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Meghan Sittler

University of Nebraska-Lincoln, meghan.sittler@unl.edu

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Yellow Powder Yellow Lungs

Meghan Sittler

Uranium mining began on the Navajo Reservation during World War II and continued for several years following the war. Many components of uranium mining operations and policies have left a trail of serious, social, physical, cultural, and environmental consequences which have impacted, and continue to impact the people of the Navajo culture. Each of these ramifications will be discussed through the incorporation of Navajo beliefs, and social organization, which have further compounded the effects of the United States government's exploitation of uranium and the Navajo people.

The majority of the uranium deposits in the United States are located on Native American reservations throughout the southwestern portion of the United States. The Navajo reservation in New Mexico and Arizona is extremely rich in uranium deposits and numerous mines and mills have been opened, operated, and abandoned since the early part of this century. The increase in the development of atomic weapons and technology during, and immediately following, World War II provided a catalyst for the rapid expansion of these mines through the 1970's. Navajos provided the largest percentage of the work force for the expanding industry and were the owners of the land on which the claims were being made. They received minimal economic benefits from the mining of uranium and had very little control over the number of claims made on their land despite their integral and active role.

Uranium can have very serious negative effects on the surrounding environment as well as the health of the local populations who have been exposed to the radiation and byproducts of uranium. These hazards were not made known to the Navajo miners or community and very few precautions were taken to prevent

physiological or environmental damage. The resulting degradation of the environment and the health of the Navajo people have caused social and psychosocial decline in the Navajo Communities.

This paper will present the development of the uranium industry in the United States, paying special attention to the negative environmental, physiological, and social impacts that it has had on the Navajo Nation and their land. The social impacts will be discussed by drawing attention to the Navajo's religion and cultural systems.

Navajo Cultural Beliefs

The Navajo culture is traditionally organized into matrilineal kinship groups (Kelley 1994). Navajos perceive the whole land as being sacred. There is no distinction between one place being more sacred than another because each part of the land comprises the greater whole, the earth. Sacred places are not seen as being more important, or more holy than any other portion of the land; they are believed to have different significance. They may be believed to be the location of different events in their creation myths or possibly even dwellings of some holy entities, but the

surrounding area is equally as important. The entire landscape gives power to the sacred place, or conversely, takes the power away (Kelley 1994). The earth is seen as a female entity and because of the matrilineal kinship organization of the Navajo people, they believe that they are related to all components of the entire living system of the earth.

“Holy People” are seen to be in control of all natural phenomena and thus, can either cause or alleviate the illness or misfortunes of individuals or communities (Kelley 1994). Navajos interact with Holy People on an almost constant basis by simply carrying out day to day tasks, such as tending to livestock or crops, collecting water, or through ceremonial gatherings. Holy People are part of, and the controlling force of, all facets of the Navajo life. Various Navajo creation stories all agree that the earth is the Great Mother from whom the Navajo people descend and they are therefore a part of the earth as a whole. Every action they may take which disrupts any of the components of the earth can anger the Holy People. The angered holy people can then inflict periods of drought, floods, famine, or illness (Dawson 1992).

Uranium Boom and Bust

Uranium was sought after almost immediately upon Marie Curie’s determination that uranium ore contained radioactive elements. These elements were originally used for simple things such as coloring dyes for dishware. Later it was determined that they were capable of producing weapons of mass destruction. The increased inquisition into the radioactive properties of uranium and its uses led to the beginning of uranium prospecting in the western United States around the turn of the twentieth century (Ringholz 1989). The Colorado Plateau region of the southwestern United States was the prime focus for the expansion of mining of the mysterious new mineral (Ringholz 1989).

The first impact of the burst of uranium mining came with the 1919 multi-million-dollar appropriation to the Bureau of Indian Affairs (BIA) from the US Congress. This Congressional Act opened all Indian reservations and land holdings in Arizona, California, Idaho, Montana, Nevada, New Mexico, Oregon, Washington, and Wyoming for the mining of various minerals (US Congress 1919). The appropriation allowed for prospectors to enter the Indian land without requesting permission from the Secretary of the Interior. If the prospector found a mineral such as uranium, it was necessary for him or her to file a claim with the US Department of the Interior. A twenty-year lease would be issued to the claim holder with the option for a ten-year extension upon conclusion of the original lease (US Congress 1919). The leaseholder was required to pay one dollar per year for each 40-acre tract of land they claimed. Additionally, they were required to provide \$100 per year of “development work” to the Indian communities and residents of the reservation lands they were mining (US Congress 1919). The United States Congress of 1919 defined “development work” as either providing physical improvements to the land or communities by developing the infrastructure of the reservation, or simply by employing the Native Americans in their mines and mills. The government also required that five percent (5%) of the net worth of the volume of minerals extracted be paid to the government. The royalties were then placed into funds, which would be given to the tribes on an annual basis (US Congress 1919). The Indians were given no control over the land and its resources.

During the first several years of the 1920’s there were a significant number of uranium mine claims on the reservations of the Four Corners region of the United States. These claims primarily affected the Navajo people located on reservation lands in New Mexico, Arizona, and Utah. The uranium market bottomed out in 1923 and remained stagnate throughout the early portion of the

1930's, culminating with the Department of the Interior closing the reservations to prospectors because of lack of interest (Eichstaedt 1994). The reservations remained closed for two years until the Secretary of the Interior reopened the reservations under slightly reconstructed lease agreements. The revised leases resulted in increases in the rental payments and royalties Native Americans were to receive from mining contracts (Ringholz 1989). The only major change in leasing terms occurred in 1941 when the Secretary of the Interior granted the Navajo Tribal Council the ability to grant leases to the highest bidder (Ringholz 1989). The basic agreement, as outlined in the appropriation of 1919, otherwise remains in effect today. American Indians continue to receive very small benefits from the mining of minerals on their reservations lands.

The United States was engaged in World War II during the first half of the 1940's. Experimentation with atomic weapons was increasing and therefore the federal government became more interested in locating uranium resources. The Atomic Energy Act, passed by Congress in 1946, created the Atomic Energy Commission (AEC) which was a board comprised of civilians who oversaw the development of atomic energy for both military and other purposes such as electricity (Eichstaedt 1994). The Atomic Energy Act gave the government the right to explore and claim all lands for its uranium resources without the permission of the landholder. Further, the government was granted the first claim to any uranium mined and processed by private companies (Eichstaedt 1994).

The uranium boom fueled by the government's race to build as many atomic weapons as possible, continued after World War II into the late 1970's and early 1980's. A vast majority of the mining continued on the 27,000 square miles of the Navajo Reservation (Kelley 1994). The appropriation of funds to the BIA in 1919 held the provision that the prospector or

mining corporations provide royalties and/or jobs to the people of the Native American communities. The Navajo people, who were and continue to be characterized by high rates of unemployment and poverty, provided a ready, willing work force to the companies operating the 2500 mines and numerous mills (Dawson 1992). The incentive to earn the highest incomes that any Navajo previously had was furthered by the propaganda used by the United States government. The government told the Navajos that not only would they be benefiting themselves, their families, and the community, but they would also be helping to ensure the security of the nation (Dawson 1993). Fueled with this patriotic mission, the lure of higher incomes, and the promise of more royalty payments to their people, Navajo workers became the largest portion of the work force in uranium mines and mills.

Health and Environmental Hazards

Coinciding with the increased mining and processing of uranium ore and the production of atomic weapons, there was an increased study of the effects of radiation. Scientists had known since the beginning of the twentieth century that when uranium and radium were isolated the elements could produce side effects such as red, irritated blotches of skin, when held next to the person's body for a period of time (Eichstadt 1994). The investigation into the risks associated with radiation continued. By the time of the uranium boom in the mid-portion of the twentieth century, uranium exposure was known to have potentially serious health ramifications for people that had been exposed.

Uranium occurs naturally as uranium 238 and is broken down into various alpha and beta particles (US Govt. 1993). These particles lodge into skin, tissue, and organs and remain there almost indefinitely, destroying the tissues and creating severe health risks (Eichstaedt 1994). The exposure to minimal amounts of radiation

increases the risk of the development of various types of cancer, predominantly lung and reproductive cancers. It also can increase instances of heart disease and reproductive disorders, such as miscarriages (Dawson 1992). The government knew of these health risks prior to the intensive period of uranium mining. However, these hazards were not publicized. Subsequently, Navajo miners and millers were unknowingly exposing themselves to extremely harsh and hazardous work conditions.

Interviews with numerous Navajo uranium mine and mill employees conducted by various anthropologists and sociologists have yielded insights into the work conditions and practices of various mining companies. Navajo miners have reported that at no time before, during, or after their employment were they informed of the hazards associated with uranium nor were they informed of the proper safety precautions necessary to minimize exposure to harmful radiation. If attempts were ever made by the mining companies to educate the Navajos about the hazards of radiation, language and cultural barriers hampered these attempts. There is no word for radiation in the Navajo language and many of the workers did not speak English (Dawson 1992). Attempts to explain radiation by comparing its colorless, odorless, and tasteless properties to steam only resulted in further confusion and less alarm because the Navajo people associated steam with sweat baths which are a cleansing, ceremonial ritual (Eichstaedt 1994). The danger of radiation became lost in attempts to bridge language and cultural barriers.

Miners were never informed of the dangers associated with breathing the dust from inside the mines or mills. Large quantities of dust were created from the use of dynamite and the collection of uranium ore. The dust contained large percentages of the harmful alpha and beta particles, often called radon daughters, and silica particles

released from the sandstone rock that surrounded the uranium ore (Eichstaedt 1994). The miners and millers, whose respiration rates were increased because of working, were constantly breathing in the dust and all of its harmful components. In an attempt by the companies to cut costs, most of the uranium mines were not ventilated properly, if at all (Eichstaedt 1994). Additionally, Navajo miners frequently reported being forced by their supervisors to go back into the mines immediately following an explosion, while white miners remained outside allowing the dust to settle (Dawson 1992). They were never warned not to wear their dust-laden work clothes home, so as not to risk their families' exposure. Furthermore, the workers would eat without washing the uranium ore off of their hands and would drink the water that seeped out of the mine walls during the twelve hours a day they were frequently inside the mine (Dawson 1992).

Aside from the fact that they were simply not told of the risks associated with their jobs, there were reported incidents of cover-ups by the companies and government. Several mine supervisors have reported that the companies informed them of the hazards but they were not allowed to share this information with the miners they supervised. More striking even than this instance of callous disregard to the well being of the Navajo miners was the agreement made between the United States Health Service (USHS) and several different mining corporations. The USHS, in order to get a better understanding of the effects of radiation and the relative health of the uranium workers, began examining the health of the miners. The companies agreed to supply the names of the workers and in turn the USHS agreed not to disclose the findings of the medical examinations to the workers (Dawson 1992).

The uranium mines and radiation also adversely affected the families of the miners and the communities where the miners lived.

As was stated before, the miners or community members, were never informed of the dangers. The miners would wear the clothes they had worked in home exposing their families to the dust and radiation contained within the fibers of their clothing (Dawson 1992). Aside from the introduction of the radiation into their homes from the clothing, the companies would build homes for the Navajo workers by utilizing the left over, contaminated slabs of sandstone from the mines and mills as part of the requirements imposed under the BIA appropriation (Eichstaedt 1994). The people were literally living within walls of radiation.

The mining and processing of uranium ore produces enormous quantities of byproducts, such as tailings and contaminated water used in the milling process, containing high levels of radiation. The tailings were left in large piles near the mines or mills and the water was held in resettling ponds by earthen dams. There were no warnings posted near these piles and ponds. Children would frequently play on the tailing piles and livestock were allowed to graze on or near the tailing piles and drink from the tailing ponds (Eichstaedt 1994). People would also utilize the plants and collect drinking water from streams running through the mining areas. Radiation in the soil is easily leached into the groundwater supply as a result of the properties of uranium (Beard et al. 1980). If the radiation does not make it into the groundwater, then it is absorbed by the roots of plants, which are then consumed by livestock. The livestock are not only exposed to the radiation through ingesting the plants, but also through drinking water containing radioactive material. The radioactive particles accumulate in the tissues of the livestock. Humans consume the meat and milk from the livestock and are once again exposed to radiation.

In addition to the seemingly everyday instances of exposure to radiation, there have also been instances of massive spills

and releases of radioactive material; the most notable being the spill near Grants, New Mexico. A large dam containing a resettling pond filled with acidic and radioactive liquids collapsed causing 94 million gallons of toxic wastewater and 1,100 tons of tailings to be washed into the Rio Puerco de Oeste. The United States Geologic Survey called this disaster the "largest single release of radioactive waste in US history," (Eichstaedt 1994). The Rio Puerco flows through Gallup, New Mexico and then through land used by Navajos to graze and water livestock. The toxic substances released by this spill have permanently contaminated the land and rivers as a result of the extensive period of time radioactive materials continue to emit radiation. There are numerous other instances of severe environmental contamination caused by abandoned tailing piles and resettling ponds.

Again, all of these hazards created by the mining of uranium and its byproducts have led to highly accelerated rates of cancer and reproductive disorders in not only the miners, but their families, and members of the surrounding community. One study conducted by Dr. Leon Gottlieb, a pulmonary specialist with the Santa Cruz County, New Mexico Health Services Agency, documented an increase in lung cancer among Navajo uranium miners (United States Congress 1990). The 1982 study found that 16 of 17 Navajo uranium miners being examined for lung disorders had developed cancer (US Congress 1990). Another study conducted in 1984 by a doctor at the University of New Mexico Medical School found that 23 out 32 Navajo uranium miners had lung cancer (US Congress 1990). Generally, these studies displayed a large proportion of cancer and other health disorders throughout the Navajo miners and general population.

Social Impacts

"The Dineh (the people) emerged from the third world into the fourth

and present world and were given a choice. They were told to choose between two yellow powders. One was yellow dust from the rocks, and the other was corn pollen. The Dineh chose corn pollen, and the gods nodded in assent. They also issued a warning. Having chosen the corn pollen, the Navajos were to leave the yellow dust in the ground. If it was ever removed, it would bring evil," (Eichstaedt 1994).

Navajos believe that natural phenomena or entities cause illnesses (Dawson 1993). Any disruption of the harmonious whole Navajos believe they are part of can bring the demise of an individual or their society as a whole. The mining of uranium is viewed by many Navajos as being responsible for angering the Holy People, bringing disharmony, illness, and hardship to their people. The breaches of cultural taboos such as this and the belief in impending witchcraft create only more stress and fear. The lack of understanding the dangers of radiation did not allow the Navajo people to attribute their illnesses to radiation exposure; they believed the gods were causing them to become sick.

Once the uranium boom ended in the 1970's, so did the opportunity of many Navajos to receive the increased wages paid by the mining corporations (Dawson 1993). A large portion of the Navajo population lives in a rural setting and is relatively isolated from surrounding communities. The isolation is further increased by the inaccessibility of transportation as many Navajos do not own cars. When, or if, a Navajo person was experiencing poor health they were required to travel long distances to seek medical attention. The lack of transportation coupled with the costs of medical care placed more strain on the ailing people. Therefore, a society that had been historically faced with high financial strain because of unemployment and poverty was now experiencing even more strain because

of the necessary medical bills and funeral costs.

The widows of miners were left not only with medical and funeral debts, but were now solely responsible for continuing to support and raise their family. Navajos are traditionally agricultural people who engage in small-scale livestock production (Dawson 1993). The loss of the husband increased the already high workload of the widow and any children still living at home. In the situations where all of the couple's children were grown and no longer living at home, the widow became spatially and socially isolated from members of the Navajo community because of a lack of transportation and various other technological constraints (Dawson 1993).

A final ramification is the Navajo people feel the United States government betrayed them (Eichstaedt 1994). The Navajo people, who willingly entered the uranium mining task force not only for the benefit of increased wages but to heed the call of the United States government to ensure the security of the nation, feel as if the government betrayed them. They were not informed of the risks and hazards associated with uranium and radiation. They were forced into unsafe working conditions. They lived, and continued to live, among abandoned piles of tailings and pools of toxic materials, and in houses constructed of highly radioactive material. The workers, once diagnosed with cancer, were not notified of their rights for worker's compensation. They must now go through lengthy lawsuits in attempts to receive any compensation from the US government or mining corporations (Eichstaedt 1994). A culture that has always felt a degree of alienation from the government now only feels a greater sense of alienation and isolation.

Conclusions

The massive spill that occurred in 1979 near Gallup, New Mexico was

followed by a lengthy period of lawsuits filed by Stewart Udall and other lawyers. The lawsuits sought compensation for Navajo miners who had developed health problems due to their exposure to radiation and harmful work conditions in the uranium mines. Udall, who was Secretary of the Interior during Lyndon Johnson's presidency in the 1960's, also filed suits to make the cleanup of the mines and tailings mandatory. These lawsuits continued throughout the 1980's and were continually dismissed by courts on the local, district, and national level, as well as by Congress. Finally in 1990, Congress passed the Radiation Exposure Compensation Act and the miners, their families, and the community members who had been exposed to radiation were given compensation for their health problems (Eichstaedt 1994). Around this time, the cleanup of the lands where the mines were located, as well as the surrounding lands, was made mandatory. The cleanup of tailings and mines will prevent future community exposure and continued massive environmental impacts, but the damage that has already been done is severe and will continue to be felt for centuries into the future.

More than just the health of the Navajo people and the area in which they live have been damaged by the uranium industry. The health of the Navajo culture has also been threatened. People have been, and continue to be, under a great deal of strain because of their belief that they have angered the gods by disrupting the earth in search of the "yellow powder" of which the gods had warned the Navajos' ancient ancestors. Their entire cultural basis has been altered by the ecological, financial, medical, and religious strain, that the uranium industry has created, and many Navajos sense the impending complete cultural demise of their nation.

The attempts being made to clean up the tailings, seal abandoned mines, and educate the people of the continued effects of the radiation are considering all possible environmental, historical, and social effects. The incorporation of all these factors is necessary to achieve the maximum healing from decades of contamination, neglect, and betrayal of the Navajo Nation and their land.

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