

An Additional Review by I2M Associates, LLC

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Article in Question:

Hundreds of Sites Complicate Navajo Uranium Cleanup

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Maryann Batlle Cronkite News Service

Tucson Sentinel.com

For seven weeks this fall, workers and scientists labored from 7:30 a.m. to 5 p.m., six days a week, digging up and hauling off thousands of cubic yards of uranium-tainted soil in Cove, Ariz., and sealing what remained.

The \$1.5 million project by the U.S. Environmental Protection Agency was an emergency measure to clean up two former uranium transfer stations because of their proximity to a day school, a house – which sat on top of one station – and a highway on the Navajo Nation.

[According to the timeline provided by I2M at the end of our review, the locations of the transfer stations were known for decades. The dangers of uranium exposure in the Four Corners Area (Navajo Nation area) has been known since the 1970's. Why would the Navajo Nation leaders permit a day school and a home to be built on such a site in the first place?

(see: http://epaos.org/site/site_profile.aspx?site_id=7915)

The goal was to remove the immediate threat of uranium contamination, stabilize the soil and keep uranium from becoming windborne. It's a stopgap measure on two tainted sites among at least 500 – possibly more than 2,000 – that pose a threat to people on the Navajo reservation that spans parts of Utah, New Mexico and Northern Arizona.

[The use of the term “stopgap” measure implies an action taken without careful consideration of the outcome. It's not uranium that would become windborne. Dust from the uranium ore and waste rock becomes windborne. This article is treating this situation as if it were a new problem. In reality, this problem has been known for decades and remediation of these sites has been on-going for many years. see: <http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/NNN000906087>]

More than six decades after the first mines opened on Navajo lands, it is still unclear how many sites need to be cleaned up, how many people may be suffering from the effects of uranium

exposure and what can be done to contain all the hazardous material in these communities – if that's even possible.

[Actually, many studies have been conducted through the decades and the number of sites is pretty well known, and the number of people likely suffering from the effects of uranium exposure is also well known. Studies have shown that the exposure is not to uranium but to radon (a degradation product) that impacts the lungs and other organs, especially for those workers who were smokers and who worked in the underground mines]

What everyone can agree on is that overcoming the legacy of uranium mining will take a long, long time.

[This is emphasizing the obvious for the purpose of impacting the reader. Remediation of any site with any type of contamination takes a long time to clean-up, especially when sites become a political issue. It should be noted that about 30% of all Superfund costs are for lawyers representing various points of view]

“They say it's a widow community,” Eugene Esplain said of Cove, where this fall's cleanup took place. “So many men have died from the impacts of uranium mining.”

[Eugene Esplain is listed as a Health Physicist for the Navajo Nation EPA. His B.S. degree is in agriculture and his duties are predominantly to conduct scintillometer surveys of contaminated sites. He doesn't have the credentials to be discussing what has or has not contributed to deaths in the various communities where he has worked. Why is there no explanation of the cause of the deaths? What are these impacts? The CDC Cancer Cluster website had no records for Cove Arizona.

The Centers for Disease Control and Prevention plans a "Prospective Birth Cohort Study Involving Environmental Uranium Exposure in the Navajo Nation". Comments are invited on the data collection plans and instruments. *Federal Register*, Vol. 76, Number 225 (Tuesday, November 22, 2011) pp. 72206-72207 (See: <http://www.gpo.gov/fdsys/pkg/FR-2011-11-22/pdf/2011-30103.pdf>)

The above usage by Mr. Esplain is also emphasizing the obvious for the purpose of impacting the reader. Such premature deaths may well be an unfortunate result of mining during the 1940's to 1960s causing radioactive dust to be inhaled, at a time when the dangers of uranium degradation products and smoking weren't well known, especially about underground miners who also smoked tobacco and who later built houses and schools on sites of uranium tailings exposing all in proximity to radon. That has changed since then, and new rules and regulations have been implemented to protect miners and the general public]

Invisible Threat

Eugene Esplain, who works for the Navajo Nation Environmental Protection Agency (<http://www.navajonationepa.org/>), said that he drank from a uranium-contaminated well when he was a student at the Cove Day School, which is near Transfer Station 1.

[The question here is whether the contamination in the ground water from the well was present before any mining occurred in the area. Natural uranium contamination of ground water isn't uncommon and, because most private wells weren't (or aren't being) tested for its presence, this natural contamination can go undetected]

"They shut it (the well) down, but that was after I left the school," he said.

Families that lived close to the uranium mines and the secondary sites where uranium was kept or processed – like the Cove transfer stations – **breathed in radioactive dust in the air and ingested it in tainted food and water.** Some Navajo used uranium-tainted material to build houses, although many of those structures have since been torn down, according to the U.S. EPA.

[The article states that they breathed and ate and drank but does not mention any specific adverse health effects that were related to the exposure. Again, this activity took place prior to the understanding of the dangers of uranium and associated tailing sites and the implementation of the modern environmental rules and regulations since the 1970's]

The contaminated dirt at the transfer sites is not easily discernible without the use of detection tools, said Maggie Waldon, EPA On-Scene Coordinator for the Cove cleanup.

"You wouldn't know because it did look like dirt. It didn't look any different than the dirt in the surrounding areas," Waldon said.

When uranium decays, it releases radon (<http://energy.cr.usgs.gov/radon/georadon/2.html>), an odorless gas **that trails only tobacco as a cause of lung cancer in the United States.** The EPA estimates (<http://www.epa.gov/radon/pubs/citguide.html#overview>) **that radon causes 21,000 lung-cancer deaths a year.**

[Why doesn't the reporter of this article state that smokers have 7 to 10 times the chance of getting lung cancer, depending on the level of radon exposure? However, much of this radon comes from natural sources deep underground unrelated to uranium mining, but perhaps directly related to smoking tobacco because radon in the air is sucked deep into the lungs by the process of smoking tobacco. As indicated above, exposure to radon is typically accumulated in enclosed areas overlying areas of anomalous uranium and radium concentrations, such as underground mines or buildings constructed directly over these waste areas; but also in areas underlain by granitic and other rocks that also contain uranium and its degradation products, radon, radium, etc. Another form of radon exposure is from contaminated ground water passing through rocks containing uranium, etc. and then used in bathroom showers. Radon has a half-life of 3 days, which means that its presence is undetectable after 30 days. There is no simple solution to many radon problems in the U.S.]

Eugene Esplain said the dangers of radiation exposure depend on a few factors, such as a person's proximity to the contamination, the length of time someone spends close to it and the strength of the contamination source.

Uranium (<http://www.epa.gov/radiation/radionuclides/uranium.html>) has always been present in Navajo country but it wasn't until the 1940s that it was pulled out of the ground in industrial quantities.

[The author doesn't bother to mention that uranium has also been present in surface soils and ground water for millions of years]

Mining companies provided jobs to many Navajo men who took millions of tons of uranium ore from the Earth during those years.

In the 1950s and 1960s, mining companies used Transfer Stations 1 and 2 in Cove to stockpile uranium ore that workers extracted from the mines in the nearby Lukachukai Mountains. The uranium ore piled on those sites was then trucked to a mill some 40 miles away for processing.

Navajo miners carried the dust home with them on their clothes and bodies, unwittingly contaminating their homes and, in some cases, exposing their wives and children.

[Again, the dangers of uranium exposure weren't well known in the 1950's and 1960's. If they had, better methods for protection of workers would have been regulated and implemented by State and Federal Governments. The Navajo Nation and the State and Federal governments have begun over the past two decades, and even before, to clean-up the harmful materials present on the surface]

The U.S. government was the main consumer of uranium during the mines' heyday on the Navajo Nation, when the U.S. used it in nuclear weapons and for other military purposes.

[The juxtaposition of the last two sentences of the article implies that it was the U.S. government that was responsible for the contamination of women and children. Where in this article does it say that the workers were even in part responsible for their own health?

This may have been true pre-1960, but once nuclear power for the production of electricity was initiated, most of the uranium mined was for electrical-power generation from the numerous nuclear power plants in operation in the 1970s and later]

Uranium demand dropped off for a few decades but has picked up in the last few years with the rise of nuclear power. Still, most of the uranium used in the U.S. for energy comes from other countries.

[Yes, uranium demand dropped off after the Three Mile Island incident in the 1970s caused public concern resulting in electric companies to stop all building of new nuclear power generation stations for several decades. Most of the uranium mines in the U.S. were closed because this building moratorium caused an immediate over-supply of uranium in the

marketplace. This over-supply continued until about seven years ago when demand finally caught up with supply]

“Currently, the U.S. imports more than 90 percent of the uranium used to produce nuclear power in this country,” Carol Raulston, a spokeswoman for the National Mining Association, wrote in an email.

[This is the result of lower-cost uranium produced from mines outside the U.S. being able to extract the uranium at the low-market uranium prices available until about five years ago. As nuclear power plants begin to be constructed again in the U.S., we must develop as much of the uranium supplies as possible from within the U.S., and from other friendly countries such as Canada and Australia if the U.S. is to become energy independent anytime soon.]

UNCOVERING THE PROBLEM

Mining activity at the Cove sites ended around 1968. But it was not until the 1990s and early 2000s that both Navajo and U.S. environmental agencies officially began to report that human health and environmental dangers might be emanating from the transfer stations, according to an EPA report (http://epaosr.org/sites/7915/files/Cove%20TS1-TS2_AUMW%20RA%20Report.pdf) on the sites.

EPA Region 9 (<http://www.epa.gov/aboutepa/region9.html>), which has jurisdiction over the Pacific Southwest region that includes 148 tribal nations, found “elevated radiation levels” at the two Cove transfer stations during aerial surveys of the Lukachukai Mountains.

The Navajo Nation EPA, which did its own assessments and conducted removal of some contamination from Transfer Station 1 in the early 2000s, then teamed with the U.S. EPA for help with further cleanup.

[This is a good example of how long it takes the Superfund program to remediate an area. The area was determined to be a problem in the 1990’s, but no actual remediation was performed until 2012. The question then arises: Where did all the money go that EPA provided to the Navajo Nation before remediation by EPA took control of the activities?]

Tufts University Professor Doug Brugge first heard of the contaminated sites in 1995, when he was in Cove with some Navajo colleagues who were collecting oral histories from men who had worked in the underground uranium mines. One of Brugge’s partners at the time pointed out a former mining transfer station.

“It’s interesting that there were people in the community 17 years ago that knew about it and knew that it was a problem,” he said.

[Actually, knowledge of problems with uranium mining in the Four Corners Area has been known since the 1970’s]

Brugge, currently a professor of public health and community medicine at Tufts, said it is reasonable to think that if a community is exposed to uranium, there **might be some health effects for neighbors.**

[This is idle speculation by a sympathetic listener who has some credibility. However, Dr. Doug Brugge is not the most unbiased individual associated with this site. He has published a book and appears to be the public face of uranium issues in the U.S. West. He once served as the Director of the Navajo Uranium Miner Project. One of the favorites on his *Facebook* page is the “Mining Justice Action Committee”, which is predominantly associated with Canadian mining activities but treats other areas as well]

It is difficult to say exactly how many of the health problems experienced by people living near mines and other contaminated sites is directly related to uranium exposure, Brugge said.

What is known is that uranium contains toxic material and poses a health risk, one **that residents in places such as Phoenix or New York City would not tolerate for very long,** he said. If people in those cities “found there was radioactive material in their backyard ... there would be a very aggressive response,” Brugge said.

[This implies that the residents of Cove were below the radar because they were not sophisticated enough to know what was good for them. The folks in Phoenix and New York City were not mining uranium or benefitting from the jobs that the mining provided. Now that we (EPA) know about the level of contamination at Cove, there has been an aggressive response by State and Federal Governments on their behalf and paid for by the other American taxpayers.

Dr. Brugge’s comment is idle speculation by an outside sympathetic listener. Unfortunately, this may actually be more of a political problem. The welfare of the American Indian has long been low on the list of priorities for the U.S. Government, but that has changed via government-sponsored programs of remediation and of funding for Indian-owned Casinos all over the U.S. and territories]

The **recent cleanup of the Cove transfer stations was “straightforward,”** according to Rusty Harris-Bishop, a spokesman for EPA Region 9 in San Francisco.

Under the project, the **EPA scanned the area with tools, dug for samples, tested them and began removing contaminated dirt. EPA crews used construction equipment to take contaminated soil from both sites and place them on low mounds on Transfer Station 2,** which was an open field.

Workers covered those mounds with “**polymeric soil sealant,**” a liquid chemical that is commonly used for dust control, to keep the contaminated dirt from wind and rain erosion, Harris-Bishop said.

During the cleanup, workers constantly hosed down the dirt to keep down contaminated dust, Waldon said. **The EPA also set up air monitors to make sure that radiation levels didn’t endanger students at the neighborhood school,** she said.

In the end, just under 12,000 cubic yards of material were removed, according to Waldon.

“We know that because we know how much yardage fits in a dump truck, and we know how many trips the dump truck did every day,” she said.

Though the cleanup is technically complete, the EPA said it found some contamination that was not detected during the original pre-removal assessment.

[Actually, the EPA report cited above recommended 9,370 yd³ be removed from TS1 and 10,213 yd³ from TS2 plus additional assessment in other areas. The response is not technically complete as the following sentence shows:

“We will likely return in the spring to conduct an assessment of the new areas,” Harris-Bishop said in an email.

[This is a good example of how a cleanup by EPA proceeds]

More to be done

And those actions are only a temporary solution: The Navajo Nation still has to come up with a permanent way to contain the material, according to Esplain and the U.S. EPA.

The transfer stations are small examples of the kind of work that needs to be done hundreds, if not thousands, of times on the Navajo Nation.

[This is pure speculation as to the number of sites in hopes that even more taxpayer funds will be spent on clean-ups]

Esplain said the Navajo EPA tries to educate people on the dangers of uranium contamination and how to avoid coming into contact with it, but some exposure is unavoidable.

Meanwhile, residents there continue to live alongside the uranium, a hazard that cannot be smelled or tasted. They may drink from tainted wells and their animals might graze on contaminated fields.

[This should not be happening. If the EPA knows that people are drinking tainted water or living on contaminated fields, they are supposed to take actions to prevent that. The question arises: What is the Navajo Nation Environmental Protection Agency doing about this? (<http://www.navajonationepa.org/>)

The Navajo Nation has rules against drinking from unregulated sources but the people choose to ignore these rules.

“Navajo Nation policy prohibits the use of these unregulated sources for human consumption, nevertheless, interviews with Navajo residents have shown that the practice continues and is widespread due to lack of suitable water sources in the more remote

regions of the Navajo Nation. The use of unregulated water sources represents the greatest public health risk associated with drinking water for the Navajo Nation.”

See: <http://www.epa.gov/region9/superfund/navajo-nation/contaminated-water.html>]

When the wind blows it carries uranium dust into the air and people bring it into their lungs simply by breathing. But for now it is part of living on the reservation for some residents.

“It’s inside of us and it won’t come out,” Esplain said.

[Actually, only particles finer than about 2.5 microns would likely remain in the body. Coarser fractions are caught in the bronchial system and expelled. The quote by Mr. Esplain is pure speculation and serves the reporter’s objective of fear-mongering for dramatic flair intended for those who read the article.

Wind-blown dust is not only a problem on Navajo lands but also on other lands elsewhere in the U.S. where radon leaks from granitic or other rocks deep underground. Substantial remediation efforts have been underway over the past 20 years and more. Here is a summary of the recent history of uranium mining and milling and remediation on Navajo Lands:

- 1940s: The mining and milling of uranium ore for United States defense and energy begins on the Navajo Nation.
- 1952: Kerr-McGee Oil Industries Inc. acquires Lukachukai Mountains property and begins mining uranium ore.
- 1954: Kerr-McGee moves its field camp to Transfer Station 1, which includes buildings used as offices and employee housing. Uranium ore was stockpiled on Transfer Stations 1 and 2 before being trucked to a processing mill.
- 1968: Final shipments of uranium ore are removed from the Lukachukai Mountains; activity is also believed to stop at Transfer Stations 1 and 2.
- 1980s: Uranium mining ends on the Navajo Reservation.
- 1993: Navajo speak at a congressional hearing that involves the U.S. Environmental Protection Agency and other agencies. The EPA offers to help the Navajo Nation with resources from its Superfund program, set up to address abandoned hazardous waste sites.
- 1994: The U.S. EPA conducts a study to determine human exposure to radiation and heavy metals from every abandoned uranium mine on the Navajo Nation.
- 2003 to 2004: Under its Navajo Abandoned Mine Land Reclamation Program, Navajo Nation removes one to two acres from Transfer Station 1 and takes the soil back to the Lukachukai Mountains.

- April 2005: Navajo Nation President Joe Shirley Jr. signs the Diné Natural Resources Protection Act of 2005, banning uranium mining and processing on the reservation.
- October 2005: The Navajo Nation EPA conducts a radiological survey of Transfer Station 2.
- August 2007: A U.S. EPA study finds 520 abandoned uranium mines on the Navajo Nation.
- October 2007: At a House Oversight and Government Reform Committee hearing in Washington, Navajo testify about health effects they say they have experienced from uranium.
- June 2008: The U.S. EPA, the Department of Energy, the Bureau of Indian Affairs, the Indian Health Service and the Nuclear Regulatory Commission release a five-year plan to clean up abandoned uranium mines on the Navajo Nation.
- September to November 2012: The U.S. EPA cleans up two former uranium transfer stations in Cove, Ariz.]

Original Article:

http://www.tucson sentinel.com/local/report/122112_navajo_uranium/hundreds-sites-complicatenavajo-uranium-cleanup/