DIFFERENTAKES

NO. 84
SUMMER
2014

The "Invisible Casualty of War": The Environmental Destruction of U.S. Militarism

H. Patricia Hynes

Editors' note: Climate change heightens the imperative for thoughtful and strategic environmental activism. In this context, it is important to acknowledge the oversized responsibility of the U.S. military for greenhouse gas emissions and environmental destruction more generally. In this *DifferenTakes*, H. Patricia Hynes exposes the toxic legacy of U.S. militarism, including the environmental impacts of waging war and the waste generated by building and maintaining military bases, weapons, and maneuvers. Tackling this toxic legacy and dismantling militarism provide an important opportunity for peace and environmental movements to work together.

— Betsy Hartmann and Anne Hendrixson

In his contentious essay, "Tragedy of the Commons," American ecologist Garrett Hardin targeted overpopulation as the prime threat to sustainable life on our finite earth. Ironically, he made this claim in 1968 at the height of U.S. chemical warfare in Vietnam with dioxin-contaminated herbicides, an assault on nature so catastrophic that scientists coined a new word for this destruction—*ecocide*.[1]

Hardin, and many who consumed his thesis, failed to single out the very small, but politically powerful, population responsible for unparalleled environmental impact—the military. Per capita, the military is the most polluting human population; and the system of militarism is the most toxic of human enterprises.[2] Yet, a well-glued solidarity between the military, national security advisors, civilian defense contractors and government elites has cloaked this extraordinary debt of pollution, destruction of land, and exploitation of finite resources under the paternalistic mantle of *national security*.

Since the origins of recorded history, war chroniclers have told of tactical environmental destruction: polluting water supply, breaching dikes to flood enemy troops and fields, catapulting infected blankets into enemy garrisons, and so on. War breeds environmental destruction; and just as war victims and war tactics have changed in recent times, so has the scale of environmental destruction from war.

The casualties of war in the late 20th and early 21st centuries have shifted from combatant soldiers to civilians, with an estimated nine civilian deaths for every soldier death. The locus of war has moved from battlefields to urban and rural population centers,

pop dev Think. Act. Connect.
For people, environment and justice.

A publication of the
Population and Development Program
CLPP • Hampshire College • Amherst, MA 01002
413.559.5506 • http://popdev.hampshire.edu

causing massive numbers of residents to flee and imminent health crises of contaminated water, poor sanitation, inadequate health care, malnourishment, overcrowding, and sexual predation in refugee camps.[3]

Likewise, modern war and militarism have a staggering impact on nature and our lived environment—by the kinds of weapons used, the hazardous waste their manufacture and testing generate, the "shock and awe" intensity of industrial warfare, and the massive exploitation of natural resources and fossil fuels to support militarism. Consider this categorical profile of military pollution:

Chemical Waste Pollution

Nearly 900 of the U.S. Environmental Protection Agency's (EPA) approximately 1,300 Superfund sites are abandoned military bases/facilities or manufacturing and testing sites that produced conventional weapons and other military-related products and services, according to the 2008-2009 President's Cancer Panel Report.[4,5] This figure does not include the full U.S. military enterprise, namely, the Department of Energy's (DOE) radioactive waste from nuclear weapons and the nearly 1,000 U.S. bases worldwide where our military is not accountable for environmental protection.

The military Superfund sites comprise chemical warfare and research facilities; plane, ship and tank manufacture and repair facilities; training and maneuver bases; and abandoned disposal pits. Common contaminants include metal cleaning solvents, pesticides, machining oils, metals, metal-working fluids and chemical ingredients used in explosives. Dumped into pits, leaking from corroding containers, buried in unlined landfills, and left on test ranges, military toxics have leached into groundwater and polluted drinking water throughout the U.S.

The case example of perchlorate, a rocket fuel component, attests to the pervasiveness of military chemical waste. More than 12,000 military sites on which live explosive training takes place, release perchlorate into groundwater where it is exceedingly mobile and persists for decades.[6] Perchlorate has spread from military bases and defense and aerospace contractor facilities into drinking water systems and has also accumulated in leafy food crops and fruit irrigated with contaminated water. A recent study of powdered baby formula produced in the U.S. found that all types of both soy- and milk-based formula are contaminated with perchlorate, and that it has also been detected in breast milk and human urine throughout the U.S.[7] Over half the foods tested by the Food and Drug Administration contained perchlorate.[8] This toxin accumulates in the thyroid gland, where it can inhibit iodine transfer and result in iodine deficiency. Adequate iodine is essential for neurological development in fetuses, infants and children and for promotion of the thyroid hormone. A broad scientific consensus maintains that very low levels of perchlorate in food and water supply threaten the health of infants.

Nuclear Weapons Waste Pollution

Since the United States exploded the first nuclear bomb in New Mexico in 1945, more than 2,000 nuclear weapons have been tested worldwide in multiple environments: aboveground, underwater, underground, and in outer space. According to some estimates, the equivalent of more than 29,000 Hiroshima bombs have been tested in the atmosphere, discharging more than 9,000 pounds of plutonium—with a half-life of 24,000 years—into the environment.[9,10]

Hundreds of thousands of military personnel, civilian workers, their families, and people living downwind of test sites have been exposed to radiation at levels sufficient to cause cancer and other diseases. Compensation programs set up by the U.S. government place many obstacles in the way of claimants, including burden of proof, maximum limits on compensation and grossly inadequate underfunding, particularly in the case of compensating citizens of the Marshall Islands and Micronesia, both of which places were environmental sacrifice zones for the U.S. nuclear program.[11]

Most of the uranium mined for the U.S. nuclear program was in or near Navajo tribal lands in New Mexico. More than 1,000 regional mines and mill sites are now abandoned and unsealed sources of soil and drinking water contamination. Navajo miners worked without protection from exposure to uranium dust and still live with their families near the contaminated sites. The Navajo and nearby Laguna tribes suffer lung cancer, kidney disease, and birth defects at higher than average rates.[12] Even if all nuclear weapons were dismantled tomorrow, the radioactivity of waste from mining, manufacturing, and testing will endure for millennia.

By 1994, nearly 5,000 contaminated sites at the DOE nuclear weapons and fuel facilities had been identified for remediation. The now-closed Hanford nuclear weapons facility, which recycled uranium and extracted plutonium for nuclear weapons, is the largest nuclear waste storage site in the country and may be the world's largest environmental cleanup site, with a projected budget of $100 billion U.S. dollars. The operating plant regularly released radioactive iodine emissions and discharged more than 400 billion gallons of radioactive waste into adjacent soil and the Columbia River, exposing tens of thousands of people living nearby to some of the largest amounts of radiation in the world. Over the course of its 30-year operations, Hanford workers developed a rare blood cancer and other work-related diseases at elevated rates. Nearby residents, including the Yakima Nation, also experienced high rates of cancers, miscarriages and other health problems.[13]

The waste on the closed 600 acre site includes nearly five tons of plutonium and more than 53 million gallons of radioactive plutonium waste stored in underground tanks. According to DOE about 60 of the tanks have leaked and others may be leaking into soil and groundwater which flows into the Columbia River, a regional source of salmon, agricultural irrigation, and drinking water supply.[14]

Nuclear weapons' waste dwarfs all other hazardous waste in scale, toxicity, dispersion across the world, and cost. Moreover, it defies technical solutions for permanent environmental cleanup and environmental safety.[15]

Biodefense Research

In September and October 2001, anthrax spores sent in letters to politicians and media companies in the U.S. killed five people. The 2001 anthrax attacks set off a massive flow of federal funding, under the Project Bioshield Act, to federal, university, and private laboratories in all parts of the country for research on live, virulent potential bioweapons agents.

Between 2002 and 2008 approximately 400 facilities and 15,000 people were handling biological weapons agents in sites throughout the country, in many cases unbeknownst to the local community. The rush to spend some $70 billion by 2014 on bioterrorism research has raised many serious concerns. Among these are:

- Runaway biodefense research without an assessment of biowarfare threat and the need for this research;
- Militarization of biological research and the risk of provoking a biological arms race;
- Neglect of vital public health research as a trade-off for enhanced biodefense research;
- Lack of standardized safety and security procedures for high-risk laboratories;
- Increased risk of accident and deliberate release of lethal organisms with the proliferation of facilities and researchers in residential communities;
- Lack of transparency and citizen participation in the decision-making process; and
- Vulnerability of environmental justice communities as selected sites.[16]

Contrary to popular and public official statements, weaponizing biological agents is extremely difficult, requiring immense research money, effort, and expertise. Thus, the threat of biological terrorism with mass casualty—a threat that government has exaggerated without a basis in fact and without any rational threat assessment—diverts resources from true public health needs, such as gun control, reducing air pollution, and research on tuberculosis resistance and influenza. In March 2005, 750 prominent microbiologists, comprising more than 50 percent of U.S. scientists studying bacterial and fungal diseases, wrote their major funding agency, the U.S. National Institutes of Health, to argue that the agency's emphasis on biodefense research had diverted research away from germs that cause more significant disease. Between 1998 and 2005, grants for biodefense research had increased 15-fold. During the same period, grants to support non-biodefense germs that cause major sickness and death (such as tuberculosis-resistant microbes and influenza) dropped 27 percent.[17]

Climate Change and the Military

Only recently has the momentous issue of military fuel use and its massive role in global climate change come to the foreground. Militarism is the most oil-exhaustive activity on the planet, growing more so with faster, bigger, more fuel-guzzling planes, tanks, and naval vessels employed in increasingly intensive air and ground wars and war exercises. At the outset of the Iraq War in March 2003, the U.S. Army estimated it would need more than 40 million gallons of gasoline for *three weeks of combat*, exceeding the total quantity used by all Allied forces in the four years of World War I.[18] In 2006, the U.S. Air Force consumed as much fuel as U.S. planes did during the Second World War (1941-1945)—an astounding 2.6 billion gallons. A quarter of the world's jet fuel feeds the Air Force fleet.[19]

Researchers at the U.S. non-profit organization, Oil Change International, calculated the greenhouse gas emissions of the Iraq War and the opportunity costs involved in fighting the war rather than investing in clean technology for the years 2003-2007. Their key findings are unambiguous about the vast climate pollution of war and the lockstep bipartisan policy of forfeiting future global health for present day militarism.

- The projected full costs of the Iraq War (estimated $3 trillion) would cover "*all of the global investments* in renewable power generation" needed between now and 2030 to reverse global warming trends.
- Between 2003-2007, the war generated at least 141 million metric tons of carbon dioxide equivalent, *more each year of the war than 139 of the world's countries release annually*. Further, re-building Iraqi schools, homes, businesses, bridges, roads, and hospitals pulverized by the war, and new security walls and barriers requires millions of tons of cement, one of the largest industrial sources of greenhouse gas emissions.
- By 2008, the Bush Administration had spent 97 times more on the military than on climate change. As a presidential candidate, President Obama pledged to spend $150 billion over 10 years on green energy technology and infrastructure—less than the United States was spending in one year of the Iraq War.[20]

The U.S. military consumes as much as one million barrels of oil per day and contributes 5 percent of current global warming emissions, according to estimates by researcher Barry Sanders.[21] Keep in mind that the military has 1.4 million active duty people, or .0002 percent of the world's population, generating 5 percent of climate pollution. The U.S. military enterprise is far and away the largest single climate polluter and contributor to global warming.

Conclusion

The environment has been described as "the silent casualty" of war; one could also call it "the invisible casualty" of war. Governments at war honor the fallen and give lip service to the "collateral damage" of civilians injured and killed, while they treat military pollution as the necessary cost of waging war and disdain any responsibility for remediating environmental contamination. As the muscled-up Pentagon sees it, environmental protection laws hamstring their military training and war readiness and, thus, jeopardize national security. The touted *greening of the military,* including solar and wind energy on bases and research on alternative fuels, pales in comparison to the environmental damage it wreaks. In 2010, the Department of Defense spent an estimated $40 on the military for each dollar it spent to address climate change.[22]

The pieces of the federal budget that fund education, energy, environment, social services, housing, and new job creation, taken together, receive less funding than the defense budget. If, as many contend, the principal threat to world security in the 21st century is environmental degradation (through climate change, pollution, soil erosion, habitat loss and species extinction), then challenging the destruction and damage to the environment and the massive exploitation of oil and metal resources for the military-industrial war machine must become paramount in our work for peace.

Pat Hynes directs the Traprock Center for Peace and Justice in western Massachusetts. A retired environmental engineer and Professor of Environmental Health, she writes and speaks on issues of feminism, environment and militarism. Her current project is *Agent Orange: US Legacy and Responsibility* (http://traprock.org/agent-orange/).

Notes

1. David Zierler, *The Invention of Ecocide: Agent Orange, Vietnam, and the Scientists Who Changed the Way We Think About the Environment* (Athens, GA: University of Georgia Press, 2011), 18-21.
2. See the 7-part series on military pollution for more depth and detail, H. Patricia Hynes, "War and the Tragedy of the Commons," *Truthout,* August 4, 2011, http://www.truth-out.org/news/item/2491:war-and-the-tragedy-of-the-commons
3. Richard M. Garfield and Alfred I. Neugut, "The Human Consequences of War," in *War and Public Health*, eds. Barry S. Levy and Victor W. Sidel (Washington DC: American Public Health Association, 2000), 27-38.
4. Superfund is the name given to the federal environmental program established to address abandoned hazardous waste sites. It is also the name of the fund established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA). It allows the Environmental Protection Agency (EPA) to clean up such sites and to compel responsible parties to perform cleanups or reimburse the government for where EPA conducts the cleanup.
5. President's Cancer Panel. "Reducing Cancer Risk: What We Can Do Now," 2008-2009 Annual Report, April 10, 2010 (http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf), 77.
6. Organic Consumers Association. "Perchlorates: Report on Widespread Rocket Fuel Pollution in Nation's Food and Water." http://www.organicconsumers.org/perchlorate.htm

   Mae Wu, "Score One for Public Health: EPA Will Regulate Rocket Fuel in Drinking Water," *Natural Resources Defense Council Blog,* February 1, 2011, http://switchboard.nrdc.org/blogs/mwu/score_one_for_public_health_ep.html
7. President's Cancer Panel. "Reducing Cancer Risk," 2008-2009 Annual Report, 77.
8. U.S. Food and Drug Administration, *2004-2005 Exploratory Survey Data on Perchlorate in Food*. http://www.fda.gov/Food/FoodborneIllnessContaminants/ChemicalContaminants/ucm077685.htm#table3
9. Half-life refers to the time required for the radioactivity of a specific isotope to fall to half of its original value.
10. "General Overview of the Effects of Nuclear Testing," Comprehensive Test Ban Treaty Preparatory Commission, http://www.ctbto.org/nuclear-testing/the-effects-of-nuclear-testing/ general-overview-of-theeffects-of-nuclear-testing/
11. President's Cancer Panel. "Reducing Cancer Risk," 79, 83-85.
12. Ibid, 81.
13. For more on the Hanford site, see Meredith Crafton, "Why a Nuclear Renaissance Threatens our Bodies, the Environment and our Future," *DifferenTakes* no. 56, Winter 2009. http://popdev.hampshire.edu/projects/dt/56
14. President's Cancer Panel. "Reducing Cancer Risk," 80-81.
15. Robert Alvarez, "A primer: Military nuclear wastes in the United States," *Bulletin of the Atomic Scientists,* February 24, 2014. http://thebulletin.org/primer-military-nuclear-wastes-united-states
16. H Patricia Hynes, "Biological Weapons: Bargaining with the Devil," *Truthout,* August 18, 2011. http://www.truth-out.org/news/item/2693:biological-weapons-bargaining-with-the-devil

    Lynn C. Klotz and Edward J. Sylvester, *Breeding Bio Insecurity: How U.S. Biodefense Is Exporting Fear, Globalizing Risk, and Making Us All Less Secure* (Chicago: University of Chicago Press, 2009).
17. Debora MacKenzie, "Top US biologists oppose biodefence boom," *New Scientist,* March 1, 2005, http://www.newscientist.com/article/dn7074-top-us-biologists-oppose-biodefence-boom.html#.U4j3kpiYndl
18. Barry Sanders, *The Green Zone: The Environmental Costs of Militarism* (Oakland, California: AK Press, 2009), 51.
19. Ibid, 50, 61.
20. Oil Change International, *A Climate of War: The War in Iraq and Global Warming, March 2008,* http://priceofoil.org/2008/03/01/a-climate-of-war/
21. Sanders, *The Green Zone*, 68.
22. William Hartung, "Greening the Military, or Greening America," *Huffington Post,* October 26, 2010, http://www.huffingtonpost.com/william-hartung/greening-the-military-or_b_774307.html