



VISION MAKER
MEDIA

Educational Guide



YELLOW FEVER

UNCOVERING THE NAVAJO URANIUM LEGACY



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“In the early days, when we emerged from the third world up into this fourth world, the Holy People gave us a choice of two types of yellow powder. One of the yellow powders was dust from the rocks, the other was corn pollen. We chose corn pollen and the Holy People were content. They warned us that since we had chosen the yellow powder from the corn, we would have to leave the yellow dust from the rocks in the ground, for if it were ever to be disturbed, evil and misfortune would result.”

—Navajo Oral History

Program Synopsis

Tina Garnanez, a young Navajo veteran, goes on a personal investigation into the history of the Navajo uranium boom, examining its lasting impacts and the potential for new mining in the area. Looking at the cost of cheap energy and the future of the industry, Tina becomes an advocate, lobbyist, and a vocal proponent for environmental justice.

Grade Appropriateness

- 9-12

Subject/Topic Curricula

- Social Studies
- U.S. History
- Language Arts
- Intro to Geology
- Intro to General Chemistry
- Environmental Studies

Common Core State Standards (CCSS)

The appropriate common core standards are listed using the nationally accepted labels and include



The members of NNDUWC stand together on the capitol steps in Washington, D.C.
Photo by Jay Minton (Potawatomi).

three parts: the first letter(s) refer(s) to the strand (e.g. RL – Reading standard for literature; RI – Reading standard for informational text; W – Writing, etc.); the first number(s) refer(s) to the grade level and the last number(s) refer(s) to the number of the specific standard.

For more information, consult:
<http://www.corestandards.org/ELA-Literacy>

Key Concepts

1. Navajos are spiritually connected to their homeland that they refer to as Diné Bikéyah.
2. The destructive effects from radiation due to uranium mining continue to plague the Navajo people today through various forms of cancer and respiratory ailments.
3. As a whole, our societies need to become more aware of the effects of energy production on the environment and on plants, animals, and people.

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Background

The Navajo Nation is the largest American Indian tribe in the United States and occupies the largest landmass of any Indigenous nation in the world. The Navajo Nation spans portions of southeastern Utah, the northeastern quarter of Arizona and northwestern New Mexico. Its land mass is 17.2 million acres, roughly the size of West Virginia. This high desert, with scattered forests and majestic sandstone formations, is referred to as the Colorado Plateau. Grand Canyon National Park is just west of the Navajo Nation boundary and is regarded as a sacred place to the Navajo and other tribal groups from the region. The land is rich in natural resources such as coal, oil, natural gas, and uranium, and home to large forests of Ponderosa, Piñon and Juniper Pine, along with Douglas fir.

Anthropologists have theorized that nomadic groups of Navajo crossed a land bridge in the Bering Strait from Asia to North America between 1100 and 1500 A.D. However, ceremony, prayer, songs and oratory explain that the Navajo people emerged from the Earth in a place near present-day northwestern New Mexico, thus placing them in the Four Corners region of the Colorado Plateau for centuries prior to European contact.

According to Navajo oral tradition, the Holy People first taught the Navajo about the Four Sacred Mountains that define their homeland. Mt. Blanca (Sisnaajini), near Alamosa, Colo., is the sacred mountain of the East; Mt. Taylor (Tso' Dził), near Grants, New Mexico, sacred mountain of the South; Humphrey's Peak (Doko'oosłíid), near Flagstaff, Ariz., sacred mountain to the West; and Mt. Hesperus (Dibé Nitsaa) in southwestern Colo., sacred mountain to the North. Within these boundaries, the Navajo were assured they would be connected to the land and its abundant gifts for all time.

The Navajo are a matriarchal society. Children are born to their mother's clan and born for their father's clan. In the early days, small semi nomadic groups of Navajo moved throughout the Colorado Plateau hunting and gathering. They also engaged in trade and sporadic raiding with other tribes.

At the start of the 1860s, the U.S. government began a policy of imprisoning the Navajo until they agreed to settle in one place and discontinue their semi-nomadic lifestyle. Led by noted scout Kit Carson, the Calvary set out on a campaign to gather Navajo people and detain

them in an internment camp at Fort Sumner in east central New Mexico. In 1868, after four years of incarceration, Navajo leaders signed a treaty with the U.S. government that allowed the people to return to their homeland in the Four Corners area. The *Treaty of 1868* created the Navajo Reservation, and the area was eventually enlarged through various executive orders and legislation. Now known as the Navajo Nation, the Diné (which means The People) raised livestock and worked the land on the reservation. Beginning in the 1920s, with the discovery of oil on the land, the Navajo Nation began working to manage the demand by oil companies and the U.S. government for access to the wealth of minerals and energy sources on the land.

Following World War II, the U.S. found itself in the nuclear arms race with the Soviet Union. The *Atomic Energy Act of 1954* allowed private companies to enter the nuclear arms and materials development arena. Large uranium deposits had been found in the Colorado Plateau in the Navajo Nation. Private mining companies and the Atomic Energy Commission (AEC) began mine exploration and hired local Navajo men to work in the mines. Although it was acknowledged that uranium mining was dangerous, the AEC and mining companies failed to share information about health risks caused by exposure to uranium to the Navajo miners who were grateful for gainful employment.

For Navajo veteran Tina Garnanez, this neglect caused her to seek answers and to learn about the history of the Navajo uranium legacy. This film traces her journey to find answers to questions asked in the beginning of the film: 1.) Why are all the male members of her family either chronically ill or passed away? 2.) Why were she and her relatives told not to play around the covered up caves in the hills surrounding her family's land? 3.) What have the mining companies and federal government done to clean up radioactive mining sites on the Navajo Nation?

The Navajo people remain spiritually, emotionally, physically and mentally connected to the land. They are a resilient people, dedicated to living harmoniously within their homeland. They will continue to seek justice, never giving up on the gifts provided by the Holy People through a never ending connection to Diné Bikéyah. (Navajo land)

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Chapter 1: BETWEEN WORLDS

The introduction of sheep to the Navajo by the Spanish in the late 1500s profoundly affected their lifestyle. Sheep are the foundation of Navajo physical and cultural survival and the Navajo are the only tribe in the US to adopt a pastoral lifestyle.

Many modern Navajo families still maintain a family flock and gather regularly to collectively care for the family's flock. Much of the Navajo Nation lacks modern day infrastructure like as paved roads, water and sewage lines and electricity. This does not keep families from their responsibilities in caring for sheep and livestock. Today, most Navajo families live and work in towns and cities, returning to the family land on weekends and holidays to enjoy family activities, participate in ceremony and to care for the land and its bounties. However, their land is still the stage for extensive mining and natural resource exploration.

Content Questions

1. According to the film, what is the cornerstone of Navajo life? *Family is the cornerstone of Navajo life.*
2. How do Tina's great aunts (and most Navajos) greet the new day? *The new day is celebrated by offering prayers and using corn pollen to seal the prayers.*
3. Who is Tina's hero and why? *Tina's hero is her Grandma Daisy because she lives traditionally. Daisy lives off the land; she hauls her own wood and water, raises sheep and goats, and grows fruit and vegetables.*
4. What is the story of Tina's Uncle Crash Willis? How did he serve the country and his community? *Tina's Uncle Crash Willis was a Veteran of two wars and mined gold, silver, and uranium.*
5. How many of his relatives died from exposure to radiation? *Three of Crash Willis's brothers and his father all died from diseases brought about by prolonged exposure to radiation.*
6. Where is uranium mined? *Uranium is mined underground.*
7. Although the Navajo people have been told the ground water is no longer any good, they continue to grow their crops and to live upon the land. Why do you suppose this is so? *Navajo people have a deep and intimate knowledge of and respect for the land. The land is referred to as their Mother. Navajo oral histories place the Navajo people on this land since the beginning of time and they hold this very sacred. They will never leave their homeland and never give up on living in harmony on this sacred land.*



A young Jameson Garnanez (Navajo), Tina's nephew, holds a baby lamb.
Photo by Sophie Rousmaniere.

Discussion Questions

1. Sheep is life to Navajo people – they are considered to be part of the family and they sacrifice so that the family can continue to live. Cultivating herds of sheep and caring for them help Navajo families to live in balance and harmony. Discuss reasons why sheep are an important part of Navajo culture. *The sheep have to be cared for and fed. When you herd them, you have a special connection to the land. They help you to have a connection to the seasons and what occurs in nature during these times. Sometimes during lambing season people need to assist with the process. They sacrifice their lives for our lives, when they are butchered for food it is done in a spiritual manner.*
2. Tina made an observation that most of the older men in her family are no longer alive. Discuss the reasons why this is so. *Most of the men were miners and worked underground without any safety equipment. They inhaled uranium dust and radon gas for many years and became sick from both. They did not find out about the dangers of what they were breathing-in until it was too late.*

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Chapter 2: URANIUM

Uranium is among the heaviest of the natural elements and produces a heavy metal that is found in minute concentrations in most rocks and throughout the earth's crust. Its molecules are very dense and unstable. This quality is what makes it radioactive.

When it was discovered that uranium was radioactive, the Atomic Energy Commission began to mine it for use in building nuclear bombs and producing nuclear energy. While everyone agreed that uranium was dangerous, the extent of the danger was not fully understood when mining exploration began in the 1950s.

The Navajo Nation is the largest Indigenous reservation in the world and 40% of its citizens live in poverty. Today, mining interests are attempting to begin mining within the Navajo Nation again as the Navajo land is situated along a rich-energy corridor. Many Navajos that live in this energy corridor suffer from high rates of cancer and respiratory illnesses. Big power plants in the region feed energy to Tucson and Los Angeles.

As a society, we are all charged with taking a critical and insightful look at power, where it comes from, and how we consume it.



Canyon de Che on the Navajo Reservation in Arizona.
Photo by Sophie Rousmaniere.



HRI in the field conducting a geological survey.
Photo by Jay Minton (Potawatomi).

Content Questions

Clip #1 (00:05:15 - 00:05:58)

1. What is uranium? *A chemical element with the symbol U and atomic number 92, meaning that a uranium atom has 92 protons and 92 electrons, 6 of which are valence electrons.*
2. According to scientists, what is the most significant characteristic of uranium? *It is unstable—the nucleus is always in a state where it is emitting energy in an effort to hold itself together in order to be stable, rendering it radioactive.*
3. What type of gas does uranium emit? *Uranium emits radon gas.*
4. What types of issues challenge the stability of the Navajo Nation? *The issues that currently plague the Navajo Nation are threat of the loss of language, poverty, lack of transportation, energy, economic and social infrastructure, and health disparities.*
5. Do you have the same issues of concern as the Navajo Nation does in your own community?

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Clip #2 (00:05:58 - 00:10:46)

1. According to the film, Navajos today are rich and poor in what? *Rich in culture, wildlife, and energy, but poor in money, water, and nutrition.*
2. Why do coal-burning power plants emit more uranium radiation than uranium mining? *Radioactive minerals uranium and thorium occur in small amounts in natural coal. When coal is burned, radiation is released because of the uranium present in the coal. The radioactive "fly ash" can be found in the air, the soil, and the ground water.*
3. What type of gas does a nuclear power plant emit? *Nuclear power plants emit steam from the water used to cool the nuclear reactor core.*
4. According to the film, what percentage of Navajos live without electricity? *40% of the Navajo population does not have electricity in spite of the fact that power plants are literally located in their back yards.*
5. Where did the men work before they worked in the Uranium mines? *They left the Navajo Nation to work on the railroads all across the country.*
6. In the film, why did Tina take water samples? *Tina wanted to test for radon in the water.*
7. What is the San Juan Citizens Alliance? Name other organizations throughout the country that might have these same goals and objectives? Why are organizations like this important? *These types of organizations keep people aware of our environment and advocate for the need to respect and care for it.*
8. What is an energy sacrifice zone? Is the Four Corners region an energy sacrifice zone? Describe. *An energy sacrifice zone is where people work producing the energy and sacrifice their health and the environment so people far away from the production and subsequent radiation can receive the energy. The film states, "the Navajo live in one of the largest energy corridors—coal, natural gas, oil—in North America, but suffer disproportionately from high rates of asthma, cancers and other chronic diseases."*

Multimedia/Research Activity

1. Divide the class into groups of six. Using the Internet and library resources, have students identify the Colorado Plateau (also known as the Four Corners region) on a map that is created by each group. Once the maps have been laid out, have the teams locate, identify, and mark the following:
 - Uranium mines
 - Coal deposits/mines
 - Natural gas sites
 - Oil wells
2. This will help the teams to see what an "energy corridor" looks like. Keep in mind that people live on this land, along with sheep, cattle, and horses. Have students think about and discuss their own families and where their families' lands are located. Have each group engage in a discussion about the potential environmental hazards that they might encounter if their family's home was in an area such as this. (This is intended to allow the students to think about other types of communities: rural, small town, and farming communities.)
3. The film talks about two major power plants in the Four Corners region. Using the Internet and library resources, identify these two power plants, and explain the process in which they generate electricity in the plants? What cities is the electricity sent to? How is it sent? Have students



Tina Garnanez (Navajo) collects some fresh water from Oak Springs. Photo by Sophie Rousmaniere.

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Chapter 3: STORIES

Much of Native America's collective history is told through song and story and for Navajo people, oral histories keep their culture vibrant and resilient. To walk in a particular place and share a story, interweaving land, vegetation, and people is considered a blessing and an important contribution to the continuation of the Navajo culture.

Several individuals recall their childhoods during this section. Gilbert Badoni shares childhood stories of growing up near the Slick Rock Mine in southwestern Colorado and how he and his siblings would play near the mine site. During the time he lived there, the only nearby water source available was radioactive runoff from the mines, which they used for baby formula.

Earl Saltwater explains how many of the children in his community were born with a variety of health issues and birth defects. Inadequate health care and lack of medical resources makes it hard for the parents to care for them. He expresses his disappointment that his people were not informed of the dangers of uranium mining.

Pat Bennett recalls growing up in Shiprock, New Mexico, where mill tailings were dumped into a pile in the middle of town. He explained how his father came home each day with yellow dust all over his clothes. He adds that his father and other miners often had a fever and flu-like symptoms from the constant exposure to uranium that community members referred to as "yellow fever." His mother-in-law tells a story of how her husband used to look for uranium by tasting yellow stones. If the taste of the stones was sweet, then they had found uranium.

In 1999, the Environmental Protection Agency developed a comic character named Gamma Goat, who was featured in a series of comics warning young children about the dangers of radiation and playing around old uranium mines and tailings sites.

Content Questions

Clip #1 (00:13:31 - 00:17:31)

1. What does Earl Saltwater say are the health effects of radiation on people in his community? *According to Earl Saltwater, babies in his community were born with birth defects and the Navajo miners were never told that uranium was harmful and that it could make you very sick or even kill you.*
2. What happened to the ground water in Shiprock? *The water became contaminated from the Uranium Mill site. This included water for drinking, irrigation, and livestock.*
3. In the film, the families of uranium miners in the Shiprock area describe "yellow fever." What is that? *Their fathers and grandfathers would come home from work with a fever and other flu-like symptoms from the constant exposure to uranium dust and radon gas.*
4. When Navajo miners were searching for uranium ore, what was one way they identified it? *They said it tasted sweet.*
5. What is the most impacted community in the Navajo Nation from radiation? *Church Rock, New Mexico, as this is the community where a uranium holding pond gave way and radioactive mill waste flowed into the Rio Puerco and spread as far away as east central Arizona.*

Discussion Question

1. Have a short discussion with students about family traditions. Have students prepare a short essay to share in a class discussion that discusses how family stories are handed down, and thus, family histories recalled. Are family histories important? Why or why not?

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Chapter 4: THE JOURNEY

A primary message this film conveys is the resiliency of the Navajo people and their ability to enjoy and celebrate life and culture in the midst of the injustice and the desecration of Navajo land in the name of progress. The Northern Navajo Fair is held on the first weekend of October and is the longest running of the annual Navajo Fairs. Traditionally, it was a time when Navajo people gathered to share and trade various foods they had harvested and to celebrate the upcoming year. It also marked the beginning of the winter ceremonial season with the nine-night ceremony called the Nightway Chant or Yei'Bi'Chei. Today, this celebration includes a parade, rodeo, pow wow, traditional song and dance, races and the Yei'Bi'Chei ceremony. The parade is also a platform for groups to raise awareness of environmental and political issues.

In this section, Tina attends this celebration and then sets out on a journey to search for answers to her growing number of questions about the legacy of uranium exposure. She realizes that although her Navajo people hold fast to their traditions, they are very patriotic and positive about modern life.

There are also people who live in the Four Corners region that support the reintroduction of uranium mining to the area so people can have jobs. She visits the home of Teddy Nez and listens intently to his family's experiences with the mining industry.

Content Questions

Clip #1 (00:21:54 - 00:23:17)

1. What community does Teddy Nez Live in? *He and his family live in Church Rock, New Mexico.*
2. How much of Mr. Nez's topsoil has been removed due to uranium exposure? *More than 12 inches of the topsoil on Mr. Nez's land has been removed because it was found to contain high amounts of radiation.*
3. What type of health condition does Teddy Nez have? *Mr. Nez has colon cancer.*

4. The EPA warned Teddy's family not to stay outside their house for too long. Why? *Because there is a high amount of radiation in the soil and the air and this will make his family members sick if they are exposed to it for too long.*
5. Why do Teddy and his family not want to move to a new home? *Teddy's family is connected to the land spiritually, emotionally and physically. Navajo people consider the land as Mother Earth and they feel they belong to the place where the Creator has placed them.*

Content Questions

Clip #2 (00:23:17 - 00:25:32)

1. Where does water from the Rio Puerco flow to? *The water in the Rio Puerco flows into the Colorado River, which winds through the Grand Canyon and ultimately into the Pacific Ocean.*
2. According to former member of the New Mexico Senate Linda Lovejoy (Diné), who has the most positive benefit from uranium mining? *She says the big mining companies and the federal government benefit at the expense of the people who live in those areas where mining is occurring.*

Discussion Question/Research Activity

1. In 1979, the United Nuclear Corporation's Church Rock uranium mill tailings disposal broke its dam. More information can be found in this news article from the *Navajo Times* about the 1979 Church Rock Spill and a brochure published by the EPA. More than 1,000 tons of radioactive mill waste and 93 million gallons of radioactive tailings solution flowed into a local river. This incident released more radiation than the accident at Three Mile Island Nuclear Power Plant in Harrisburg, Penn.

Construct a map of the area where the radioactive material flowed. Research how long it will take for the land to heal after this occurrence. How much land was affected since much of the material was in the water. Use your maps to trace the path of the radioactive material in order to illustrate the affected areas. What were the impacts of this incident? Was it significant? Was it in the news?

Chapter 5: INDUSTRY

The Environmental Protection Agency estimates that there are approximately 4,000 mines with documented uranium production and another 15,000 locations with uranium occurrences in 14 western states, most in the Four Corners area and Wyoming. Mining interests have begun uranium exploration again and are moving forward with plans to resume mining in and around Navajo land

Mining companies such as Hydro Resources, Inc. (HRI) are now on site near Church Rock, New Mexico, taking water samples in an effort to prove to the residents that the groundwater is still safe to drink, and that in situ leach mining is safe.

Content Questions

Clip #1 (00:25:33 - 00:32:03)

1. What is HRI and what is their interest in uranium mining? *HRI stands for Hydro Resources, Inc. and they are a mining company that claims their method of mining uranium is safe, even though some groups have proven that their mining technique contaminates the ground water.*
2. What is the current status of the relationship between Hydro Resources, Inc. and the people of Church Rock, New Mexico? *The mining company Hydro Resources, Inc., wants to begin mining in the Church Rock area, and is currently in a legal battle with the local residents over whether the company has the right to mine in that area.*
3. Ultimately, who is responsible for the safety of the people and the environment when it comes to uranium mining? *The Federal government is responsible for keeping this a safe process.*
4. What do the Citizens for Responsible Energy say about nuclear energy? *They feel that if the American people can access all their resources, then America would not have to be dependent on other countries for their energy resources. They feel Americans can be self-sufficient when it comes to energy and energy production.*

5. What type of gases do power plants emit? *Nuclear power plants emit steam and therefore, many people say this is a clean and safe way to create energy. Coal-fired power plants emit sulfur dioxide (SO₂), nitrogen oxides (NO_x), particulate matter, mercury, lead, radiation, carbon monoxide (CO), hydrocarbons, arsenic, and other toxic substances.*
6. After Tina did some research about uranium mining, what were her thoughts? *She observed that nuclear energy is less expensive than other types of energy generation methods. As she learned about new technology, she began to think that maybe the new mining methods were indeed safer.*
7. What is in situ leach mining? *Drilling holes into ore deposits, and then pumping a leaching solution into the deposit that dissolves the mineral. Then the solution is pumped to the surface and processed to remove the uranium or other deposit.*

Multimedia/Research Activity

1. Using the Internet and library resources, have students look up and research the in situ leach mining method. Have them draw diagrams illustrating the process and research about how this process differs from the traditional mining methods of 50 years ago. Through oral presentations, students can share thoughts about this technique and offer their opinion about its safety. Respond to the comments in the film by proponents of nuclear energy using this process as the basis for responses. Is there proof that this process harms the ground water and aquifers?
2. Research the terms “greenhouse gases” and “the Greenhouse Effect.” Draw a diagram that illustrates how greenhouse gases affect our air quality. Build a map of the United States and place markers on sites around the country where the Greenhouse Effect is more pronounced than other places. Think about wind currents and if this affects your home community in some way. Discuss your findings.

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Chapter 6: VETERAN'S DAY

Tina spent several years in the Army and did tours of duty in Iraq and Kosovo. This was a difficult time for her and she suffers from post-traumatic stress disorder (PTSD). One of the therapies she has begun to explore is photography. Her family is the subject matter of her art as she considers them her grounding, her connection to her identity as a Navajo person and to Navajo land. They have always been her strongest support and she pays tribute to them through the art of photography.

It is important to have family support through these very difficult life experiences. Tina also credits her Navajo teachings as having saved her from ruin.

The Indian Pueblo Cultural Center is located in Albuquerque, New Mexico, and presents the art and culture of the Pueblo people of New Mexico as well as special exhibits by or about other Native cultures.

As Tina thinks about her family and expresses herself through her art, she also realizes that her grandfathers and uncles all were warriors as well, but they were in the battlefield of the uranium mine, laying down their lives so nuclear bombs could be made. These individuals are referred to as Cold War Patriots.

Content Questions

Clip #1 (00:32:23 - 00:34:32)

1. Tina is a veteran and struggles with PTSD. Research what PTSD stands for. *PTSD is the abbreviation for Post-Traumatic Stress Disorder, a type of anxiety condition that can occur in people who have been through an extreme emotional and traumatic experience such as war.*
2. What art form helps Tina deal with Post-Traumatic Stress Disorder? *Tina uses the art of photography to capture images that are close to her and to remember her family and culture. By including her family as the subject matter for her artistic expression, Tina feels connected, grounded and safe. She says that her family is her strength so she shares that concept through her photos.*
3. At the exhibition opening at the Indian Pueblo Cultural Center, what type of dance do you suppose the young man is doing and why? *The man is*

performing an Eagle Dance. This Dance is a way to show respect to the eagle, which is considered sacred by American Indian people.

4. In addition to doing photography, what other things does Tina want to do that will help her healing process? *She wants to learn her Navajo language and learn more about Navajo ceremonies.*

Clip #2 (00:36:16 - 00:36:37)

1. What was the "Cold War" and what is a "Cold War Patriot"? *It was the term applied to the race for nuclear arms supremacy between the USSR and USA in 1950s. Patriot is one who died from mining, and their mining contributed to the cold war (Navajo uranium miners).*

Clip #3 (00:37:35 - 00:41:29)

1. Do the residents of Grants, New Mexico, favor uranium mining? Why or why not? *Some residents know that the land is still recovering from past mining and are leery to see it happen again.*
2. The film describes Grants, New Mexico, as a Boom Town for the uranium mining industry. Discuss what a Boom Town is. What other places throughout American history have had Boom Towns—what was the industry that these towns were dependent on? Are there Boom Towns anywhere in the U.S. today? If so, where and what industry? (Have students discuss events such as the California Gold Rush, the Copper mine towns in Arizona and the oil industry currently expanding in North Dakota.)
3. Annie Begay discusses the challenges her family faces due to exposure from radiation. Many of the children born in Annie's family are born with handicaps and some members of her family have unexplained illnesses and a high rate of cancer. People in this area of New Mexico have not been adequately educated about the effects of prolonged exposure to radiation and they do not have a complete understanding of the health issues that arise. Have students discuss some ways they think the community can obtain more knowledge about radiation and its effects. (Have students think about community health services, schools, libraries, and other places in communities where we can learn remembering that many of those affected live without electricity and in remote areas).



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Chapter 7: WASHINGTON

Following decades of environmental contamination, Navajo miners began to experience health issues. Both the U.S. government and private companies were slow to take action on behalf of those who suffered and the situation was ignored.

In 1990, Congress passed the Radiation Exposure Compensation Act to settle cases and provide needed compensation to Navajo miners or their survivors who contracted certain cancers or serious diseases as a result of exposure to radiation.

By the time this legislation was passed, many of the miners had already passed away so their surviving families received compensation. Gilbert Badoni escorted a group of Navajo women to Washington, D.C., to testify in front of Congress about the effects of uranium mining on their families and in their communities. Although culturally these women represent the backbone of Navajo society, many of them live in poverty and in third-world conditions. As a result, they do not have political power, but with the support of their congressmen, they appeal to Congress for compensation to the families of uranium miners.

Content Questions

Clip #1 (00:42:46 - 00:47:16)

1. Where did Gilbert Badoni take the group of ladies and why? *He took them to Washington, D.C. to testify before Congress about the effects of radiation on their families.*
2. Who are the U.S. Congressmen that helped get more legislation passed to compensate survivors of miners who were exposed to radiation? *Two of the most outspoken and strong advocates for the families of uranium miners are Ben Ray Lujan from the New Mexico House of Representatives and Senator Tom Udall from New Mexico.*
3. Are Navajos in favor of mining in the Church Rock and Four Corners areas again? Why or why not? *Most are not in favor of mining because many people are sick, babies have been born handicapped, and they do not feel that there is support coming from the government or mining companies.*



Warnings in Diné and English near a closed mine in Sonostee, New Mexico.
Photo by Jay Minton (Potawatomi).

Multimedia/Research Activity

1. Work in groups of five. Using the Internet and the library, research the history of the *Radiation Exposure Compensation Act*. What was it? Why was it drafted? Who was the U.S. Senator that introduced the bill? How did it progress through Congress? Create a timeline of this Act and its status today.

In addition, have the groups discuss and record the following:

- What are the main points of this law?
- What type of compensation are families entitled to?
- Is there evidence that everyone who is eligible is being compensated?
- Is there any language in the law that provides for follow-up health care for families of these miners who might develop health issues? If so, what?
- Given the fact that much more mining and oil exploration will be taking place in America in the future, do you think more laws should be passed to protect people? Why or why not?

Chapter 8: LIVING LIFE

Despite efforts to clean up uranium sites, significant problems stemming from the legacy of uranium development still exist today in the Navajo Nation and the surrounding states of Arizona, Colorado, New Mexico, and Utah. Hundreds of abandoned mines have not been cleaned up to environmental specifications and, as a result, continue to present environmental and health risks in many Native and non-Native communities.

For Navajo people, embracing the legacy of being able to adapt to situations while continuing to honor Mother Earth and family are the core of their strength and resiliency. Oral histories, language, ceremony and tradition have guided the Diné to flourish, even in the face of industrialization, progress and technology.

For Tina, time spent with family around sheep and nature is healing and where she finds solace and safety.

Content Questions

Clip #1 (00:47:31 - 00:51:59)

1. Is mining excavation occurring only on the Colorado Plateau? *No, mining is taking place all over the United States.*
2. Is it an acceptable part of Navajo teachings to be “inside the Mother Earth, in the ground”? *No, because Navajo teachings say we are surface people, those who live on the Earth’s surface.*
3. What were the results of Tina’s water test for her family’s water supply? *The results showed that the water from Tina’s family’s water source was not contaminated by radiation.*
4. What are Tina’s hopes and plans for the future? *She would like to return to her family’s home site plot where her grandma Daisy lives, tend to the crops and sheep, and live a simple life off the land. This is a demonstration of the resiliency of the Navajo people and of their strong connection to the land and its bounty.*



Tina Garnanez (Navajo) enjoying some time with her grandmothers.
Photo by Sophie Rousmaniere.

Discussion Question

1. Identify three major current environmental issues that we must learn to deal with in order to save our environment for the future generations? Discuss possible solutions to these challenges. This is an opportunity to think about local communities and how we can work collectively to educate ourselves and our families about issues such as recycling, facing climate change and bio farming. It is important to emphasize that these issues concern all communities, not just Native communities.

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Supplemental Activities

Use this research and this lesson to remember that responsibility to a safe environment falls upon all of us and that we are all in some way affected by dangerous situations that are left unattended.

1. Research the oil exploration and production that is currently underway in North Dakota and neighboring states. Are these oil wells on American Indian land? If so, which tribes live on the land and how are their communities being affected? Present your findings in a short narrative.
2. Using a map, locate the Colorado Plateau. Identify famous places or landmarks. (Monument Valley, Mesa Verde, etc.). Using the Internet and library resources, collect numbers on tourism for the area. Then think about movies. Identify movies that have been filmed in locations in the Colorado Plateau. (Have students list recent films such as *The Lone Ranger*, *Transformers*, *Iron Man*, and *Wild Wild West*). Identify films made throughout the last 80 years in this area such as the John Ford films, John Wayne westerns, *Easy Rider*, and *Forrest Gump*. Think about music videos that have been filmed in the Colorado Plateau. On the map, identify radioactive sites and determine if any of the companies that worked on these films and videos might have been exposed to radiation. those who worked in this industry? There is controversy about whether John Wayne and many others died after working on *The Conquerors* in Monument Valley, with bomb tests and mines be thought of as a potential cause. Do you think any of this exposure has had an effect on the lives of those who worked in this industry?



Marching to help bring remembrance and awareness to a massive radioactive water spill, the original event occurring near Churchrock, New Mexico, in 1979. Photo by Jay Minton (Potawatomi).

3. Describe what the each agency does and why it is significant.
 1. AEC – Atomic Energy Commission
 2. EPA – Environmental Protection Agency
 3. DOE – Department of Energy
 4. HRI - Hydro Resources, Inc.
 5. NRC – Nuclear Regulatory Commission
 6. PTSD – Post Traumatic Stress Disorder
 7. RECA – Radiation Exposure Compensation Act
 8. UMTRA – Uranium Mill Tailings Remedial Action
 9. UMTRCA – Uranium Mill Tailings Radiation Control Act
 10. WIPP – Waste Isolation Power Plant
4. Define the following vocabulary words:
 1. Contamination
 2. Disparity
 3. Environment
 4. Exposure
 5. Fly-ash
 6. Gamma Ray
 7. Greenhouse Effect
 8. Half-life
 9. Pastoral
 10. Radiation
 11. Resiliency
 12. Tailings

National Common Core Standards, Grades 9-12

Key Ideas and Details

- CCSS.ELA-LITERACY.RH.9-12.1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
- CCSS.ELA-LITERACY.RH.9-12.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of a text.
- CCSS.ELA-LITERACY.RH.9-12.3 Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.

Craft and Structure

- CCSS.ELA-LITERACY.RH.9-12.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.
- CCSS.ELA-LITERACY.RH.9-12.6 Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.

Integration of Knowledge and Ideas

- CCSS.ELA-LITERACY.RH.9-12.9 Compare and contrast treatments of the same topic in several primary and secondary sources.

Range of Reading and Level of Text Complexity

- CCSS.ELA-LITERACY.RH.9-12.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.
- CCSS.ELA-LITERACY.RH.9-12.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

Key Ideas and Details

- CCSS.ELA-LITERACY.RI.9-12.2 Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
- CCSS.ELA-LITERACY.RI.9-12.3 Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

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Craft and Structure

- CCSS.ELA-LITERACY.RI.9-12.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
- CCSS.ELA-LITERACY.RI.9-12.7 Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.

Range of Reading and Level of Text Complexity

- CCSS.ELA-LITERACY.SL.9-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
- CCSS.ELA-LITERACY.SL.9-12.1.A Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
- CCSS.ELA-LITERACY.SL.9-12.1.C Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
- CCSS.ELA-LITERACY.SL.9-12.1.D Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
- CCSS.ELA-LITERACY.SL.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
- CCSS.ELA-LITERACY.SL.9-10.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.

Presentation of Knowledge and Ideas

- CCSS.ELA-LITERACY.SL.9-12.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
- CCSS.ELA-LITERACY.SL.9-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

Production and Distribution of Writing

- CCSS.ELA. LITERACY.W.9-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.
- CCSS.ELA- LITERACY.W.9-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
- CCSS.ELA- LITERACY.W.9-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
- CCSS.ELA- LITERACY.W.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow or broaden the inquiry when appropriate, synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

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Links

- **Citizens' Alliance For Responsible Energy**
An advocacy group to help with understanding the importance of energy to our society and how to be educated about energy production. www.responsibleenergy.org
- **Navajo Abandoned Mine Land Reclamation Department**
Addresses abandoned mine land problems within the Navajo Nation. www.aml.navajo-nsn.gov.
- **Navajo Nation Dependents of Uranium Workers Committee (NNDUWC)**
A grassroots organization of widows and children of Navajo uranium miners.
www.navajouraniumfamilies.com.
- **Southwest Research and Information Center**
Works on health, environmental issues and community assistance. www.sric.org.
- **U.S./Navajo Environmental Protection Agency**
Addresses uranium contamination in the water and building materials in the Navajo Nation.
www.navajonationepa.org.

Resources

- Amundson, Michael A. *Yellowcake Towns: Uranium Mining Communities in the American West*. Boulder, CO; University Press of Colorado, 2004.
- Deloria, Vine, Jr. *Red Earth, White Lies: Native Americans & the Myth of Scientific Fact*. New York; Scribner, 1995.
- Eichstaedt, Peter. *If You Poison Us: Uranium and Native Americans*. Santa Fe, NM; Red Crane Books, 1994.
- Edited by Brugge, Doug; Benally, Timothy and Yazzie-Lewis, Esther. *The Navajo People and Uranium Mining*. Albuquerque, NM; University of New Mexico Press, 2006.
- Pasternak, Judy. *Yellow Dirt: A Poisoned Land and the Betrayal of the Navajos*. New York, NY; Simon & Schuster, 2011.
- Roscoe, Robert J., Deddens, James A., Albert, Salvan and Schnorr, Teresa M. "Mortality Among Navajo Uranium Miners," *American Journal of Public Health*. 1995; 535-541.