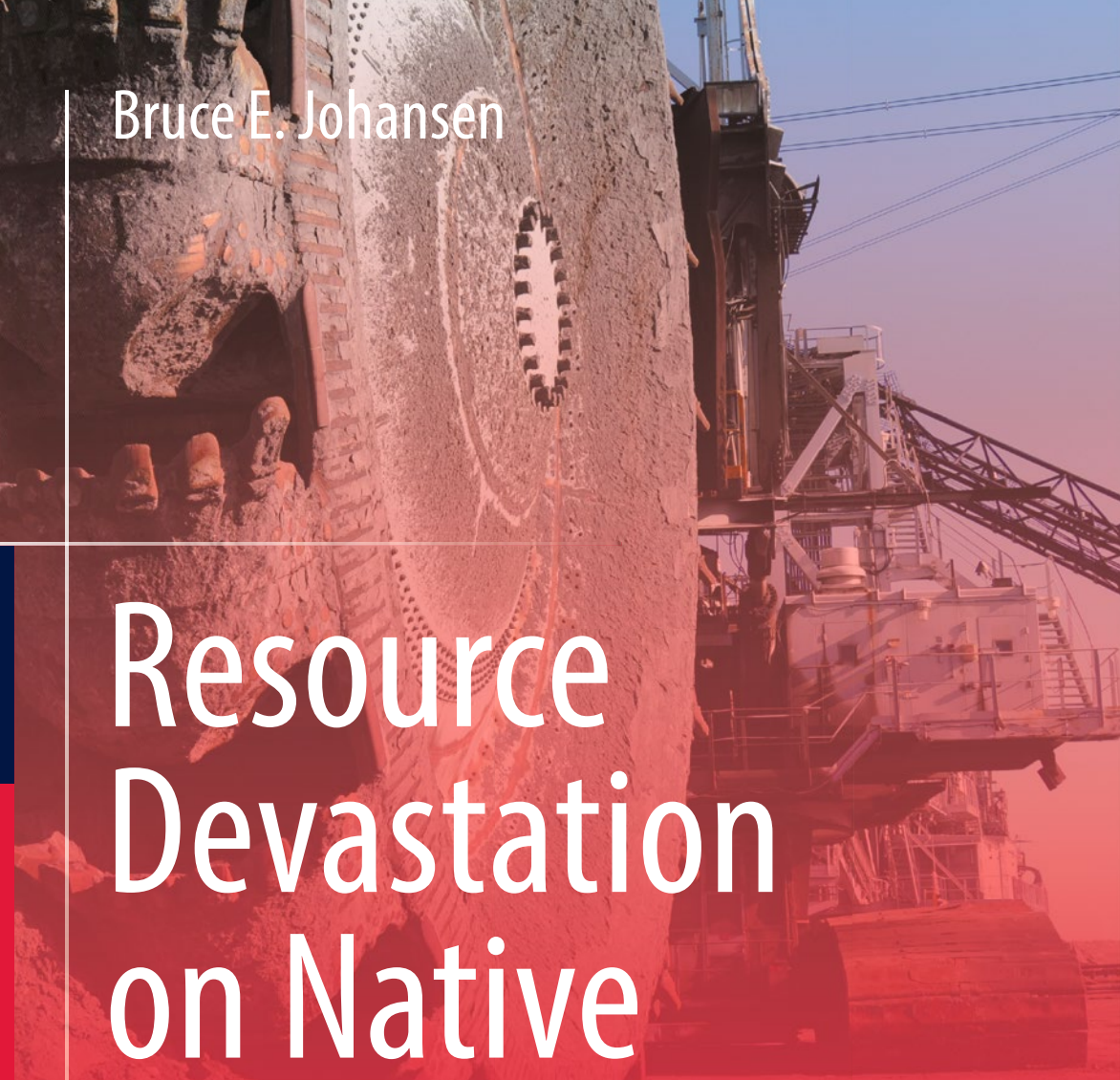

Bruce E. Johansen

Resource Devastation on Native American Lands

Toxic Earth, Poisoned People

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Contents

Chapter 1
Introduction

By the beginning of the third millennium on the Christian calendar, observers of humanity's relationship to the Earth began to realize that a very important breach of prior conditions had been reached. Humankind had taken commanding control over the Earth and its future. What had been described as natural disasters became human-aided, whether climate-related, the spread of pollution, and many other manifestations of environmental dysfunction. People who observe Earth's condition now came to speak of the Anthropocene, when human change upon the Earth dominates nature. The Earth, for example, has always experienced climate change, and disasters, but never before with the speed and endurance of human-aided cycles.

At the same time, more people began to understand that the planet's epical problems cannot be solved by almost 200 countries on Earth in isolation, and most assuredly not in bloody war with each other. To solve global warming, for example, the peoples of the Earth also must learn how to end nationalism as a motor of war, as well as we move away from combustion of fossil fuels. This will not be at all easy, since it goes against nearly every inclination of human beings' behavior with each other since we discovered the use of weapons and language. Ever since the conflict was waged with sticks and stones, the destructive power of nuclear weapons has grown to the point where no one dares use them except a deranged, unhinged leader. At the same time, in addition to the existential threat of nuclear apocalypse, combustion of fossil fuels steadily warms the atmosphere, presenting another prospective apocalypse that demands solution very quickly on nature's clock**.** Who is ready to face the future framed in these terms? How do we learn to satisfy our material needs without ruining our home? Perhaps we begin this journey of reformation by studying the histories of the world's indigenous peoples instead of forcing them to minimal survival at the dangerous edges of an economic system that irradiates their bodies and crushes their souls. We must learn rather than exploit, a massive challenge to a human race with a history of forcing its indigenous wisdom bearers into poverty since *human* expansion around the world has been characterized by *inhumanity.*

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We present here a sordid, wrenching description of indigenous peoples and their homelands driven close to extinction by industrial humankind's drive to exploit the Earth's natural resources for use by an industrial state that grows pell-mell, driven by the human will to profit from others' lives and labor.

"With our fertilizer plants, we fix more nitrogen than all [other] terrestrial eco-systems combined [as well as growing dead zones in lakes and oceans], with our plows and bulldozers, we move around more earth than all the world's rivers and streams. In terms of biomass, the numbers are staggering. People now outweigh wild mammals by ratio of more 8 to 1. Add in our domesticated animals (mostly cows and pigs, and the ratio is more than 23 to 1. . . .All sorts of catastrophes straddle the line between man and nature" (Kolbert 2021, 16). In search of oil by "fracking," earthquakes shake areas where the natural observations of geology do not explain them. Intense pandemics such as COVID-19 spread and mutate around the world with a speed heretofore unknown with the crowding of human populations and the speed and ubiquity of jet aircraft. People have always endured plagues, and have raced to stay ahead of their ability to mutate even as we chase them with medicine, even as they sweep the world with unprecedented speed. Within a month of its first detection in Wuhan, China, COVID-19 had swept into at least 26 countries (Kolbert 2021, 16). In another 10 months, a million people had died, as variants (mutations) were competing with vaccines for dominance. Within another few. Months, the death toll from COVID had exceeded one million in the United States *alone*. These are large numbers, but not so many in proportion to the 8 billion or more people who populate the Earth. No doubt a worldwide nuclear war sparked by runaway nationalism would kill more than that, while blighting humanity's future with deadly radiation.

The unique aspect of such a war would be its human creation. Nuclear power begins with uranium most often mined on the lands allotted to Native American peoples who have been suffering its effects for almost a century by now. This book visits only some of uranium's killing fields.

Another human-made catastrophe that often victimizes human beings who are least able to cope with it has been the growing, world-girding effects of climate change. These changes often victimize indigenous peoples more often and with greater intensity than others.

This work examines environmental problems stemming from resource exploitation on Native lands from Nunavut and the Canadian Arctic southward through the United States. It is mainly contemporary, but all of these problems have historical roots. The work focuses on Native resistance to resource colonization that is addressing the many environmental crises across Native North America that have become a plague upon many indigenous peoples.

Pollution nearly inevitably follows resource exploitation, Native peoples in the United States today often live on ruined, exhausted land, suffering toxic consequences. *As of June 5, 2014, 532 (about 40%) of 1322 Superfund sites in the United States were in Indian country (*Hansen 2014*). This book examines a wide variety of serious environmental issues affecting scores of Native peoples in Alaska, Canada, and in the United States of America.*

Many reservation residents are dealing with illnesses due to the use of their lands for several decades as industrial dumps and mine sites. This work examines the acute effects of exposure to dioxins, PCBs, and other persistent organic pollutants in several Native communities, most acutely in the Arctic, where Native consumption of sea life (their traditional diet) has been curtailed and Inuit mothers are sometimes warned not to breastfeed their infants. Mothers' milk may be toxic. This book also examines the present and prospective effects of global warming (again, most acute in Arctic areas of Canada, and Alaska) on Native peoples. Salmon, for example, are imperiled by warming water. The Arctic, which looks so pristine to the untutored eye, is also experiencing the world's most rapid rate of climate change. An Inuit culture based on ice is melting. and many Inuit hunters have been injured or killed by falling through thin ice.

I have been writing about indigenous peoples' resistance to changes in their homelands for 50 years, starting with a critique of Earth Day *vis a vis* tribal people bombed and poisoned by chemicals in the Vietnam war as editor of my college newspaper at the University of Washington in 1970. I also began by covering Puget Sound Indian fishing rights as an intern at the *Seattle Times*. Since then, I have produced copious books, magazine and academic-journal articles, as well as newspaper articles describing the struggle to change how to change energy production, popular perceptions, political practices, technology, et al. to accommodate sustainable ways of life before it is too late.

This pursuit has taken me into several academic fields, including environmental studies, the histories and legacies of indigenous peoples with the sciences and politics that comprise today's debates about climate change. I am one of very few academic researchers and writers who can summarize scientific and technological knowledge in a context of indigenous peoples' histories and cultures into a narrative that can be understood and appreciated by people in many fields of study and levels of endeavor. All of this has been undertaken within a context of indigenous environmental knowledge.

I was working on my first book, *Wasi'chu: The Continuing Indian Wars*, in 1976 when a Navajo elder, Emma Yazzie, of the Coalition for Navajo Liberation introduced me to uranium and coal mining in Navajo Country. Women, especially elders, have been prominent in modern-day Native social and political movements. Yazzie, who was more than 70 years of age when I first met her (I was 26 years old at that time, in 1976.), Yazzie became an important Navajo leader against coal strip mining as her herds of sheep were devastated by mining pollution (Johansen and Maestas 1979, 143–144).

Yazzie led Roberto Maestas and me to the floor of a strip mine near her hogan, disregarding the orders of mine security, to watch draglines at work, saying: "Don't go alone. They'll turn you away. They're afraid of me!" (Johansen and Maestas 1979, 145). Yazzie showed her disgust at the mining by removing surveyors' sticks and dumping them on supervisors' desks.

Over the years, Yazzie had found herself living between coal strip mines and the Four Corners coal-fired electrical plant, which (while it was operating, until November 18, 2019) put out a polluting plume so large that NASA astronauts

observed it from Earth orbit. Yazzie's sheep had, by 1976, become small, skinny, and sickly, with gray wool. The Four Corners plant exported power to Los Angeles, Phoenix, Las Vegas, Nevada, and other cities in the region. Yazzie's Hogan had no electricity. The transmission lines buzzed above Emma Yazzie's hogan, which contained not so much as a single light bulb.

When she gave me this tour, Yazzie was standing under the largest methane "hot spot" in North America. This area on and near the Navajo Nation, which stands out on satellite photographs taken between 2003 and 2009, had been created by coal mining and coal-fired power generation from the Four Corners Power Plant on the reservation and the San Juan Power Plant nearby. Some of this power generation later was shut down to avoid expensive pollution controls. The methane "hot spot," which covers about 2500 square miles, roughly half the area of Connecticut not far from the intersecting borders of Colorado, Arizona, New Mexico, and Utah, was described in the October 16, 2014 issue of *Geophysical Research Letters* (Kort et al. 2014). Before it closed, the Four Corners methane plume by itself comprised 10% of U.S. methane emissions, according U.S. Environmental Protection Agency estimates (Minard 2014).

Yazzie did not know the academic language of resource colonization and exploitation, but she *did* know that the plume of smoke and ash that blew upslope near her hogan stunted the growth of her lambs and stained their coats dirty brown. She called the mine and the power plant a monster and a harbinger of death.

During the 1940s, representatives of the companies that mined some of the uranium which powered the United States' growing nuclear arsenal (and, later, early nuclear power plants) had arrived on the Navajo Nation offering prosperity through mining jobs. Left unstated was the eventual cost of this uranium boom: an epidemic of cancer (especially lung cancer) in a place that had never known such a thing. Until recently, cancer had no name in the Navajo language. Today it rides the winds across the reservation as yellow dust from huge piles of tailings (mining waste). The mining and milling of uranium is now illegal on Navajo land, but a deadly legacy remains.

Uranium mining has been only one part of energy colonization on the Navajo Nation that led the U.S. Energy Department during the 1970s to call it a "national sacrifice area" (Johansen and Maestas 1979, 143, 170). A large part of this sacrifice involved the use of plentiful coal reserves under the Navajo Nation to generate electricity, thrumming along transmission lines to Los Angeles and other cities, over hogans that had no power at all, meanwhile polluting the air that Emma Yazzie and many other Navajos breathed. Navajos continue to battle for a cleaner environment; in 2015, the Environmental Protection Agency announced a $168 million settlement that may remedy part of the pollution over several years around the Four Corners plant that heretofore had ruined Yazzie's flock 40 years before. Neighbors of the plant are still suffering from asthma and other health maladies with inadequate access to health care.

Near the town of Page, the Navajo Generating Station, then the largest coal-fired plant in the U.S. West (It was demolished during December 2020) poured plumes of carbon dioxide, lead, mercury, nitrogen oxide, as well as other metals from three

775-foot stacks. Abraham Lustgarten of ProPublica reported, in 2015, that "Every hour the Navajo's generators spin, the plant spews more climate-warming gases into the atmosphere than almost any other facility in the United States. Alone, it accounts for 29% of Arizona's greenhouse-gas emissions from energy generation. The Navajo station's infernos gobble 15 tons of coal each minute, 24 hours each day, every day." According to the Navajos' government, cancer rates in the area have doubled since the plant began operations four decades ago (Lustgarten 2015). "You are trying to raise your family in this environment, and you realize this is one of the top 10 dirtiest plants in the nation and it's been spewing all this stuff for 40 years," said Nicole Horseherder, a Navajo environmental activist. "Who is going to speak up and say, 'Look, we are paying a huge cost so that the state of Arizona can have its profits, have its taxes, have its electricity, have its water?'" (Lustgarten 2015).

When reservations (or, in Canada, reserves), were assigned to American Indians in the mid-to-late nineteenth century the fossil-fuel age was just beginning. The uses of uranium were largely unknown, and the federal governments of the United States and Canada, as well as corporations, had only the slightest inkling of what mineral and fuel riches lay under the reservations' often-barren soil. By the late twentieth century, however, these riches were being exploited, and many Native nations became virtual resource colonies.

A report from the Federal Trade Commission distributed during October 1975 said that an estimated 16% of the United States' uranium reserves that were recoverable at market prices were on reservation lands; this was about two-thirds of the uranium on land under the legal jurisdiction of the United States federal government. There were, at that time, almost 400 uranium leases on these lands, according to the F.T.C., and between 1 million and 2 million tons of uranium ore a year, about 20% of the national total, was being mined from reservation land.

The toxic legacy of Native North America is pervasive but largely invisible to most of us. Many toxic sites are located in out-of-the-way rural areas largely forgotten by the majority of America that nonetheless supplied its industries with the rudiments of manufacturing for the better part of a century before being closed and cast aside.

Examples abound from sea to shining sea. To cite only one of many, zinc and lead were mined within the jurisdiction of the Quapaw in Picher, Oklahoma, until 1967, when, according to a retrospective by Terri Hansen on the Indian Country Today Media Network, "mining companies abandoned 14,000 mine shafts, 70 million tons of lead-laced tailings, 36 million tons of mill sand and sludge, as well as contaminated water, leaving residents with high lead levels in blood and tissues. Cancers skyrocketed, and 34% of elementary-school students suffered learning disabilities" (Hansen 2013). The area was designated as the Tar Creek Superfund site in 1983, but Picher initially was skipped for remedy and assigned to a special environmental hell: too toxic to clean up. Instead, the federal government offered a rock-bottom buyout that paid people to leave town.

This is not an exceptional case. A detailed catalog of such environmental atrocities would fill a very thick volume. What follows in this book is merely a sampler from across North America. I have added a few that are not on Indian reservations

(such as dioxin in Vietnam and pig waste in North Carolina) to illustrate the pervasive nature of these types of pollution.

Travel nearly anywhere in North America, and toxicity has become heritage. In Alaska, the Salt Chuck Mine, a source of copper, gold, palladium, and silver between 1916 and 1941, contaminated the Kasaan (Alaska) harvesting grounds for fish, clams, cockles, crab, and shrimp. For decades, the Native people were unaware that their harvests were saturated with effluvia from mine tailings. Even after the area was declared a Superfund site, Pure Nickel, Inc. sought to reactivate mining in 2012.

To many Native Americans—those with a naturalistic philosophy—mining is the ultimate insult, a rape of Mother Earth transformed into mother lode, thus the number and intensity of protests by indigenous peoples against mining across Turtle Island, the Iroquois name for North America. The mining of uranium is the most notably odious; it is such a natural breach that Navajo cosmology warns against it. Mercantile capitalism has no such qualms about mining. It is, in fact, the very basis of a system that survives and thrives by making and selling things, thus the germ of conflict: Native American homelands contain vast stores of exploitable natural resources that corporations find useful and profitable, often available from the federal government at prices far below market value—or so they were until the "other" started talking back.

The catalog of mining's toxic legacy on Native American lands is vast. Many Native peoples across North America have organized against mining on their homelands, notably in Alaska, where the world's largest sockeye salmon run could be imperiled by the proposed Pebble Mine, potentially the largest gold and copper strip mine on Earth, which could produce as much as 80 billion pounds of copper. A permit for that mine was denied in 2014 by the U.S. Environmental Protection Agency (EPA), but mining companies are challenging the ruling. Which could be reversed following the election of a Republican president in 2024. This might be a re-run of the 2016 election of Donald Trump and his appointment of Scott Pruitt to head the Environmental Protection Agency. Given such a prospect, the Pebble mine (and others) will be back in play.

In Wisconsin, copper, zinc, and sulfide mining are being proposed, and they are being resisted by Native peoples. Silver mining in Mexico is poisoning indigenous children. Coal strip mining is an important issue for Hopis and Navajos, although they have been phasing out dependance on coal, and have begun closing coal-fired electric-generating plants, the best-known of which the Four Corners behemoth.

In California**,** the Elem Band of Pomo Indians now are suffering elevated levels of mercury in their bodies due to the Sulfur Bank Mine, a superfund site that borders their colony. Hansen (2014) wrote that "nearby Clear Lake is the most mercury-polluted lake in the world, despite the E.P.A.'s spending about $40 million over two decades trying to keep mercury contamination out of the water. Although the E.P.A. has cleaned some of the soil under Pomo roads and houses, pollution still seeps beneath the earthen dam built by the former mine operator, Bradley Mining Co. For years, Bradley Mining has fought the government's efforts to recoup cleanup costs."

Resource colonization has continued for the entirety of United States history. Coal, oil, coal, gas, and other minerals worth $3.5 billion were extracted from Native American lands in the United States during the fiscal year 2011, compared to $2.8 billion worth in the fiscal year 2010, according to a report by the Government Accountability Office (GAO).

In the United States, Native American reservations represent only 2% of the land but hold approximately 20% of the country's fossil fuel reserves, including coal, oil, and natural gas. Together these fuels are worth about $1.5 trillion, according to the Council of Energy Resource Tribes (Osborne 2018). Indian reservations contain almost 30% of the United States' coal reserves west of the Mississippi, 50% of potential uranium reserves, and 20% of known oil and gas reserves—resources worth nearly $1.5 trillion, or $1.5 million per member of Native Nations. Yet 86% of Indian lands with energy or mineral potential remain undeveloped because of Federal control of reservations that keeps Indians from fully capitalizing on their natural resources if they desire.

Meanwhile, most American Indians live in poverty, with an average per capita income of $16,645 (compared to $27,334 for the U.S. population as a whole) and unemployment rates as high as 78% on some reservations (Regan and Anderson 2013, p. 2. This report contains no dates, limiting the usefulness of its statistics. Maps and statistics indicate, without sayings much, that Alaskan native corporations also may be excluded.) Although in the US, Native American reservations represent only 2% of the land, they hold about 20% of coal, oil, and gas reserves of the country. An audit by the Energy Resource Tribes puts the total value of all these fuels together at somewhere around $1.5 trillion.

Reservation governments received some monetary benefit from this activity. Income to Native American reservations for extraction of fossil fuels was about $540 million in the fiscal year 2011, up slightly from about $400 million in 2010. By 2016, the total Native American income from fossil fuel extraction topped $1 trillion, and by 2020 it was estimated at $1.5 trillion. These rough estimates did not include the value of copper, gold, and other hard-rock resources from federal or Indian lands; mining companies are not legally obligated to pay royalties. They pay fees for leases. Resource exploitation of first nations in Canada also has developed along similar lines. In 2014, American Indian revenues from mineral leases in the United States (34,000 owners in 34 tribes and nations) passed $1 billion for the first time, up about $200 million from 2013

Environmental provocations afflicting Native American peoples in the United States (a range of problems equal to those of any Third World nation) range from uranium mining to kitty litter for the Navajos to the devastation wrought by dioxin, PCBs, and other pollutants on the agricultural economy of the Akwesasne Mohawk reservation in northernmost New York State. As with the Akwesasne Mohawks, some of the most serious problems span international borders. The Yaquis, whose homelands span the U.S.–Mexican border, have been afflicted with some of the same pesticides as the Mohawks on the U.S.—Canadian border.

Some of the environmental problems faced by indigenous peoples in the United States strain one's sense of credulity. Witness the Eskimos of Point Hope, Alaska,

who have learned that parts of their land once had been once been eyed as a harbor for a harbor to be created by exploding nuclear weapons. Although the harbor was not exploded open after protests by Point Hope Eskimos and white environmental activists, the Point Hope Eskimos still found themselves dealing with nuclear waste that they had not requested. Other Alaskan Eskimos found reindeer inedible, their bodies polluted by several heavy metals. The Western Shoshone of Nevada called themselves "the most bombed nation on Earth," after a nearby nuclear test range and a since-canceled proposal at Yucca Mountain to open a national waste-uranium repository. The U.S. government seemed to be acting as if no one lived in the area.

Canada, which often tells outsiders how humane their civil rights record has been regarding indigenous peoples, has nevertheless become a major source of conflict and contamination. The Innu of Labrador have found themselves afflicted by aluminum smelting and sulfide mining, Overhead, the previously quiet skies at times have been filled with noise from military aircraft.

A remote location in Canada is no guarantee against intense resource exploitation. In northern Alberta, among the Lubicon Cree, lands were so inaccessible that treaty surveyors completely missed them. By 2000, however, roads had opened their lands to logging and massive test oil drilling. The Cree of Quebec found their homelands a target of dam building near James Bay that contaminated large areas with toxic methylmercury as well as other pollutants. Mining has decimated the Dene who live in Canada's Northwest Territories much as it has spread cancerous illnesses among the Navajo in New Mexico and Arizona.

The pesticides can be found in many Native areas within the United States, and their use spread even to Vietnam during the war there. Less than a decade of intensive use was enough to produce birth defects and many other problems for generations. Now, more than 50 years later, thousands of Vietnamese face lives crippled by deformations and many other maladies from dioxin (Agent Orange). The same medical conditions also have been diagnosed in U.S. veterans (as well as *their* children) and generations after that. The effects of severe problems traced to Agent Orange will probably be detectable. For five to ten more generations after the present. As one of many "persistent organic pollutants" (POPs), dioxin is nearly impossible to cleanse from the bodies of human beings and other animals. Some of the environmental problems faced by indigenous peoples in the United States strain one's sense of credulity. Witness the Eskimos of Point Hope, Alaska, who have learned that their land had once been proposed as the site of a new harbor to be created with nuclear weapons. The harbor was never created, but the Point Hope Eskimos still found themselves hosting uninvited nuclear waste. Other Alaskan Eskimos have found their reindeer rendered inedible, polluted with a number of heavy metals. The Western Shoshone of Nevada have come to call themselves "The most bombed nation on Earth," a reference to a neighboring test range for nuclear weapons and (more recently) a now-stalled proposal to open a national waste-uranium repository at Yucca Mountain, which was shut down after several years of protests.

The Innu of Labrador have been afflicted with sulfide mining, aluminum smelting, and noise pollution from squadrons of military aircraft. Some of the

most intense resource exploitation in Canada takes place in remote locations, such as among the Lubicon Cree of northern Alberta, whose lands were so inaccessible that in 1900 that treaty map makers completely missed them. Today, roads have opened their lands to massive oil drilling and logging. The lands of the Cree in Quebec have been scarred by widespread dam building near James Bay that has contaminated large areas with toxic methyl mercury, as well as other pollutants. Uranium mining has devastated the Dene in Canada's Northwest Territories much as it has ravaged the Navajo in the Southwestern United States. Indigenous environmental issues in Canada span the range of resources—from hydropower, to diamonds, uranium, gold, silver, and sulfide, aluminum, oil, and natural gas.

Several first nations in Alberta been scarred by the development of oil from tar sands.

Mexico's indigenous peoples have been dealing with a wide variety of environmental issues, from the Mayas of Chiapas in the South, (who have been protesting the intrusion of roads, dams, logging, and hydropower dams under the Zapitista banner), to the Huicholes Indians of Sinaloa, Baja California, who harvest herbicide-laced tobacco. The workers and their families not only experience toxicity on the job; they also live in the fields. Elsewhere in Mexico, The world's largest producer of silver has been ordered to cut production because children near its facilities were found to have unhealthy levels of lead in their bodies. Near Mexico City, in the State of Morelos, at the birthplaces of the Mexica (Aztec) god Quetzalcoatl as well as Emilio Zapata, local indigenous peoples took to the streets to resist the construction of a golf course that would have taken much of their water in a historically dry region. The image of Zapata was invoked by the protesters, who eventually defeated the proposed golf course.

A count of all such environmental atrocities could fill might fill a small encyclopedia; this chapter describes just a few. It follows environmental atrocities in the south of Baffin Island, in the south of Baffin Island and the Mohawk reservation of the very Northmost New York States, with brief descriptions of Mexico's Huicholes. The Arctic is hardly as pristine as popular imagination has it, as polychlorinated biphenyls (PCBs) and dioxins reach its upper atmosphere and reach the ground as poisoned snows. A student of history might recall dioxins as a major component of a powerful herbicide used in Vietnam used to kill forests that also produced major deformations of young Vietnamese, as it spread through generations. Anyone who has used RoundUp to kill weeds and produce a weed-free "perfect" lawn has been using a milder form of dioxins.

Nunavut, part of the Inuit Nation, a semi-sovereign territory, receives its chemicals, swept northward by prevailing winds from industries in the United States and Canada, until they were outlawed by the Stockholm Convention. Unfortunately, the chemicals are very difficult to remove from the food chains that affect marine mammals such as whales and seals. The sea mammals are a favored food of the Inuit, who receive an even higher dose when they are eaten by humans by a process known as biomagnification, which increases their potency at each step up the food chain. Small fish eat even smaller sea creatures, which have been toxified at a relatively low dose of these chemicals. The fish are eaten by a whale or a seal at a higher level, and

a human being at an even higher level. The rise in potency occurs at roughly exponential levels; that is: Very small fish = 1; small fish 2 (2 × 1); whale = 4 (2 × 2); human being = 16 (4 × 4).

Inuit mothers have been advised not to breastfeed their infants because they become the next step up the food chain – 16 × 16 = (256). At Akwesasne, as well as among the Inuit, the larger sea animals have been laced with seriously high levels of PCBs and dioxins. The fish are inedible, and they have been told to avoid eating anything from the St. Lawrence River), long their main source of protein.

Both the Inuit and the Mohawks have organized politically to restore an Aquatic environment that will not poison them. The Inuit, in particular, have had an active role to outlaw the use of these toxins with the Stockholm Convention.

Following negotiation of the Stockholm Convention that outlaws most of the "Dirty Dozen" persistent organic pollutants (POPs), Inuit activist Sheila Watt-Cloutier brought tears to the eyes of some delegates when she expressed gratitude on behalf of the Inuit. The treaty, she said, had "brought us an important step closer to fulfilling the basic human right of every person to live in a world free of toxic contamination. For Inuit and indigenous peoples, this means not only a healthy and secure environment, but also the survival of a people. For that I am grateful. *Nakurmiik*. Thank you".

It is a long road back, however. As pointed out above, these chemicals are often very difficult to expel from their bodies. The battle to rid their food chains of them may require decades.

In addition to being rooted in their homelands, Native Americans maintain historical, spiritual bonds with the land that fosters attention to environmental threats. Longtime fishing rights activist Billy Frank Jr. said that this connection places protection of environment and its role in sustaining human and all other life "at the top of our priority list" (Russo 2012, 235). "When we say the Okanagan [native] word for 'ourselves,'" said Jeanette Armstrong, "we are actually saying the ones [that] are 'dream' and 'land' together" (Grossman 2012, 38). Chief Willie Charlie has said, "Mother Earth is crying, and we need to pay attention to what she is saying" (Grossman 2012, 45–46).

Activist and author Kurt Russo, who works with the Native American Land Conservancy, commented that "our courage to acknowledge this crisis, our conviction to stand up for unborn generations, our connection to nature and, through nature, to each other, and our resilience—as a family, as a species, as peoples—will determine whether we hear her cry for the agony of extinction or stand idly by and bear witness to a great dying" (Russo 2012, 236).

"Indigenous communities are, in general, in a unique position given their history and knowledge to understand and respond to the crisis," commented Russo. "[They] are, in general, more informed and engaged than the majority of Americans or their political and corporate leaders.... As place-based communities of inter-related families with historical consciousness, indigenous peoples are also more resilient, and thus able to face, rather than deflect or deny, the true magnitude of the crisis [that] will have long-lasting and potentially catastrophic consequences for every life-form and human community" (Russo 2012, 234).

On September 29, 2011, Daniel Yuchi member of the Muscogee Nation of Oklahoma and a professor at Haskell Indian Nations University in Lawrence, Kansas, speaking at the Center of the American West of the University of Colorado, Boulder, said that, until recently, Native people were members of tribes, not nation-states, with a relationship to nature that defined species on which people depended for survival in familial terms as relatives, not as exploitable resources. The bison on the Great Plains, salmon among the Coast Salish, and corn across much of today's North America (Turtle Island) were "the central relatives we acknowledged" (Berry 2011).

Indigenous activism against the development of extractive industry that destroys environmental integrity is not new in this area. Indigenous people have long historical experience with resource exploitation that works against a spiritual ethos that invests spiritual integrity in everything that is natural. European religions usually restrict their effects to humanity, many Native Americans interpret their worldview to apply to "all my relations" to mean *all* of nature—animate and not—even the rocks on which we walk. This respect for nature is fundamental and enduring and at the root of traditional Native American responses to economic development. Definitions of "balance" are couched in this context, counterpoising protection of "mother earth" with European immigrants' ethos that seeks a "mother lode," from *Genesis* ("Go forward, multiply, and subdue the Earth").

Naomi Klein, in *This Changes Everything: Capitalism and the Climate* (2014, 183) writes of industrialists who "view . . . nature as a bottomless vending machine."

The non-Native world is slowly recognizing the toll that its appetites for natural resources wreak on indigenous peoples. In February 2013, the United Nations UN Special Rapporteur on the Rights of Indigenous Peoples James Anaya issued a request "for information on extractive and energy industries in or near indigenous territories . . . and the human rights issues that these industries generate . . . such as mining, petroleum or gas projects and energy production, including hydroelectric projects." A report to be compiled by Anaya's office "will identify good practices for the industries to use in order to avoid or overcome . . . human rights violations." This report was compiled because, according to the Indian Country Today Media Network, "sovereign Indian nations, particularly in the American West, continue to be significantly impacted by radioactive and other hazardous wastes because of the proximity of nuclear test sites, uranium mines, power plants, toxic waste dumps and extractive industries" (Toensing 2013).

In addition to corporations, the U.S. military has been a source of pollution in Indian Country, according to Gregory Hooks and Chad L. Smith, who coauthored "The Treadmill of Destruction: National Sacrifice Areas and Native Americans" in the *American Sociological Review*. The study found "that much of the disproportional exposure of Native Americans to environmental dangers throughout the 20th century was the result of militarism, rather than economic competition. And it shows that historically coercive governmental policies in locating Indian reservations are a major factor in determining their exposure" (Hooks and Smith 2004, 558).

In Chap. 2, "Akwesasne: Land of the Toxic Turtles," our account takes us to a Native American community where, for several centuries of human occupancy, the

site the Mohawks call Akwesasne was a natural wonderland: well-watered, thickly forested with white pine, oak, hickory and ash; home to deer, elk, and other game animals. The rich soil in the bottomlands of a valley into which several rivers flowed allowed farming to flourish. The very name that the Akwesasne Mohawks gave their territory about 1755 testifies to the bounty of the land. "Akwesasne" in the Mohawk language means "Land Where the Partridge Drums," after the distinct sound that a male ruffled grouse (partridge) makes during its courtship rituals. Lying at the confluence of the Saint Lawrence, Saint Regis, Racquette, Grass and Salmon rivers, Akwesasne, until recent times, also provided its human occupants with large runs of sturgeon, bass, and walleye pike.

Within roughly less than a century, this land of natural wonders has become a place where one cannot eat local fish and game, because their flesh now is laced at toxic levels with PCBs and other carcinogens. In some places, one cannot drink the water, for the same reason. In parts of Akwesasne, residents have been told to plow under their gardens, and to have mothers' breast milk tested for contamination. In place of sustaining rivers and a land to which the Mohawks still offer thanksgiving prayers, capitalism has offered incinerators and dumps for medical and industrial waste. Akwesasne, which straddles New York State's border with Quebec and Ontario, has become the most polluted Native reserve in Canada, and a number-one toxic site in the U.S. Environmental Protection Agency's "Superfund" list of sites badly needing cleanup.

Within the living memory of many people at Akwesasne, "The Land Where the Partridge Drums," has inherited the toxicological consequences of General Motors' waste lagoons in which animals have been found with levels of PCBs in their fat that qualifies them as toxic waste under U.S. Environmental Protection Agency guidelines. Akwesasne has become riskier to human health than most urban areas, a place where any partridge still living may be more concerned about its heartbeat rather than its drumbeat.

Chapter 3, "The Deadly Yellow Powder," notes that uranium mined from Native American lands supplied a substantial proportion of the fuel for early nuclear power plants as well as the U.S. nuclear arsenal. By the 1970s, many of the early miners were dying of lung cancer, most notably among the Navajo and the Dene of the Canadian Northwest Territories. In Washington State, nuclear waste from the Hanford plants afflicted the Yakamas. Uranium mining also has caused a plague of cancer among the Laguna Pueblo. The Navajos organized to stop uranium mining and milling, and today both are illegal there—but only after several hundred people had died.

Chapter 4, "Showers of Pig Feces" describes the environmental price paid where pork is mass produced. Massive pig farms on an industrial scale produce lakes of swine waste and imperil the air and water of disproportionally black and poor people who endure frequent dousings of pig manure sprayed around their homes to fertilize nearby fields in, as Lily Kuo wrote in *Quartz* (2015), "a fine mist of liquefied feces collects on their houses and cars, attracting swarms of flies." "The poor people, they literally get shit on," said Kemp Burdette, who advocates better water quality in North Carolina's Cape Fear River Watch.

In the language of agricultural bureaucracy, these gigantic pig farms are known as Swine CAFOs (Confined Animal Feeding Operations). The School of Public Health at the University of North Carolina--Chapel Hill reported that "these pig farms are responsible for both air and water pollution, mostly due to the vast manure lagoons they create to hold the enormous amount of waste from the thousands of pigs being raised for food". North Carolina is one of several states in which the number of pigs exceeds the human population, and they produce several times more waste per pig than human beings. No one seems to know exactly how much more (estimates range from 2 to 14 times).

Global warming affects everyone, some more rapidly and intensely than others. *Chapter 5, "An Ice World Melts,"* surveys the Canadian and Alaskan Arctic, which are among the most quickly warming areas on Earth. Alaskan Native communities face climate-induced change, including the relocation of entire coastal villages. Elsewhere in Native America, elders tap generational memory to tell scientists how their lives have been reshaped by a rapidly warming climate.

Chapter 6, "The Inuit (and Others): If it Swims, It's Probably Poisonous begins in Nunavut, the semi-sovereign Inuit nation in northern Canada where it is snowing poison, as PCBs, dioxins, and other chemicals produced by southern industries are swept northward by prevailing winds. Southward, at Akwesasne, in northernmost New York State and nearby Canada, the fish, laced with the same chemicals, are often inedible. The Huicholes of Mexico live in a land laced with the same class of toxic pollution. In all of these locations, Native peoples have been organizing to restore a livable environment. The Inuit, in particular, have taken an active role in efforts to outlaw the use of these toxins in an international agreement: the Stockholm Convention.

Chapter 7, Alberta's Moonscape: If This Sounds Apocalyptic, It Is" describes Native peoples in Alberta, Canada, who have found some of their lands devastated by tar (or oil) sands mining. Native peoples in the United States and Canada took a leading role in opposing the Keystone XL Pipeline, which has been proposed to carry tar sands oil from Alberta to the U.S. Gulf Coast for refining and export. Blockades have been set up by the Nez Perce (in Idaho) and Lakota (at Pine Ridge, South Dakota) to block construction materials on their way to Alberta, provoking many arrests. Pine Ridge draws its water from the planned path of the pipeline. On one occasion in Idaho during 2013, the tribal chairman and most of the Nez Perce council were arrested (along with two dozen other people) as police dispersed a crowd of more than 200 people. Others, including Mik'maq bands in New Brunswick, have put their bodies on the line, with arrests, to impede fracking (hydraulic fracturing), in which high-pressure chemicals are injected deep underground to pulverize shale so that oil may be pumped out. The protests paid off after Democrat Joe Biden came into office (2020). He canceled the Keystone XL pipeline, forcing the tar sand miners to find new routes through Canada for their crudest of crude oils. As has been noted above with reference to other environmental issues, one turn of the electorate at the presidential level could open the Keystone gusher of oil, with all that implies for pollution and increases in atmospheric greenhouse gases.