

# Environmental Contamination in Indian Country: Assaults on Public Health, Native Lands, and Tribal Sovereignty

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## Executive Summary

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Relatively little is known about environmental contamination on American Indian reservations in the United States. Yet the problem is widespread in Indian Country. I used specialized software to reveal that **there are as many as 1,250 Superfund sites (sites with uncontrolled hazardous waste) and almost 4,000 facilities that emit toxic chemicals into the land, air, and water on or within five miles of American Indian lands in the United States.** A literature review that I conducted as part of my study strongly suggested that American Indian public and environmental health is consistently put at risk and sacrificed for economic development that only rarely benefits our tribal nations. **Most often, the sites that contaminate our lands benefit only the dominant, non-Indigenous society, and the direct beneficiaries of these enterprises tend to live at a distance from the Indian lands they are contaminating.**

One of the contaminated sites exists on the reservation of my Tribe, the Choctaw Nation, in a town in which I have kin ties. Just south of the town of McAlester in the northwestern part of my reservation, the U.S. military built the McAlester Army Ammunition Plant (McAAP) more than a half-century ago. The McAAP manufactures, stores, and decommissions munitions for the U.S. military. **Residents speculate that the widespread environmental contamination from the McAAP's actions have resulted in disproportionately high rates of cancers and neurodegenerative disorders.** Alarmed by the threats the plant seems to be posing to the health and well-being of our tribal citizens, lands, and wildlife, Choctaw Chief Gary Batton approached me about his concerns when I was in high school and had developed a strong interest in environmental science. Chief Batton sought a young Choctaw to investigate whether and to what extent the McAAP was harming the environment and our people.. Grounding this project in the frameworks of settler colonialism and Native land theft, I used interdisciplinary methods and citizen-science approaches that involved community members in the design and research of the project and the formulation of the project's findings. My methods included interviewing residents, collecting and analyzing water samples, installing air quality sensors, analyzing promotional material and technical reports produced by the McAAP, and evaluating federal and community environmental reporting tools.

In this report, **I argue that these environmental assaults on the Choctaw Nation are an expression of ongoing Native Land theft, aided by the inadequate regulations and the politicization of environmental data.** I suggest that the Choctaw Nation's Environmental Protection Service (CNEPS) implement stricter environmental regulations for the Choctaw Nation reservation, establish Choctaw regulatory and enforcement structures for violations at sites such as the McAAP, and implement a robust citizen science environmental sampling program. In addition, I recommend that my collaborators and I work with the Choctaw Nation judiciary to develop laws that

will better protect our people, lands, and animals. These actions will help ensure Choctaw public and environmental health and wellbeing are prioritized and protected.

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**“Today, hundreds of Indian Nations are being approached by both the waste disposal industry and the United States Government in search of new dumping grounds for the unwanted toxic, nuclear, medical, and solid waste of industrial society.”<sup>1</sup>**

Bradley Angel  
Greenpeace Founder

## **Background on the Plant and Study Objectives**

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In 1942, the Department of Defense (DOD) built the Naval Ammunition Depot seven miles south of McAlester, Oklahoma, in the Choctaw Nation. During World War II, the facility served as the “main location for the production and storage of ammunition for the armed forces in the United States.”<sup>1</sup> In 1977, the DOD turned over the munitions management to the US Army and the facility became the McAlester Army Ammunitions Plant (“McAAP”). Today, the McAAP encompasses seventy square miles in the northwestern Choctaw Nation and has an economic impact of more than \$463 million.

As a citizen of the Choctaw Nation, I was personally prompted by my chief to investigate the impact of the McAAP on the health of the Choctaw people and homelands. My top three goals for this research are that it will instigate robust tribal citizen participation in additional data collection and analysis; initiate remediation, led by our people, of the plant’s contamination of our reservation; and legitimize treatment for the many Choctaws who are suffering adverse effects from the non-Indian-produced industrial contamination that sits at the core of this study.

## **Methods**

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Because of how broad and complex is the issue of environmental contamination on Native lands, this project is incredibly interdisciplinary. I engage with, among other fields, anthropology, American Indian studies, environmental science, geosciences, history and health sciences. My methods included:

- ◆ **Water sample collection and air sensor installation** to document for the first time the impact of the McAAP on the environmental health of the surrounding lands and communities.
- ◆ **Interviews and community engagement** to assess community concerns and perspectives, collaborate on environmental sampling (tap water collection and air sensor installation), share preliminary findings, and co-produce solutions.

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<sup>1</sup> Angel, Bradley. 1991. “The Toxic Threat to Indian Lands.” *Greenpeace*. [www.ejnet.org/ej/toxicthreattoindianlands.pdf](http://www.ejnet.org/ej/toxicthreattoindianlands.pdf).

- ◆ **Political and ethnographic analysis** of technical environmental reports, promotional materials released by the McAAP and analysis of statements/interviews by McAAP leaders and employees.
- ◆ **Environmental and geospatial data analysis** to document the type and extent of contamination on Native lands across the United States using ArcGIS Online.

**Historical analysis**, involving both primary and secondary sources, to situate these present-day assaults against Native lands within the long histories of Choctaw dispossession, land theft, and settler relations with and federal policies enacted on American Indian tribal nations.

## Findings

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**Key Observation #1:** For decades, community members have speculated and continue to speculate that the plant has **augmented their rates of cancers and neurodegenerative disorders**, but almost no research has been conducted to determine this link or its causes.

- ◆ “Diagnoses of autoimmune, neurological, and cancers seem to many in McAlester. Several years ago, at a first visit with a new doctor to McAlester, he made the comment to me that so many people in this area of the state have MS/ALS. In our small talk we both agreed there has to be a connection to the McAAP.” – McAlester Resident
- ◆ The McAAP releases hundreds of thousands of pounds of toxins into the environment each year, including known and probable carcinogens, neurotoxins, and other compounds known to cause adverse health effects.<sup>2</sup> However, no academic or other studies investigate the relationship between the McAAP and public health. The only media coverage of resident health concerns related from the McAAP is from a 2017 article in *The Oklahoman*.<sup>3</sup>
- ◆ I could not find city or county-wide data on neurodegenerative diseases in Oklahoma, but county-wide data on cancer rates from the National Institutes of Health’s National Cancer Institute reveal that McAlester has cancer rates in the highest quantile of the United States (top 20%) for brain and other nervous system, esophagus, liver and bile duct, lung and bronchus, and ovary cancers. Cancers in the second highest quantile (40-20%) include kidney and renal pelvis, oral cavity and pharynx, and pancreatic cancer.<sup>4</sup>

**Key Observation #2:** I documented for the first time the **distinct impact that the McAAP is having on the surrounding environment**. This data is vital to obtaining funding and other support for cleaning up this part of our reservation. Without such data, remediation efforts are nearly impossible.

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<sup>2</sup> The McAAP only makes public data for chemicals designated under the Toxic Releases Inventory. Of these chemicals the known and probable carcinogens released by the McAAP include lead and lead compounds, trinitrotoluene, nickel, styrene, methyl isobutyl ketone, and epichlorohydrin. Neurotoxins include styrene, manganese, toluene, xylene, and 1,1,1-trichloroethane (ECHO. 2019. “Chemicals and Associated Health Effects,” *United States Environmental Protection Agency*).

<sup>3</sup> Pemberton, Tricia. 2017. “Neighbors unfazed by bomb blasts at McAlester Army Ammunition Plant.” *The Oklahoman*. August 22, 2017.

<sup>4</sup> National Cancer Institute. “State Cancer Profiles.” U.S. Department of Health and Human Services, National Institutes of Health. Accessed January 4, 2022. <http://statecancerprofiles.cancer.gov/incidencerates/index.php?stateFIPS=40>.

- ◆ Using established environmental-science methods, I collected 17 surface and tap water samples from around McAlester and the McAAP and tested them for 21 heavy metals<sup>5</sup> using inductively coupled plasma mass spectrometry in the Higgins lab at Princeton. More than half of the assessed metals show statistically significant differences in concentration with increasing distance from the McAAP, indicating that proximity to the McAAP increases the concentration of these metals.<sup>6</sup>
- ◆ At sites close to the McAAP, aluminum – which is emitted in large quantities by the McAAP – was revealed to exist in concentrations that are 13 times higher than the EPA National Drinking Water Regulation limit. Aluminum is linked to neurodegenerative disorders. For decades, McAlester residents have noticed disproportionately high incidences of neurodegenerative disorders in their community.
- ◆ While this sampling represents an important first step towards data generation and analysis on the McAAP's impact on the environment surrounding McAlester, in many ways it has raised more questions than answers. Further research and a more robust study need to be conducted to more fully assess the McAAP's impact on public and environmental health.

**Key Observation #3:** Environmental contamination in Indian Country is **more widespread than previously believed.**

- ◆ In 2014 journalist Terri Hansen (Winnebago Tribe) reported on the widespread incidence of Superfund sites – the most contaminated sites in the United States – in her article, “Kill the Land, Kill the People: There Are 532 Superfund Sites in Indian Country!”<sup>7</sup> While her methods for determining this statistic are unclear, Hansen reports 521 Superfund sites in the Navajo Nation and 11 across other Tribes. This statistic has been used to bring greater attention to the problem of widespread contamination on Native lands, a problem that is largely ignored by the larger, non-Indigenous society.<sup>8</sup>
- ◆ I used ArcGIS Online to calculate 1,250 Superfund sites on or within 5 miles of 302 different Tribal Nations across Indian Country.<sup>9</sup> This is significantly more sites than the number calculated by Hansen, and it shows that these sites are much more widespread across Indian Country, affecting not only 12 but as many as 302 Tribal Nations.
- ◆ Assessing only contaminated sites that lie directly on Indian lands is an inadequate metric of assessing contaminated sites in Indian Country. Because many Tribal Nations' legal reservation lands are incredibly small, especially the reservations of the hundreds of Rancherias in

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<sup>5</sup> Water was assessed for aluminum, iron, barium, cadmium, vanadium, lead, chromium, cobalt, manganese, nickel, rubidium, lithium, uranium, potassium, arsenic, zinc, strontium, calcium, copper magnesium, and sodium.

<sup>6</sup> The metals with statistically significant differences in concentration with increasing distance include aluminum, iron, barium, vanadium, lead, chromium, cobalt, manganese, nickel, rubidium, potassium, and uranium.

<sup>7</sup> Hansen, Terri. 2014. “Kill the Land, Kill the People: There Are 32 Superfund Sites in Indian Country.” *Indian Country Today*. Updated 2018. Accessed April 2022. <https://indiancountrytoday.com/archive/kill-the-land-kill-the-people-there-are-532-superfund-sites-in-indian-country>.

<sup>8</sup> See Gilio-Whittaker, 2019; Ditmore 2019; Simmons 2017.

<sup>9</sup> Data on Superfund sites and TRI facilities comes from the Environmental Protection Agency's (EPA) Facility Registry Service, Superfund Enterprise Management System and Toxic Release Inventory, both were last updated October 2021. Data on Tribal lands comes from Esri Federal Data extrapolated from the U.S. Census Bureau last updated April 10, 2022. Both state and federally recognized tribal lands were used to generate the statistic of 1,250 Superfund sites and 3,917 TRI facilities on Native lands. Using only federally recognized tribal lands yields 1,135 Superfund sites and 3,400 TRI facilities.

California, their tribal reservation lands often only legally compose 0.5 square miles. Including sites that are within 5 miles of the legal boundaries of Native lands takes into account not only the fluidity of tribal nations and the reality that tribal members often live close to but not directly on the reservation but also the reality that contaminants themselves travel across borders. Sites within 5 miles of Indian Country directly impact our people, and although these sites may not sit on our lands, they nevertheless constitute a pressing environmental-justice issue for our people.

**Key Observation #4:** Inadequate environmental regulations, the politicization of environmental data, and a lack of oversight of remediation actions **facilitates the contamination of Native lands.**

- ◆ **Environmental releases of toxic chemicals at sites like the McAAP are inadequately regulated.** “The EPA’s system for determining how much chemical burning is safe amounts to little more than educated guesses,”<sup>10</sup> and does not reflect the continued accumulation of toxics at sites like the McAAP that emit toxics into the atmosphere on a daily basis. Permits for emitting pollutants are not based on actual environmental testing but instead on computer simulations. “Regulators admit little work has ever been done to confirm whether those simulations actually predict emissions levels [ ], or whether those emissions are indeed safe.”<sup>2</sup> Thus, **even if the McAAP’s releases are legal, these releases cannot be construed as safe for public and environmental health.**
- ◆ Further, remediation of Superfund sites at military facilities is abhorrent. William Frank, former senior attorney for the EPA’s Federal Facilities Enforcement Office, reveals that “they clean [military Superfund sites] up in the cheapest, quickest possible manner.” **Often “they’ll drive up in a Jeep, take a look out the window and say, ‘Eh, no further action,’” rather than actually cleaning up the pollution** (Lustgarten 2017). Often the only action at these sites “has been to fence off contaminated areas,” as the McAAP has done with multiple contaminated sites on its property (Lustgarten 2017). ProPublica’s investigation of remediation at military facilities “suggests that since Congress directed the Department of Defense to fix its contaminated sites, the agency has used an array of bureaucratic tools to shorten the list by almost any means legally available” (Lustgarten 2017).
- ◆ Treating remediation in the ways the DOD does – as individual, bounded sites of contaminants sitting within uncontaminated Lands – generates the false impression that contaminants can be isolated and removed. In reality, the boundaries between the “contaminated site” and “clean sites” are imagined. Indeed, as Havlick describes, contaminants don’t neatly obey containment but instead flow with the winds and waters, making their way outside of the borders of the McAAP and into the community of McAlester. Indeed, contaminants “disobey boundaries, appear where they shouldn’t appear, alter environments, and enter communities and bodies without permission” (Boudia et al. 2018, 167).

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<sup>10</sup> Lustgarten, Abraham. 2017. “How the Pentagon's Handling of Munitions and Their Waste Has Poisoned America.” *ProPublica* and *Huffington Post*. [https://www.huffpost.com/entry/open-burns-ill-winds\\_n\\_5970112de4b0aa14ea770b08](https://www.huffpost.com/entry/open-burns-ill-winds_n_5970112de4b0aa14ea770b08).

## **Additional Conclusions**

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Especially in the context of environmental contamination in Indian Country, it is important to consider that remediation needs to mean more than just the cleanup of contaminants themselves. Environmental scientists carrying out remediation projects must consider the ethics beyond what is quantifiable. Truly remediating these Choctaw lands requires considering the long legacies of land theft. It also necessitates the remediation of the severed relationships between Choctaws and our lands.

In pursuing actions to remediate the environmental contamination in McAlester and prevent further harm from occurring there, it is important to be mindful of the fact that “how we approach restoration of land depends, of course, on what we believe ‘land’ means . . . If land is just real estate, then restoration looks very different than if land is the source of a subsistence economy and a spiritual home.”<sup>11</sup> We Choctaws have a close relationship to our land. There is no question that the vast majority of us care deeply about nearly every aspect of the health of our land. We also care deeply about the health of our people and lands. I am confident that we will be able to successfully harness the strength that enabled us to survive the Trail of Tears and other traumas toward the end of achieving environmental justice for our people.

## **Policy Recommendations**

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- ◆ The Choctaw Nation’s Environmental Protection Service (CNEPS) is an office within my tribal government that is relatively new. Currently it is in the process of developing environmental codes. While working collaboratively with CNEPS throughout this study, I recommend continuing that collaboration toward the goals of developing and implementing stricter environmental regulations for our reservation, establishing Choctaw regulatory and enforcement structures for violations at sites such as the McAAP, and implementing a robust citizen science environmental sampling program.
- ◆ I recommend that CNEPS, tribal citizens, and I work with our tribe’s judiciary, the Choctaw Nation tribal council, to develop laws that will better protect our people, lands, and animals. These actions will help ensure Choctaw public and environmental health and wellbeing are prioritized and protected.
- ◆ Our K-12 reservation schools and our reservation-based colleges should work together with our Tribe to create and implement robust environmental science and citizen science units. Students of all ages and educational levels should be instructed in environmental testing and anthropological methods such as participant-observation and interviews that prioritize the perspectives, aspirations, and theories of tribal citizens.
- ◆ Members of Congress and key executive agencies such as the White House, the Department of the Interior, and the Bureau of Indian Affairs should be leveraged to collaborate with my Tribe and other tribes both to stop polluters from using American Indian reservations as

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<sup>11</sup> Kimmerer 2013, 328.

dumping grounds for industrial contamination and to prioritize the cleanup of Indian reservations.

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