the Tenth Circuit reflect the Circuit's consistent holding that discretionary immunity applies in instances of pollution at military bases. In *Aragon v. United States*, landowners near Walker Air Force Base, New Mexico brought suit against the federal government under the FTCA based on contamination of their groundwater wells with the toxic industrial solvent TCE.⁹⁵ The court dismissed the claim, holding that the FTCA discretionary function exception applied. The court held that pollution at the base arose from "broader policies affecting airbase operations" which allowed the Air Force "to place security and military concerns above any other concerns," including concerns about hazardous waste disposal and contamination.⁹⁶

In *Daigle v. Shell Oil Company*, the Tenth Circuit extended this protection to include the military's failure to warn nearby residents about hazardous waste contamination.⁹⁷ The plaintiffs alleged that the military was negligent by failing to warn about toxic air emissions during the cleanup of chemical weapons and other hazardous waste at Rocky Mountain Arsenal near Denver, Colorado.⁹⁸ The court held that

94. Several other circuits have also weighed these issues, with most backing the government's claim of applying the discretionary function exception to the FTCA. *See e.g.*, *OSI, Inc. v. United States*, 285 F.3d 947, 953 (11th Cir. 2002) (finding that the Air Force's disposal of waste in an off-base landfill was covered by the discretionary function exception to the FTCA); *Maas v. United States*, 94 F.3d 291, 297 (7th Cir. 1996) (holding that the discretionary function exception to the FTCA applied to Air Force's decision not to notify service members of radiation risk from handling debris from a nuclear weapons accident); *Boyle v. United Techs. Corp.*, 487 U.S. 500, 511 (1988) (noting that the FTCA discretionary function exception protects the military from being "second-guessed" on decisions about "the trade-off between greater safety and greater combat effectiveness").

95. *Aragon v. United States*, 146 F.3d 819, 823 (10th Cir. 1998).

96. *Id.* at 826.

97. *Daigle v. Shell Oil Co.*, 972 F.2d 1527, 1538 (10th Cir. 1992).

98. *Id.*; *see Rocky Mountain Arsenal*, COLO. DEP'T OF PUB. HEALTH & ENV'T, <https://www.colorado.gov/pacific/cdphe/rocky-mountain-arsenal> (showing that, among other toxic chemicals, Rocky Mountain Arsenal stored Sarin and VX gases, extremely lethal nerve agents); *see also Rocky Mountain Arsenal*, U.S. FISH & WILDLIFE SERV. (Jun. 19, 2015), http://www.fws.gov/refuge/rocky_mountain_arsenal/ (last updated Apr. 25, 2016) (providing

the decision to warn “is a component of an overall policy decision protected by the discretionary function exception.”⁹⁹

Similarly, in *Ross v. United States*, the Tenth Circuit held that inadequate warnings were also protected by the discretionary function exception.¹⁰⁰ This case also involved contamination of TCE in civilian water wells near Tinker Air Force Base, Oklahoma. The Air Force had held off notifying the off-base community of Tinker View Acres about the contamination until a clean-up effort had begun on base. Community members alleged that this late and inadequate warning left them exposed to toxins well after the military knew of the contamination. The court again held that the decision to tell off-base residents, and how much to tell them, falls within the government’s discretionary function.¹⁰¹

In contrast to the Tenth Circuit’s holdings, the Ninth Circuit has twice held that discretionary immunity did not apply to pollution at military bases. In *Starrett v. United States*, landowners near the U.S. Navy’s Submarine Base at Bangor, Washington sued the government for contamination caused by decommissioning long-range missiles from the base’s submarine fleet.¹⁰² To decommission the missiles, the Navy would pump water through the missiles to remove explosive material, filter the water through cheesecloth, and then dump the water in a trench. The Court found that this process was subject to Executive Order Number 11258 (1965), an order directing safe wastewater handling and disposal practices at military installations.¹⁰³ As a result of this “specific mandatory” requirement, discretionary immunity did not apply and the case was remanded for further proceedings.¹⁰⁴

Similarly, in *Clark v. United States*, the Ninth Circuit affirmed the District Court’s finding that discretionary immunity did not apply because the Air Force’s dumping of TCE and other chemicals on the base golf course directly violated military manuals that “set out standards and requirements” for waste disposal.¹⁰⁵ The case was rooted in the plaintiffs’ loss of property value, and did not consider their long-

information about an environmentally positive aspect to this case—the former military facility is being converted into the Rocky Mountain Arsenal National Wildlife Refuge administered by the U.S. Fish and Wildlife Service).

99. *Daigle*, 972 F.2d at 1542.

100. *Ross v. United States*, 129 Fed. Appx. 449, 452 (10th Cir. 2005).

101. *Id.*

102. *Starrett v. United States*, 847 F.2d 539, 540 (9th Cir. 1988).

103. *Id.*

104. *Id.* at 541-42.

105. *Clark v. United States*, 660 F. Supp. 1164, 1178 (W.D. Wash. 1987), *aff’d*, 856 F.2d 1433 (9th Cir. 1988).

term health impacts. As a practical matter, these two Ninth Circuit cases show that avoiding governmental discretionary immunity is possible by closely connecting the military's waste disposal activities to specific military manuals and regulations.

The above cases highlight the difficulty and inconsistent ability of civilians to bring suit against the federal government for contamination at military bases.

2. *The Feres doctrine protects the Department of Defense from liability for injuries that arise out of the course of military duty.*

In *Feres v. United States*, the Supreme Court held that service members had no cause of action under the Federal Tort Claims Act for negligence that occurred "incident to service."¹⁰⁶ The case, heard upon a circuit split in the lower courts, was a consolidation of three torts cases brought by military veterans and their survivors. Two of the consolidated cases were for medical malpractice (one involving military medics stitching up a troop with a thirty-by-eighteen inch towel, which read "Medical Department U.S. Army," still inside his stomach) and the third was brought for injuries sustained in a barracks fire caused by a defective heating plant.¹⁰⁷

Central to the Court's holding in *Feres* was that service members injured during their military service are eligible for VA compensation payments. These compensation payments function similarly to workers compensation payments for civilian employees, a system through which employees typically lose a cause of action against their employers for injuries sustained on the worksite. Additionally, survivors of deceased veterans are often eligible for cash payments intended to prevent veterans' widows from living in destitution.

The Court distinguished *Feres* from its holding in *Brooks v. United States*.¹⁰⁸ In *Brooks*, the Court supported a cause of action brought by a service member who was on leave when he was injured in a collision with a government owned and operated vehicle.¹⁰⁹ The Court held that the injuries sustained by the service member were not "caused by" or "incident to" his military service.¹¹⁰ The Court's upholding of the *Brooks* precedent in *Feres* still allows for suits to be brought under the

106. *Feres v. United States*, 340 U.S. 135, 144 (1950).

107. *Id.* at 137.

108. *Id.*

109. *Brooks v. United States*, 337 U.S. 49, 50 (1949).

110. *Id.* at 51.

Federal Tort Claims Act by service members who were injured outside of mission or military duty obligations.¹¹¹

Broadly construed, the *Feres* doctrine would prevent a cause of action by veterans injured from the contaminated water at Camp Lejeune. The situation of the barracks fire in *Feres* is the closest analog to the contaminated water case. In both cases, active duty service members sustained injury from unsafe conditions in their housing quarters on base. The Court held in *Feres* that injuries from barracks conditions were “incident to service” because the service members were living on base in those quarters not of their own free will, but rather as a direct result of their military service.

3. *Recommendation: modify the Feres doctrine to allow for liability in non-combat torts, reckless or knowing acts, or in cases of alleged cover-up.*

Despite similarities, there are key differences between the Camp Lejeune case and the barracks fire in *Feres* that make it worthy of an exception to the prevailing doctrine. First, the barracks fire in *Feres* was the result of alleged negligence due to a defective heating plant. In other words, the commanders should have known about the risk of a fire and did not have adequate protections in place to prevent it. In the case of the contaminated water at Camp Lejeune, however, the commanders *did know* about the contaminated wells and did nothing to stop it. Further, by not disclosing the condition of the water to the base’s residents, Camp Lejeune’s commanders recklessly allowed thousands of families to drink toxic water for years until the wells were finally destroyed. The Camp Lejeune case, in other words, is not a case of alleged negligence, but of knowing or reckless behavior on the part of the base commanders.

Second, the VA disability and compensation system has been wholly inadequate in the present case. As is discussed in more detail below, the VA has only approved 8.8% of the 11,092 claims filed by Camp Lejeune veterans for illnesses arising from exposure to contaminated water.¹¹² The comparison to workers compensation—a system of automatic payouts based on injuries sustained—simply does not equate here.

A limitation to the *Feres* doctrine in the present case would preserve military commanders’ autonomy and discretion during combat operations and training exercises. The injuries caused by the

111. *Feres*, 340 U.S. at 146.

112. VETERANS BENEFITS ADMIN., CAMP LEJEUNE CLAIMS UPDATE (2014) (on file with author).

contaminated water supply occurred stateside during peacetime and bear no relation to a “military mission” other than simply an association with military service. It is undisputed that military commanders need and deserve the discretion to take risks and make bold decisions during the fog of war. Accountability for actions taken stateside during peacetime, outside of mission-related operations or training, does not impede commanders’ autonomy during battle. To the contrary, accountability in these situations—particularly in cases of knowing or reckless behavior over a period of time—promotes the well-being of all who serve in uniform.

C. Benefits Through the Department of Veterans Affairs Are the Most Likely Way for Veterans to Recover for Injuries from Toxic Exposure

The VA provides a full suite of benefits to veterans who have service-connected medical conditions.¹¹³ The main VA benefits program provides tiered disability compensation and health benefits if a veteran can demonstrate that a current mental or physical health condition (ranging from the very minor to the severe) is medically linked to his or her military service. Veterans are assigned a disability rating based on the severity of their condition and receive tax-free payments ranging from \$133 to \$3,447 per month.¹¹⁴ These payments are intended to supplement income for veterans and families who likely have diminished earnings potential as a result of their injuries. The disabled veteran also receives free health care for his or her service-connected condition at VA hospitals and clinics nationwide.

Despite the generous appearance of this benefits package, it is often either insufficient or out of reach for sick veterans and their families. For one, standard VA benefits do not provide compensation or health care for veterans’ sick family members who become ill from exposure to toxins at U.S. military bases.¹¹⁵ Additionally, absent the presumption of a service connection, it is often very difficult for veterans to prove that their current ailment is the result of toxic exposure experienced years

113. Much of this section is based on material from an October 2014 pro bono legal training program taught by Swords to Plowshares, a veterans advocacy organization based in San Francisco.

114. *Veterans Compensation Benefits Rate Tables*, U.S. DEP’T VETERANS AFFAIRS (Dec. 1, 2014), http://www.benefits.va.gov/COMPENSATION/resources_comp01.asp.

115. Civilian community members who are exposed to toxins because of their proximity to a military base (such as in Orange County, California) also have no eligibility for benefits through the VA. See STACEY-RAE SIMCOX & JOHN PAUL CIMINO, *SERVICEMEMBER AND VETERANS RIGHTS* § 6.04 (Brian Clauss & Stacey-Rae Simcox eds., 2014) (“To be eligible for benefits with the VA, a person must have served on active duty with the armed forces.”).

ago. Compiling sufficient evidence or hiring a doctor to vouch for the likely connection often requires uncommon resources or sophistication for many older or physically-ill veterans.

In situations where the burden of establishing a service connection prevents a large population of veterans from receiving the care they need, Congress has created exceptions to the VA disability review process.¹¹⁶ In the case of Camp Lejeune's veterans and family members, it took the form of legislation that provides VA health care to veterans and their families who experience a range of ailments after having served at Camp Lejeune.¹¹⁷ In other situations, such as for illnesses associated with Agent Orange or Gulf War Syndrome, Congress has directed the VA Secretary to presume that a service connection exists for eligible veterans who apply for benefits.¹¹⁸ Given the difficulties that veterans face in proving the connection between toxic exposure and military service, a presumed connection should arguably exist for all veterans who served at military facilities later designated as Superfund sites and who experience illnesses associated with toxic exposure.

1. *The "Honoring America's Veterans and Caring for Camp Lejeune Families Act of 2012" provides medical care to most military families injured by Camp Lejeune's contamination.*

On August 6, 2012, President Obama signed the "Honoring America's Veterans and Caring for Camp Lejeune Families Act of 2012" (Camp Lejeune Families Act) into law.¹¹⁹ The law was intended to directly address the crisis affecting the hundreds of thousands of veterans potentially exposed to contaminants at Camp Lejeune.

The Camp Lejeune Families Act provides VA health care benefits to veterans and military dependents who served for at least thirty days at Camp Lejeune between 1953 and 1987 and who are diagnosed with a list of conditions associated with TCE or PCE exposure.¹²⁰ The ailments

116. See SIDATH V. PANANGALA ET AL., CONG. RESEARCH SERV., R41405, VETERANS AFFAIRS: PRESUMPTIVE SERVICE CONNECTION AND DISABILITY COMPENSATION 1 (2014).

117. See Honoring America's Veterans and Caring for Camp Lejeune Families Act of 2012, Pub. L. No. 112-154 § 102, 126 Stat. 1165, 1167-69.

118. 38 U.S.C. § 1116 (2014) (authorizing the Secretary of Veteran Affairs to create a presumptive service connection for veterans exposed to herbicides during service during the Vietnam War); 38 U.S.C. § 1117 (2014) (authorizing the Secretary of Veteran Affairs to create a presumptive service connection for veterans suffering from illnesses popularly termed Gulf War Syndrome).

119. Honoring America's Veterans and Caring for Camp Lejeune Families Act of 2012 § 102.

120. *Id.*

covered are esophageal cancer, lung cancer, breast cancer, bladder cancer, kidney cancer, leukemia, multiple myeloma, myelodysplastic syndromes, renal toxicity, hepatic stenosis, female infertility, miscarriage, scleroderma, neurobehavioral effects, and non-Hodgkin's lymphoma.¹²¹ Benefits also extend to children who were carried in utero by a mother residing at Camp Lejeune during that period.¹²²

These benefits are a welcome and much-needed resource to injured veterans and their families, but the Camp Lejeune Families Act under-compensates the injuries experienced by the victims of contamination by not providing financial compensation. As a result, not only are those who are sickened by contamination not made whole, but the lack of accountability also makes future contamination events more likely.

Veterans with illnesses arising from the Camp Lejeune water contamination may still apply for disability and compensation payments, but are unlikely to receive them. To receive disability and compensation payments, veterans must provide medical evidence that their illnesses are a result of their military service, with the benefit of the doubt going to the veteran.¹²³ This evidence is difficult to come by due to varying amounts of exposure and the years-long latency between exposure and symptoms. As a result, most veterans who claim an illness associated with the Camp Lejeune contamination are denied compensation payments. As of January 2014, the VA had adjudicated 11,092 claims for service-connected disability based on water contamination at Camp Lejeune and approved only 976 (8.8%) of them.¹²⁴

2. *Recommendation: modify the Camp Lejeune Families Act to include coverage for children of Camp Lejeune veterans.*

Toxins such as TCE and PCE can cause significant birth defects in the children of those directly exposed. Bridgid Cleary and Michael Tooshi criticize the Camp Lejeune Families Act for underserving children of those born to veterans who served at Camp Lejeune in three key ways.¹²⁵ First, and most significantly, the Act only covers children

121. *Id.*

122. *Id.*

123. 38 U.S.C. § 5107(a)(b) (2014). This connection between military service and the veteran's disability is known as the medical "nexus." SIMCOX & CIMINO, *supra* note 115, § 6.05(6)(a).

124. VETERANS BENEFITS ADMIN., *supra* note 112.

125. Bridgid Cleary & Michael Tooshi, *Camp Lejeune Revisited: Strategies for Implementing a Program of Benefits for Veterans' Dependents*, 5 VETERANS L. REV. 201, 218 (2013).

who were in utero while the veteran parent was stationed at Camp Lejeune. Since toxins linger in the body for years after exposure, a child could be born with a birth defect caused by exposure years before conception.

Second, the list of covered ailments significantly undercounts likely birth defects caused by exposure. Studies suggest that toxins found in the Camp Lejeune water may be associated with increased rates of neural tube defects, cleft lip, cleft palate, leukemia, and non-Hodgkins lymphoma. A telephone survey conducted by the ATSDR of women who lived at Camp Lejeune during their pregnancies between 1968 and 1985 identified one-hundred and three cases of birth defects, neural tube defects, oral cleft defects, and hematopoietic cancers. The Camp Lejeune Families Act neither provides health care coverage for many of these birth defects nor for the unforeseen complications caused by low birth weight.

Third, echoing a critique levied by veterans groups, the Act undercompensates children with birth defects by not providing benefits beyond health care coverage. Drawing parallels to Congressional and VA action following the discovery of the health effects of Agent Orange during the Vietnam War, Cleary and Tooshi advocate for vocational training and compensation payments for children of Camp Lejeune veterans who have a birth defect associated with toxic water exposure.¹²⁶ In particular, children born to women who were exposed to Agent Orange and other herbicides during the Vietnam War and service along the Korean Demilitarized Zone were found to have a significantly higher rate of spina bifida as compared to the general population. In response, Congress authorized the VA to provide healthcare to children of veterans suffering from spina bifida as well as four years of vocational rehabilitation and a monthly stipend based on the severity of the child's symptoms.¹²⁷ Similar benefits should be available for the children of Camp Lejeune veterans who suffer because of their parents' exposure to toxic water.

3. *Recommendation: apply a coherent policy framework for presumptive service connections resulting from toxic chemical exposure.*

Congress and the VA have previously established a presumptive service connection for groups of veterans who suffer from ailments that

126. *Id.* at 218.

127. *Id.* at 205.

are difficult to prove are connected to military service.¹²⁸ These groups include Vietnam and Gulf War combat veterans, veterans who performed nuclear weapons testing, and former prisoners of war.¹²⁹

Presumptive service connections for VA benefits parallel many of the no-fault compensation systems that Congress and state legislatures have created since the 1910s.¹³⁰ These systems include Workers Compensation, Automobile No-fault systems, Black Lung Disease Compensation, Childhood Vaccine-related Injury Compensation, and Birth-related Neurological Injury Compensation.¹³¹ These plans often provide full compensation for medical expenses and out-of-pocket wage loss within specified limits, provide benefits on a long-term pay schedule, and limit recovery for pain and suffering.¹³² This common structure reflects the combined influence of a social desire to compensate victims for medical expenses and lost wages while reducing overall costs.¹³³ Modern plans generally arise after public attention is drawn to a sympathetic set of victims and the prospects of compensation through the tort system threaten overwhelming delays or expenses for all parties involved.¹³⁴

The policy decision of whether to presume a service connection requires balancing the cost of over-providing care that is not service-connected with the risk of under-providing care to veterans whose disabilities are difficult to connect to military service. Put another way, it is the decision that the risk of veterans not receiving benefits they deserve outweighs the financial cost of providing additional care and compensation to veterans who should not receive them.

This policy consideration is rarely made in a vacuum and is often the result of a Congressional mandate to expand coverage for specific

128. See generally Allison Lin, *Warning: Don't Drink the Water: An Examination of Appropriate Solutions for Veterans Exposed to Contaminated Water at Camp Lejeune*, 4 VETERANS L. REV. 85, 101 (2012) (providing an analysis of prior presumptive service connections and an argument in support of creating a presumptive service connection for Camp Lejeune veterans).

129. *Id.* at 100.

130. See Robert L. Rabin, *The Renaissance of Accident Law Plans Revisited*, 64 MD. L. REV. 699, 703 (2005) (reviewing the state of no-fault compensation systems); see also Nora F. Engstrom, *Exit, Adversarialism, and the Stubborn Persistence of Tort*, 6 J. TORT L. 75, 78 (2013) (offering a robust critique of no-fault compensation systems, and finding that many of them do not prevent tort lawsuits or are encumbered by bureaucratic adjudication).

131. Rabin, *supra* note 130, at 703-13.

132. *Id.* at 725.

133. *Id.* at 726.

134. *Id.* at 703 (arguing that no-fault systems since the 1970s “became narrower in focus and more the product of classic interest group politics”).

groups.¹³⁵ VA committees that review presumptive service connection proposals are often tasked with assessing scientific evidence, but not with considering broader policy factors. In order to improve this decision making process, and to promote the welfare of disabled veterans, the following factors should be considered in assessing a presumptive service connection:

Difficulty of establishing the medical nexus between the injury and the veteran's military service. Is medical evidence establishing a service connection difficult to come by or unavailable? The more difficult it is to satisfy the requirements without a presumed service connection, the stronger the case in favor of creating a presumption.

Identifiability and cohesiveness of the veteran group. Is there a way to determine whether or not a veteran is in the group? The easier it is to identify the group of exposed veterans—typically by time and location—the easier it is to implement a presumed service connection.

Likelihood that toxic exposure occurred. Does scientific testing provide evidence that the level of toxins were actually dangerously high? The more substantiated the tests or scientific models are, the stronger the case in favor of a presumption.

The link between toxic exposure and specific illnesses. How much higher is the rate of illness within the identified group, and how established is the science? Courts, legislators, and administrators will often need to defer to scientific evidence drawing a correlation between exposure and illness, although the threshold is a judgment reserved for policy makers.

Prevalence of the disease. How likely is the disease to occur in the general population? The more likely the disease is to occur outside of the identified veterans group, the weaker the case for a presumed service connection.

Equitability analysis. Is there a strong social responsibility to right a wrong? A stronger duty is probably owed to groups that are combat related versus those that are not; for contaminants that were not mission necessary; and to those who have been unduly denied benefits for an extended period.

By considering the above factors, the VA can not only increase the likelihood that veterans who suffer from service connected disabilities will receive the benefits they deserve, but also that the costs of improperly imposing a presumptive service connection are minimized.

135. For a detailed description of the presumptive service connection process, see PANANGALA ET AL., *supra* note 116, at 4.

IV. CONCLUSION

Widespread contamination at U.S. military bases threatens the health and wellbeing of service members, military families, and civilian communities. Procedural enhancements that promote the ability of injured parties to recover, such as limiting the *Feres* doctrine, expanding the Camp Lejeune Families Act to cover service members' children, and creating broader presumptive service connections for injuries from toxic chemical exposure, will both increase the likelihood that the injured are made whole and also discourage toxic contamination in the future.