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Vol. 16 Iss. 15

Feb. 28 - March 7, 2018

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## Circle painting on Standing Rock!



FORT YATES, N.D. – Circle Painting came to Standing Rock Middle School Feb. 21! Above, students, staff, families, and community members worked with Hiep Nguyen, a dynamic, fun-loving master teaching artist from California known for making and teaching art. Nguyen’s mission is to provide BIG, BOLD, FUN collaborative art experiences for schools, communities, students, and staff. For more information about this unique and innovative program and artist, Hiep Nguyen, go to: [www.circlepainting.org](http://www.circlepainting.org)

## CRST Members file lawsuit to challenge exploratory Gold Mining Permit in Black Hills



Steve Emery



A. Gay Kingman

EAGLE BUTTE, S.D. – On Feb. 20, 2018, three members of the Cheyenne River Sioux Tribe filed a lawsuit in Pennington County Circuit Court in Rapid City, S.D., to challenge a decision by the South Dakota Board of Minerals and Environment to transfer of an exploratory gold mining permit from a Canadian company to its South Dakota affiliate.

The company, Mineral Mountain Resources of Vancouver, British Columbia, filed for the permit to ex-

plore for gold in an area of the Black Hills on private mining claims, known as the Standby Project, south-east of Rochford, South Dakota.

The Sioux Nation, including the Cheyenne River Sioux Tribe, consider the Black Hills sacred. The tribal members who filed suit have asserted an interest in protecting the land, natural resources, and water in the Black Hills.

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Tamara St. John runs for District 1 S.D. Senate

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## Heavy metal mining linked to grave health issues for Natives

By Georgianne Nienaber  
Special to *Teton Times*

On Feb. 20, 2018, three members of the Cheyenne River Sioux Tribe filed a lawsuit to challenge a decision by the South Dakota Board of Minerals and Environment to transfer of an exploratory gold mining permit from a Canadian company to its South Dakota affiliate.

Located in Vancouver, British Columbia, Mineral Mountain Resources intends to explore for gold in an area of the Black Hills on private mining claims, known as the Standby Project. The project is located in the Homestake Gold Belt in the Black Hills of South Dakota.

According to company documents on the Mineral Mountain Resources website, Phase I began on Feb. 7 and involves drilling a minimum of 12 drill holes totaling approximately 4300 meters. The Standby Mine gold structure was partially developed from 1891 to 1909 by underground mining from the surface to the 425-foot level. 3D modeling suggests that this is a “high priority gold target.”

The Black Hills is sacred to members of the Sioux Nation. Tribal members who filed suit have asserted an interest in protecting the

land, natural resources, and water in the Black Hills. They are concerned the proposed gold exploration project will pollute the land, natural resources, and water in the Black Hills, according to a recent press release.

Harold Frazier, Chairman of the Cheyenne River Sioux Tribe, said: “We must utilize all resources and angles to protect our sacred Black Hills. We, the Cheyenne River Sioux Tribe, stand with our Tribal Members and all others who stand to protect our sacred lands.”

Easily accessed government databases document 160,000 abandoned hard rock mines in the Western USA that are located on, or in close proximity to the majority of Native American lands. Included in these are 4,000 abandoned uranium mines.

While uranium conjures the specter of radiation poisoning, other hard rock mining operations, including gold, have contributed to heavy metal contamination and runoff in to rivers, lakes and streams that flow through Indian territories.

The incalculable tonnage will persist for generations and years yet uncounted. Until the past is mitigated, there is a solid argument to be made for not compounding the



A catfish, with cancerous tumors like the one above, was photographed by Paul Archambault, who was a Game and Fish Officer at the time. The catfish was caught in the community of Bullhead.

problem.

Hardrock (heavy metal) minerals include gold, silver, copper, and uranium. While uranium poisoning evokes an immediate and visceral response, the mining of other heavy metal minerals contributes to large quantities of waste, which when released in an uncontrolled manner, pose potential contamination of the ecosystem and negative effects on human health.

Understanding the health impacts of heavy metal exposure is complicated by many factors in Native communities, not the least of which is a lack of environmental health studies, compounded by a lack of understanding of the toxicity of these metals. (“Heavy Metal Pollution from Gold Mines: Environmental Effects and Bacterial Strategies for Resistance”)

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## Heavy Metal Health Issues From Page 1

In December 2017, a motion was approved to have the Standing Rock Sioux Tribe Tribal Council “call upon the Indian Health Service to provide funding for a peer-reviewed level analysis of the health impacts of the water quality of the Grand River in the Rock Creek and Running Antelope Districts.”

A 2007 80-page report by the South Dakota School of Mines and Technology, “North Cave Hills Abandoned Uranium Mines Impact Investigation,” called for more study and generally disputed the possibility that heavy metal contamination and resultant toxicity to humans and wildlife was the result of the abandoned mines, further delaying action on proximity analysis and disease clusters.

At this time, it is indeterminate whether the abandoned uranium mines in the North Cave Hills contribute to the metals content of the water without more extensive studies, according to the report’s conclusions.

“Mining and Environmental Health Disparities in Native American Communities,” published by the National Institute of Health in May 2017, offers a completely contrary analysis, dire warnings, and a history of how the US government abandoned and nullified responsibilities outlined in treaties in order to provide access for mining. This has resulted in generational exposure to heavy metals.

“Recent Findings show that Native Americans living near abandoned uranium mines have an increased likelihood for kidney disease and hypertension, and an increased likelihood of developing multiple chronic diseases linked to their proximity to the mine waste and activities bringing them in contact with the waste. Biomonitoring confirms higher than expected exposure to uranium and associated metals in the waste in adults, neonates, and children in these communities,” according to the NIH paper.

The Grand River, which flows through the Standing Rock Reservation, and the Morreau River, which flows through the Cheyenne River Indian Reservation, are both contaminated by abandoned heavy metal mines.

The North Cave Hills uranium mining area is part of the Sioux Ranger District in Custer National Forest, as designated by the US Forest Service. It is located approximately 25 miles north of Buffalo, South Dakota (Harding County Seat) and 150 miles north-northwest of Rapid City, South Dakota.

Northern drainages from the Cave Hills mines are captured by Crooked Creek, which flows north on their western side and then flows east to join the North Fork of the Grand River at Haley-Bowman Reservoir in North Dakota. Southern drainages are

captured by Campbell Creek flowing toward the southeast along the southwestern side of the North Cave Hills.

Campbell Creek flows into Bull Creek, which joins the South Fork of the Grand River. The North and the South Forks of the Grand River are the major contributors to Shadehill Reservoir, the major reservoir in northwestern South Dakota.

The water runoff from the Slim Buttes abandoned uranium mines empty into the Morreau River, which flows through the Cheyenne River Indian Reservation.

The geological, topographical and drainage linkages are indisputable.

So why is it so difficult to complete a peer reviewed health study that links disease clusters and proximity to water sources? The author’s of the 2017 NIH study cite political and ethical failures, a lack of scientific understanding of the toxicity of heavy metal exposure in any population, and the unique living situations of native populations. This may include traditional lifestyles such as plant harvesting for ceremonial purposes, and drinking from historically utilized sources instead of municipal and treated water. Reservation lands are remote. Poverty is rampant, and the Indian Health Service usually offers the only health care with minimal funding. These factors combine to make meaningful studies that compare native health issues to that of the general population difficult and expensive.

To add to the confusion, in 2014 the CDC reported (Cancer Among American Indians and Alaska Natives) that Indian Health Service registration data to identify American Indian people many times incorrectly reports them as being members of other racial groups. “Studies show that nearly 30% of people who identify themselves as AI/AN when living are classified as another race at the time of death.”

### Proximity

There are many anecdotal reports from people living in the Bullhead (Corson County, SD) and Cherry Creek (Ziebach County, SD) communities. Bullhead has a 2010 census count 348 and Cherry Creek is not counted in US statistics.

Deaths from brain lymphoma and other cancers have been reported. Deformed fish, riddled with tumors, have been reported. Linkage has been lacking to mining runoffs. Anecdotes are regarded as unreliable or hearsay. Science requires funding and anecdotal seeing is not believing in the halls of academia. Besides, who is willing to listen to communities lost to history and broken treaties?

However, data is beginning to emerge that cannot be ignored, and

which ultimately connects heavy metal mining to grave health issues in many Native American communities.

A summary proximity table of Native Americans living within less than 10 km (6.2 miles) to hard rock heavy metal mines and associated metal contaminants is disturbing at best. 1,064,839 persons have proximity exposure to gold (arsenic, cadmium, cobalt, mercury, nickel, lead, zinc); uranium/vanadium (copper, molybdenum); copper and lead mines. Population estimates are based on census data and are likely higher.

Other data concludes that birth defects are 50 percent higher in native communities, and life expectancy is 4.4 years lower. The Centers for Disease reports that death rates for liver and kidney cancers among American Indian men and women were more than double the rates for white men and women “in most regions.” A key finding was that “Among American Indian people, cancer is the leading cause of death followed by heart disease. Among other races, it is the opposite.”

So far, the lack of meaningful data and the dearth of answers requested by the members of the Standing Rock and Cheyenne River Reservations is sobering. Perhaps the pending lawsuit will require more disclosure from mining interests and more testimony from scientists who are studying these linkages.

### Strong Heart Study

The Strong Heart Study (SHS) is a study of cardiovascular disease and its risk factors among American Indian men and women supported by the National Heart, Lung, and Blood Institute (NHLBI) since Oct. 1, 1988 and is the largest epidemiologic study of American Indians ever undertaken. (Source: NIH)

Science, well executed, often leads to discoveries not intended in the original hypothesis. In this case, a study of increased cardiovascular risk in native populations also showed that heavy metal exposure is higher in native populations when compared with other races in urban and rural settings.

Natural and cultural sources of metal exposure differ for urban and rural residents, says a recent paper out of Johns Hopkins University.

That statement seems obvious, but becomes an important thread in the incomplete tapestry of proximity risks of the over 1 million Native Americans living within 6 miles of the 160,000 abandoned hard rock mines.

Authors of “Metal mixtures in urban and rural populations in the US: The Multi-Ethnic Study of Atherosclerosis and the Strong Heart Study,” by the Departments of Epidemiology at Johns Hopkins University, were conducting a urinary study when data emerged on heavy metals that has the potential for solidly linking proximity to mining and disease

Table 1. Effects of heavy metals on human health.

Metals	Effects
As	Peripheral vascular disease, lung, skin, kidney and bladder cancer, severe disturbances of the cardiovascular and central nervous systems which may lead to death, bone marrow depression, haemolysis, hepatomegaly, melanoses, polyneuropathy and encephalopathy may also be observed.
Cd	Bronchial and pulmonary irritation, kidney stone, liver damage, various system disorders such as nervous and immune system, blood, bone and Itai itai disease.
Cr	Skin rashes, stomach and ulcers upset respiratory problems, weakened immune systems, kidney and liver damage, alteration of genetic material, lung cancer and death chromium hinder enzyme activity, DNA damage, altered gene expression and causes mutations.
Cu	Accumulation in liver, kidney, brain and cornea leading to cellular damage and Wilsons disease, upper respiratory tract and nasal mucous membrane irritation, hemolytic anaemia, epigastric pain, nausea, dizziness, headache and death may occur.
Pb	Blood related disorders such as colic, constipation and anemia, high blood pressure, decrease of hemoglobin production, kidney, joints, reproductive and cardiovascular systems disorder, long-lasting injury to the central and peripheral nervous systems, loss of IQ, low sperm count, loss of hearing.
Hg	Affect gene expression, kidney damage, tremor, restlessness, anxiety, depression and sleep disturbance, paresthesia and numbness in the hands and feet while high doses may lead to death. Total brain damage can occur in early exposure while late exposure results in localized damage to the cerebellum, motor cortex and the visual cortex.
Ni	Hypoglycemia, asthma, nausea, headache, cancer of nasal cavity and lungs.
Zn	Tachycardia, vascular shock, dyspeptic nausea, headache, cancer of nasal cavity and lungs, asthma, vomiting, diarrhea, hypoglycemia, pancreatitis and damage of hepatic parenchyma, impairment of growth and reproduction.

in Native populations.

The authors were trying to identify patterns of metal mixtures that might suggest common environmental sources. They crunched data from two population-based studies (urban and rural); the Multi-Ethnic Study of Atherosclerosis (MESA) and the Strong Heart Study (SHS). 308 white, black, Chinese-American and Hispanic participants from the MESA study and 277 rural American Indians from the Strong Heart Study were analyzed to evaluate nine urinary metals, which included arsenic, cadmium, molybdenum, uranium, and zinc among a few others. Remember that these heavy metals were cited in proximity studies and exposure on reservation lands.

The results showed that the urinary metal levels were higher in the native Strong Heart Study participants who were living in rural areas.

Scientists are a careful bunch and sometimes do not want to jump to what might be an obvious conclusion.

Results in the Strong heart Study might reflect groundwater contamination in rural areas, and the Cd-Zn (cadmium-zinc) cluster could reflect common sources from meat products or metabolic interactions. Among the metals assayed, As, U, W and Zn (arsenic, uranium, tungsten, zinc) differed the most between MESA and SHS, possibly reflecting disproportionate exposure from drinking water and perhaps food in rural Native communities compared to urban communities around the US.

When a scientist uses the words “might” and or “possibly,” it is a red flag that something has been uncovered that will contradict previous scientific analysis. In other words, the authors are hedging their bets for the time being. There is a reason that levels of arsenic, uranium, tungsten and zinc were higher in rural natives than their urban counterparts of differing

ethnic heritage. If it is not the water that both they and their meat sources drink, what other possibility exists?

This is more than background contamination. So far, there is no other explanation for this disparity between proximity, Native American heavy metal exposure, disease and urban populations. Proximity is a tantalizing answer and the data are sufficiently strong to call for serious mitigation now.

Whether the Standing Rock and Cheyenne Nations will obtain funding and interest for future studies remains to be seen.

Perhaps the answers are obvious. If all of the individuals, organizations and media that supported the Standing Rock protests against oil would support hard rock mining mitigation, future generations can be spared the diseases their elders are doomed to inherit.

Oil spills can be located and cleaned up. They can be stopped entirely with proper engineering, permitting and routing. Cancer does not require a permit.

### Main Sources:

1. CDC: Cancer Among American Indians and Alaska Natives
2. Metal mixtures in urban and rural populations in the US: The Multi-Ethnic Study of Atherosclerosis and the Strong Heart Study
3. Mining and Environmental Health Disparities in Native American Communities
4. Final Report: North Cave Hills Abandoned Uranium Mines Impact Investigation
5. Geology and Uranium Deposits in the Cave Hills Area, Harding County, South Dakota
6. Arsenic Pollution On The Cheyenne River Reservation
7. Heavy Metal Pollution from Gold Mines: Environmental Effects and Bacterial Strategies for Resistance