



Navajo Birth Cohort Study Outreach staff CHERS speak out

FORT DEFIANCE, AZ - A group of Navajo women working for the Navajo Nation Division of Health (NNDOH) has been instrumental in helping the Navajo Birth Cohort Study (NBCS) make progress toward its goal of enrolling 1,500 women and their babies in this seminal study of uranium exposures.

The women, called "CHERS," which is short for Community Health and Environmental Research Specialists, have been working in partnership with other agencies, academic institutions and nongovernmental organizations to implement the congressionally mandated birth cohort study since enrollment began in February 2013. With the active support of the Navajo Nation, the NBCS is being conducted to address the potential effects of exposure to abandoned uranium mines and mine wastes on the health of Navajo women and their babies.

The NBCS field team, which consists of the CHERS, Cohort Clinical Liaisons (CCLs) at six hospitals on the Navajo Nation and Research Field Staff (RFS) employed by an Albuquerque NGO, had enrolled 186 mothers, 66 fathers and 76 babies as of the first of May 2014. The CHERS recruit and enroll participants, provide outreach to the public, and promote the study. Most important, the CHERS conduct enrollment surveys during the prenatal period and administer post-

birth development assessments of the babies and follow-up surveys of the mothers to help ascertain Navajo women's exposures to uranium wastes.

The study is a partnership of the University of New Mexico Community Environmental Health Program (UNM-CEHP) and the Southwest Research and Information Center (SRIC), both based in Albuquerque, along with the Navajo Area Indian Health Service (NAIHS) and the NNDOH CHR Outreach Program, which houses the seven CHERS working on the study at locations throughout the Navajo Nation. The study partnership includes five NAIHS birthing hospitals and a regional clinic. Much of the CHERS' and CCLs' recruitment of women into the study takes place at these facilities the Chinle Comprehensive Health Care Facility, Gallup Indian Medical Center, Northern Navajo Medical Center in Shiprock, Tsehootsoo Medical Center in Fort Defiance, and the Tuba City Regional Health Care Corporation. The new NAIHS Kayenta Hospital is scheduled for completion in late 2015 and the NBCS is preparing to staff the Kayenta Service Unit to begin recruiting participants there, too.

The CHERS outreach staff also collaborates with SRIC's RFS to help conduct home environmental assessments, called HEAs. The HEAs help to identify potential sources of exposure in and around the homes of



Navajo Birth Cohort Study CHERS Staff at Navajo Nation Broadcast Services after giving Christmas messages in Window Rock, AZ. (L. to R.): Rebecca Tosie, Olivia Muskett, Roxanne Thompson, Miss Navajo Natasha Hardy, Anna Rondon, CHERS Supervisor, and Gaturah Anderson in Window Rocks, AZ. Photo by Malcolm Benally

expectant mothers and fathers, and later on, their newborns. (See article on HEAs on page 6 for more details.)

The NBCS is funded by the Centers for Disease Control and Prevention (CDC) through monies appropriated by Congress. Dr. Johnnye Lewis, UNM-CEHP director and a board-

certified toxicologist, is the principal investigator. Dr. David Begay, a Navajo educator and UNM research professor, and SRIC's Chris Shuey, an environmental health specialist, are co-investigators. Both UNM-CEHP and SRIC collaborate with NNDOH and NAIHS staffers to provide study oversight and training for the

Navajo staff working in the field. CHERS supervisor Anna Rondon says the study provides an opportunity to ensure hózhó for the future generations of Navajo people. Read how the CHERS are reaching this goal in a series of interviews in this issue.

You Tube now features short videos promoting the Navajo Birth Cohort Study

KAYENTA, AZ - The Navajo Birth Cohort Study has posted more than a dozen short videos on You Tube and on the NBCS website to provide information about the study to the general public and to reach out to pregnant Navajo women who may be eligible to participate in this landmark investigation of uranium exposures on the Navajo Nation.

The videos can be seen on You Tube (www.youtube.com) by typing "Navajo Birth Cohort Study" into the search window, or by accessing the NBCS website at <http://nbcsh.healthyvoices.org/>.

The videos, which were approved by the Navajo Nation Human Research Review Board, give an overview of the study, discuss eligibility criteria, and provide background information on the

Navajo Uranium legacy. The videos feature both women and men talking about their decision to enroll in the study.

"You will find voices from the community, Navajo Nation leaders, service providers, and youth speaking on behalf of the Navajo Birth Cohort Study," said Malcolm Benally, the Forest Lake/Kayenta-based NBCS multimedia specialist who produced the videos. "When the whole culture is speaking, that is when everyone learns."

The videos are intended to raise awareness about the legacy of uranium mining on Navajo lands and to serve as a resource for getting out information to the public about the dangers of living near uranium mines and mills. Possible health risks from exposure to

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Southwest Research and Information Center Continues Work With Navajo Communities Affected by Uranium

Albuquerque, NM - Even in the most isolated regions on the Navajo Nation, a lot of Navajos know Chris Shuey, co-investigator for the Navajo Birth Cohort Study (NBCS) and director of uranium assessment programs at Southwest Research and Information Center (SRIC). They even think of him as their own son.

For more than 30 years, Shuey and his staff from their Albuquerque office have helped Navajo communities make sense of how to deal with contaminated water sources and the possible health effects of living near abandoned uranium mines and mills. At a July 2013 meeting near Churchrock, NM where the Red Water Pond Road Community holds its annual commemoration of the now infamous uranium mill tailings spill into the Puerco River in July 1979, Phil Harrison, who was the master of ceremonies for the event, elicited much laughter and applause when he had this to say about Shuey during his introduction: "Our son Chris, his hair has turned grey helping our community overcome all this push for uranium."

Founded in 1971, SRIC has worked on uranium issues in the Southwest since the mid-1970s, providing

technical assistance to communities affected by past and proposed uranium mining to help raise the legacy of uranium contamination as a priority issue on the Navajo Nation. To this day, Shuey and his colleague Paul Robinson are giving technical support to several Navajo communities with their efforts in pushing for cleanup of nearby abandoned uranium mines.

In implementing the NBCS, SRIC works in collaboration with the University of New Mexico's Community Environmental Health Program (CEHP), the Navajo Nation Division of Health, Navajo Area Indian Health Service, and the Atlanta-based Centers for Disease Control and Prevention/ Agency for Toxic Substances and Disease Registry. SRIC employs four Navajo Research Field Staff (RFS): Lynda Lasiloo, Two Grey Hills; Teddy Nez, Gallup; Sandy Ramone, Crownpoint; and Maria Welch, Tuba City. Nez and Ramone also worked on the DINEH Project, a study of uranium exposures in 20 chapters of the Eastern Navajo Agency that preceded and informs the NBCS.

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Navajo Birth Cohort Study Newsletter

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The Navajo Birth Cohort Study is approved and monitored by the University of New Mexico Human Research Review Committee and the Navajo Nation Human Research Review Board

Letter from the Director

The Navajo Birth Cohort Study is an exciting opportunity to answer questions that we have heard from community members across Navajo Nation for decades who want to know if the waste remaining from the uranium mining period is affecting health in communities. Of particular concern has been the affect on children and future generations.

In 2007 representative Henry Waxman began a series of hearings to understand why the more than 500 mines and their more than 1000 waste sites remain on Navajo more than 20 years after the last mines closed. These hearings led to a 5-year plan to bring together federal agencies led by USEPA to first understand and then begin to clean up these sites.

In 2010, the congressional committee overseeing the process requested that health studies be added to the effort, and the Navajo Birth Cohort Study (NBCS) was born in response to community concerns. The NBCS is an opportunity to bring together community members, researchers, tribal and federal programs, and clinical health providers to learn from each other and try to determine if there is any relationship between exposures to uranium waste, birth outcomes, and child development in Navajo communities.

The exciting thing about the NBCS is that we all learn important information that will improve health throughout the study – even though the answer to the main question will take several years. The involvement of Navajo Division of Health in collecting information helps to build research skills for future studies. Home environmental assessments provide participating families with information on risks for their children's health, as well as information on any metals identified in their urine or blood that might indicate other exposures of concern as well – or commonly confirm that there is nothing to be concerned about! Assessments of child development will also provide early warning of any possible problems, and make sure children are connected to services that will maximize their developmental potential at earlier times when they are most beneficial.

The NBCS and its broad partnership outlined in the figure below will also provide Navajo Division of Health and other tribal agencies with information on where there are needs to improve the health of Navajo children, whether those are in better clinical care, removal of environmental hazards, better nutritional options, or increased developmental services.

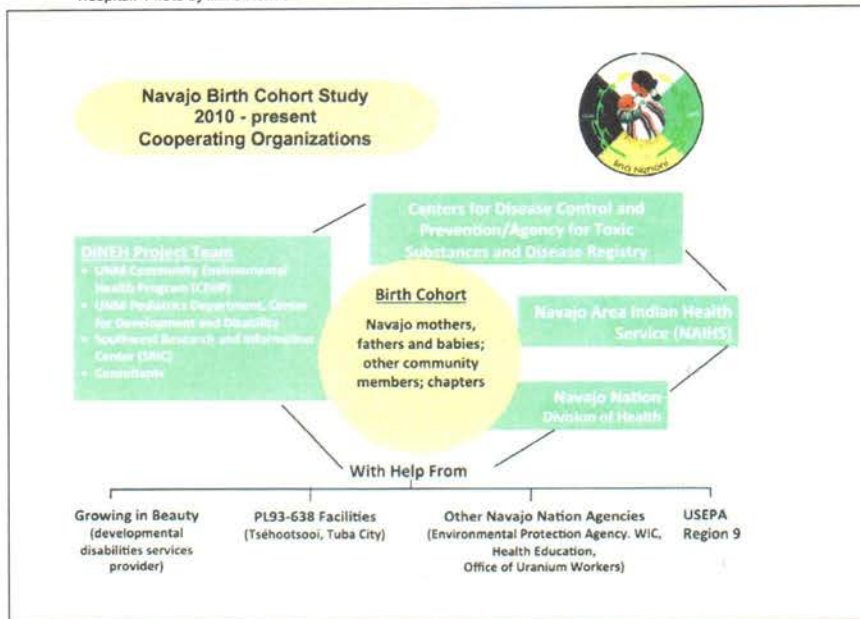
And of course participants will receive gifts throughout their involvement including the beautiful two-volume set of Native Journeywoman books to provide guidance from a Native woman's perspective to resolve health questions.

So learn about the NBCS and its partners in this series of inserts, listen to our radio Women's Health Minutes, watch our YouTube videos on the Navajo Birth Cohort Study, visit us on Facebook, visit HealthyVoices.org, or call for information to 1-877-545-6775. Spread the word to your family and friends, and join us if you are a 14-45 years old, pregnant, have lived on Navajo Nation for 5 years at any point in your life, and plan to deliver your baby at Chinle, Tuba City, Shiprock, Tsehootsooi, or Gallup Indian Medical Center!



Navajo Birth Cohort Study Principal Investigator Dr. Lewis discusses water quality issues with Yolanda Barney of Navajo EPA during a report-back and interpretive training for clinical staff at Chinle Hospital. Photo by Anna Rondon.

Johnnye Lewis, Ph.D.
Principal Investigator, Navajo Birth Cohort Study
Director, Community Environmental Health Program
University of New Mexico College of Pharmacy



"We should be reading about our own soil. Our own Dine Bikeyah, shima nahadzaan - we need to worry about that being acknowledged and know what's out there."

-Honorable Chair Jonathan Hale, Navajo Nation Health and Human Services Committee

Study / YouTube videos

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uranium have been critical concerns for Navajo communities since the first mines began setting up camps in Cane Valley, Mexican Hat, and Monument Valley, Utah and later in northeastern Arizona and northwest New Mexico.



Rebecca Tsosie, CHERS Staff holds a book copy of Journey Woman, Window Rock, AZ, Dec. 2013. Photo by Malcolm Benally

Navajo Birth Cohort Study Part XII: Journey Woman

Our newest video introduces the Journey Woman reading series featuring the voices of our very own CHERS staff member covering the Tuba City-Kayenta area. Josey Watson reads short verses about how Native Women view their skin, their

hair, and their bodies. The reading series titled "The Native Women's Health Minute" is adapted from Journey Woman: A Native Women's Journey to Wellness, Volumes I & II, edited by Betsey Buckingham, and published by Native Journey Woman, a non-profit organization which provides wellness education and guidance to Native women. Visit <http://www.nativejourneywoman.org/> for more information.

<http://youtu.be/kNv3pYcRxc>



Helen Nez tells her story with her daughter Serafina translating into English, Blue Gap, AZ. Photo by Malcolm Benally.

Navajo Birth Cohort Study Part XIII: Update 1

BLUE GAP, AZ – Helen Nez and her daughter Serafina talk about the Navajo legacy of uranium mining near their home in Blue Gap-Tachee Chapter, a small, tight-knit community at the southeastern base of Black Mesa about 30 miles west of Chinle, AZ. Helen, a grandmother and matriarch, tells her story of going to Washington D.C. to lobby on behalf of her children who she believes succumbed to health afflictions from living near uranium sites and drinking contaminated water. Her statement is filled with riveting stories about raising children who were born with the rare debilitating disease called "Navajo neuropathy." As she saw lambs being born with physical deformities every birthing season, she began to wonder if these were signs of harsh consequences for her community's health now or in the near future. How does long-term exposure to abandoned uranium mines affect the development of children? she asked.

<http://youtu.be/NjQ-A15wM1E>

Navajo Birth Cohort Study Part XIV: Join The Study

ALBUQUERQUE, NM – This video provides some basic background on the study and begins with Carol Blackhorse, 97, an elder from Big Mountain, AZ, telling the story of the birth of Changing Woman. The Navajo Birth Cohort Study takes its lead from Navajo oral histories that provide teachings surrounding womanhood, birthing, and overcoming great obstacles. Also, in this video, NBCS Principal Investigator, Dr. Johnnye Lewis, director of the Community Environmental Health Program at the University of New Mexico's Health Sciences Center, gives some insight into the importance of the study and the benefits of enrolling.

<http://youtu.be/Oo7gfgsgKts>

The videos are aimed at pregnant women and women of child-bearing



Principal Investigator Dr. Johnnye Lewis gives a presentation on the study at a staff training session in Albuquerque, NM. Photo by Malcolm Benally

age, who may be concerned about living near uranium wastes or who simply want to have healthy babies. The study's logo, an original painting by NBCS staffer Sandy Ramone of Crownpoint, NM, depicts a woman holding a newborn while surrounded by traditional Navajo symbols, and stresses a Beautiful Life - Iiná Nizhóní - for mother and baby. These positive images help promote the study's goal of enrolling 1,500 mother-infant pairs and following the baby's health and development through its first year of life.

Uranium / Southwest Research and Information Center

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They bring experience with previous research protocols and expertise in Navajo language and cultural sensitivity to the study team.

The principal job of the RFS is to conduct a home environmental assessment (HEA) for each Navajo woman enrolled in the birth cohort study. In the HEA, SRIC's trained Navajo staff members conduct

radiation surveys, measure indoor radon gas and collect samples of indoor dust for analyses for heavy metals. They also ascertain participants' source or sources of drinking water. All of these assessments are designed to provide information on the participants' environmental exposures to uranium and other contaminants. The data help the study team assess whether these exposures may affect pregnancies, births and early childhood development.

The RFS staff also works with staff from the other partner agencies to conduct outreach and education about the study, and assists Division of Health staff in conducting post-birth surveys of the moms and their babies.

SRIC's Lynda Lasiloo shared her experiences in the field with her colleagues at a recent training in Gallup, NM: "You have to really explain the benefits of the study when

young women come to talk to me. Sometimes they will show an interest but hold back. I think once you give them the information, a lot of them go home and think about it. Then they come back later with more questions. I just talk to them and try to answer their questions the best way I can. Then the ones who become interested, they become participants in the study."

Anna Rondon, CHERS Supervisor



Anna Rondon, Program Supervisor, Community Health Environmental Research Specialist (CHERS) oversees the staff reservation-wide providing outreach, assisting with home environmental assessment surveys, and recruiting participants. Window Rock, AZ. Photo by Malcolm Benally

"The unborn future generations are depending on us today to provide for a "Hózhó" tomorrow. Navajo mothers, fathers, children and grandparents deserve to know what is their environment and how can we take steps to reduce our risks to contaminants around our homes.

"Why I love my involvement in the Navajo Birth Cohort Study is the fact that we have the ability to provide Home Environmental Assessments, to ensure that access to drinking water is safe for human consumption.

"Over the past 40 years there has been grassroots Navajo movements that has sounded the alarm on the uranium mining and milling contamination that has afflicted our air, land and water. The animals and plant life have also been impacted in a detrimental process.

"The hope that Navajo Birth Cohort Study provides is the heart of the study, and that is what motivates me to encourage and view this as an intersection in public health, the environment and social justice."

Anna is Kiyaa'n'anii born for Nakaii Dine'e. Her maternal grandparents are Tabaahi and her paternal grandparents are Nakaii Dine'e.

Mae Gilene Begay, CHR/Outreach Director Welcomes The Navajo Cohort Study to Navajo lands.



Mae Gile Begay, CHR/Outreach Director, Navajo Division of Health in Fort Defiance, AZ partners with the Navajo Cohort Study to train staff and implement the study on the Navajo reservation.

The Navajo Birth Cohort Study brings long overdue public education through an in-depth maternal wellness health study for our Navajo mothers, babies and their families due to the fact that uranium mining and milling has taken an immense toll on our people and the environment.

Since 2011, I have had the honor to ensure that the Navajo Birth Cohort Study was housed in the CHR/Outreach Program, which now provides staff members with many years of experience in health promotion and fieldwork.

The Navajo Nation Council's Health, Education and Human Services Committee and their honorable Chairperson Jonathan Hale advocate strongly for this study and their support is growing stronger.

Our staff of Community Health Environmental Research Specialists (CHERS) see the need for taking on studies that impact the health of our Navajo People.

CHERS speak out...

Doris Tsinnijinnie, Red Mesa Chapter- Navajo Nation CHERS

Red Mesa, AZ - Doris Tsinnijinnie works with the Shiprock Service Unit. She is the vice-president for the Red Mesa Chapter. Doris is Tachii'nii, Red Streak Running Into Water born for Nakaii Dine'é.

Doris says, "My job is unique because I get to work with our young Navajo ladies. When it comes to a study, one always thinks we are being used as guinea pigs. I explain what the project is about. I get all these looks like "WOW". Just having at least one individual understanding and interested makes my job enjoyable. It's also a learning process for me. I get to gain more information about environmental health and prevention while I explain this to the participants. Working with

the younger generation is also very challenging. They ask a lot of questions, where you have to go back and do your homework. I enjoy working with the participants getting to see them at different times.

"Just having at least one individual understanding and interested makes my job enjoyable. It's also a learning process for me."

"Some living with low income, some do not know there are resources available for assistance.

Doing a referral for them and getting them help is satisfying and makes me believe my job is worth it. It's very tiring - driving hundreds of miles per day. Some of the roads are not paved. The other challenging thing is communication. Many of the participants have limited minutes on their phone and those are the times we go out to find them. The other part about this job is the people I work with. All those who are involved, I enjoy working with them."



Doris Tsinnijinnie and Rebecca Tsosie take a break from training in Albuquerque, NM, February 2013. Photo by Malcolm Benally

Melissa Samuels, Chinle, Arizona - CHERS Staff

Chinle, AZ - Melissa Samuel works for the Chinle Service Unit. Melissa is Tó'aheedlínii, Water Flow Together born for Ashiihi, the Salt People clan. Her maternal grandparents are T'ááshch'í, the Red Cheeks people. Her paternal grandparents are Tódi'ch'í'í'ni.

"Helping our younger and future generation to grow in beauty is a great asset."

She goes by the nickname "Missy". Missy has a short video on YouTube that she produced about the importance of having your water tested. Check it out! Navajo Birth Cohort Study: Get Your Water Tested at this link - <http://youtu.be/YesUfn5H7oQ>

Asked to talk about her

experience so far, she says, "I have been working with the Navajo Birth Cohort Study since February 2013, and I enjoy the duties that I perform every day. Before, I worked more with the Elders. They are special people with great wisdom and kindness; now I work closely with the younger generation. It gives me great joy to be close to the younger people and especially babies. I feel like they are my children! I want them to have a safe home, be happy, to learn the knowledge of environmental contaminants and educate their child about early child development. You see what I'm saying? I am a grandma. Helping our younger and future generation to grow in beauty is a great asset."

Melissa Samuels answers questions for Elders and youth at the Blue Gap Chapter in March 2014. Photo by Malcolm Benally



Velma Harold, Tuba City, Arizona

Tuba City, AZ - Velma Harold works with the Tuba City Service Unit. She is Tódič'í'nií, Bitter Water clan born for the T?'ízi 'áni, Manygoats. Her paternal grandparents are Táchii'nií, Red Streak Running into Water clan.

Velma says, "As a Community Health Environmental Research Specialist (CHERS) with the Navajo Nation Division of Health, I am involved and collaborate with other agencies on the Navajo Birth Cohort Study. I believe this study will benefit our future generation to hopefully alleviate some of the growth and developmental concerns brought upon by exposure to uranium on the Navajo Nation by way of our Dine elders. I enjoy going out into the field to visit doing Enrollment Surveys with expecting mothers and fathers-to-be.

"Some of the mothers and fathers are quite young, some are older. Being

exposed to various demographics of our participants, I have come to appreciate my work even more. Not every home life is the same. There are times when I encounter individual(s) who want to express certain issues they might be going through. By making myself open, I hope to show that I do care and that someone is willing to listen to their problems and concerns.

"I may not have the answers but my presence and understanding can bring them somewhat of an inner peace. I do what I can to assist them so that they are aware of some of the available resources their community provides. The ultimate and most rewarding part of my job is when I visit the family again after the baby is born and it is great to see how mothers and fathers glow and are adorned their new addition to the family. At each of the four visits of the Ages & Stages

Questionnaires-Inventory, I get to see the transformation in the family unit as a whole.

"Being a CHERS, I have come upon struggles within families who have been impacted by uranium especially on our Elders who worked in the mines or mills and exposed it to their love ones. With this study, we may finally get some answers with the hope of providing appropriate early interventions and adequate health care services to our future generations to break the cycle of the effects of Uranium on our Dine people."

Photo Caption: Velma Harold reads for the radio program "Woman's Health Minute" for state-wide radio station at the Navajo Nation Broadcast Service studio in Window Rock, Arizona. Photo by Malcolm Benally



Qeturah R. Anderson, Fort Defiance, Arizona

Qeturah R. Anderson works with the Fort Defiance Service Unit. She is Tááb'?'hí, Water Edge clan born for Bit'?'hnií, Under His Cover Clan. Her maternal grandparents are T?'ááshchí'í, the Red Bottom People and the Tódič'í'nií, the Bitter Water are her paternal grandparents.

Navajo Birth Cohort Study is a one of a kind program on the Navajo reservation. What I mean is that we are the very first tribe to actually have a study to look at the public health impacts of past uranium

mining and milling operations on Navajo children. To be part of

"We are the first tribe to have a study to look at the public health impacts of past uranium mining and milling operations."

history is exciting and worth doing my job as a Community Health Environmental Research Specialist.

I know that myself as well as other co-workers are making an impact about prenatal care among Navajo mothers. We ensure early intervention to reduce the impact of birth defects and developmental delays. Most importantly, we want to strengthen understanding on environmental health risk and capacity on the Navajo land.

Qeturah Anderson attending the International Uranium Film Festival at the Navajo Nation Museum in Window Rock, Arizona. Photo by Malcolm Benally.



Olivia Muskett, Gallup, New Mexico

Gallup, NM - Olivia Muskett works with the Gallup Service Unit as a Community Health Environmental Research Specialist.

Olivia says, "The Navajo Birth Cohort Study has given me the opportunity to gain knowledge on how the environment affects our health. So, even though a person eats right, exercises right, and takes care of their health in every way possible; just because of where they live, that alone has an effect on their health.

"Every time I am out in the field interviewing participants, I am amazed at the strength our people have. Here we are, conducting interviews to find out if participants are being exposed to any toxic materials or contaminants, and you find that participants are not only dealing with this issue but also with everyday struggle providing for their families.

"The Health Education that I have had gives me the opportunity

of providing information about uranium and the uranium legacy that our Navajo people have endured was a learning experience for me. I was learning right along side our participants.

"Many of the community members had stories to share on how the Uranium Mines affected their lives and it was because of this that I continue to do field work, being able to interact with community members.

"I'm very thankful to every participant that has allowed me into their home and given me a couple of hours of their time to interview and conduct the surveys. I believe their input will help to answer the questions that many of our people have been asking for many years. I want to also thank the all of the staff with the Navajo Birth Cohort Study for all their hard work and guidance. Continue your hard work for our people!"



Olivia Muskett (middle) poses for a photo with Rebecca Tsoie (left) and Roxanne Thompson (right) after reading for the Women's Health Minute at Navajo Nation Broadcast Services in Window Rock, Arizona. Photo by Malcolm Benally.

You and your community can learn more about the Navajo Uranium Legacy and the Navajo Birth Cohort Study by inviting a NBCS staff person to make a presentation at your local chapter, community event, or group. Call toll free 1-877-545-6775, for more information.

NBCS Home Environmental Assessment Data Summary Update

By Chris Shuey

(Albuquerque, NM) - The Navajo Birth Cohort Study home environmental assessments (HEAs) are conducted at the home of each participant enrolled in the study. Most HEAs are conducted during the prenatal period to measure exposures during each participant's pregnancy. We look for the presence of uranium from either naturally occurring sources or from mine waste. We measure gamma radiation and indoor radon gas, and determine if there are metals present in dust from inside the home. We monitor some participant homes for hydrogen sulfide gas, which often occurs where oil and natural gas are produced or processed.

These contaminants in homes might not cause immediate health problems, but may not be considered safe over a lifetime of exposure. Knowing the amounts of contaminants in and outside of the home help us to understand how they might affect pregnancies, births and early childhood development. We do not require participants themselves to wear radiation badges or air pollution monitors, nor do we check for other contaminants like asbestos or formaldehyde.

Participants in the study live in all areas of the Navajo Nation as well as border towns, such as Gallup, Farmington, Ignacio, Page and Flagstaff. Enrollment in the NBCS is open to all pregnant women who meet the eligibility requirements. You don't have to live in an area impacted by abandoned uranium mines to participate in the study.

HEAs are conducted by our Navajo-speaking Research Field Staff (RFS) employed by Southwest Research and Information Center (SRIC) and assisted by staff of the Navajo Nation Division of Health (NNDH), both of which are partners in the birth cohort study. The RFS use special meters to measure gamma radiation outside and inside of each home and will tell participants immediately if gamma radiation levels look higher than normal (see photo). Tests for the other contaminants require two weeks to four months before results are known.

The RFS and NNDH's CHERS (Community Health and Environmental Research Specialists) also ask the participants about their drinking water and the NBCS staff search for water quality data for each system or unregulated source, and in the absence of existing data, collect water samples from water sources used by participants for later laboratory analysis.

One of the surprising findings of our study so far is that more than 3 out of every 4 participants have running water piped into their homes from a community water system. Previous estimates have indicated that about 35% of Navajo families do not have running water from a community system in their homes, necessitating water hauling for many families, often from unregulated water sources such as windmills, developed springs and hand-dug wells.

Results of the HEAs to date are shown in Figure 1. The most frequently occurring metals are in dust samples and include lead, arsenic, manganese, iron and antimony. Measureable levels of uranium metal have been found in dust in most homes tested, but at low levels. Frequent cleaning, especially around heat sources, and reducing tracking of mud and dirt into the home will help reduce dust contamination.

Some homes have had radon levels that represent unacceptable health risks for family members, especially children. Participants who have unsafe indoor radon levels are referred to the Navajo Nation Environmental Protection Agency (NNEPA) for follow up. USEPA recommends that



Teddy Nez talks about the Churchrock uranium tailings spill at Red Water Pond Road community, July 2013. Photo by Malcolm Benally

homeowners "fix" their homes to reduce radon levels. This recommendation, which is not binding on the homeowner, is intended to reduce lifetime risk of lung cancer. Participants who are told they have radon exceeding the NBCS referral criterion are encouraged to increase airflow through the home by opening doors and windows whenever possible. Keeping a pot on water steaming on the stove is another way to lessen indoor radon levels. Radon tends to build up inside homes in the winter when the doors and windows are closed.

The good news is that gamma radiation levels exceeding natural "background" have been found in less than 5% of homes tested, indicating that more than 95% of homes in the study have no signs of contamination from uranium mine wastes or other human-made sources of radiation. Participants who do have homes with high gamma rates are referred to the NNEPA Superfund Program for follow-up. According to the National Research Council Committee on the Biological Effects of Ionizing Radiation, radiation at any level damages human tissues, meaning there is no absolutely "safe" level of radiation exposure. But at natural or normal levels, any adverse effects may not be noticeable over a lifetime of exposure.

Participants in the NBCS should not hesitate to call the project's toll-free line, 1-877-545-6775, with questions about any of the HEA results they receive. If you would like more information on these contaminants, please visit www.sric.org/NBCS. You will find Frequency Asked Questions (FAQs) on interpreting the results of our home environmental assessments and biomonitoring, fact sheets on radon, metals and water contaminants, and basic outreach materials for the Navajo Birth Cohort Study. You may also visit <http://nbcsh.healthyvoices.org> to learn more about the ongoing activities of the NBCS.



Lynda Lasiloo and Teddy Nez, SRIC research field staff member conduct a home assessment survey. Photo by Chris Shuey.

Gamma radiation is the most common type of ionizing radiation; it is all around us and inside us, but you cannot see, smell, taste, feel or hear it. It comes from the soils and rocks of the Earth and in the form of cosmic rays from the Sun and outer space. Gamma radiation is like X-rays — tiny packets of light that pass through you. At levels that occur naturally, gamma radiation contributes to the human aging process and may harm us only over our entire lives. Higher levels of gamma radiation may be harmful to human health, especially to children and the elderly. Gamma radiation may indicate the presence of uranium mine wastes in and around the home. Very high levels of gamma radiation has been observed only in atomic bomb blasts or inside nuclear power plants, spent fuel pools, and high-level nuclear waste tanks can kill or immediately injure people.

Radon is a natural occurring radioactive gas that, like gamma radiation, you cannot see, smell, taste, feel or hear. Like gamma radiation, radon is all around us, inside the home and outdoors. But unlike gamma radiation, radon emits a type of radiation, called alpha particles, that is extremely harmful if breathed into the lungs over many years. Because of this, the USEPA says that indoor radon is second only to cigarette smoking in causing lung cancer in the U.S. Radon, which comes from natural uranium, can be found in any home anywhere on the Navajo Nation as well as across the US, and is usually found in higher levels in homes in the winter when windows and doors are closed.

Metals present in dust occur naturally and can be breathed in, eaten or absorbed through the skin. Dust containing metals comes from the weathering of dirt and rocks around the home or from materials inside the home, such as wood- and coal-burning stoves. Each dust sample collected in the home is analyzed for 22 different metals. The amounts, or concentrations, of the metals in the samples are compared with Screening Guideline Values (SGVs) that are estimates of the concentrations that may be hazardous to human health over long periods of exposure. Some metals, like arsenic and mercury, are more toxic to the human body than others.

Water Contaminants are naturally occurring and human-made substances that are dissolved in water or introduced into water by human activities that make water unsafe for people to drink. Some contaminants are dangerous to human health at very low levels while other contaminants give water unpleasant tastes, colors and smells but are not considered "unsafe" to drink. Water contaminants include metals (like uranium, lead, arsenic and mercury); radioactive elements (like uranium and radium); elements that make salts (like sodium and chloride); bacteria and viruses from human and animal wastes or bacteria that occur naturally in soils and rocks; petroleum, natural gas and their byproducts; chemical compounds that are generated as a result of treating water with chlorine; and man-made chemicals like solvents, pesticides and plastics.

Unregulated water sources may not be tested or treated to ensure their safety, and many have been found to contain potentially harmful bacteria. A small percentage of participants were found to be drinking water from a community water system that has levels of arsenic, uranium and other contaminants exceeding federal and Navajo Nation drinking water standards. The NNEPA Public Water Supply Supervision Program (928-871-7715) is working with the Navajo Tribal Utility Authority (NTUA) (toll free 1-800-528-5011) to reduce contaminant levels to below drinking water standards to ensure that customers are consuming safe drinking water. If you are a customer of NTUA and want to know more about the quality of the water you are buying, visit www.ntua.com and click on "Water Quality Report 2012 Consumer Confidence Report" for your area.

Haul Your Drinking Water Safely

Forest Lake, AZ - The Navajo Birth Cohort Study is currently conducting home environmental assessment in the study's participant homes to help detect traces of possible "environmental contaminants" in and around the home. The University of New Mexico's Community Environmental Health Program and Southwest Research and Information staff members would like to share these tips for safety in your home: safe drinking water.

Water Barrels

* Use Barrels that are made to haul drinking water.

1. Clean water barrels once a month.
2. Scrub: Mix 1 cup chlorine bleach with 15 gallons of water. Scrub barrel with mixture. Clean all hoses and any other water hauling equipment with the water and bleach mixture.
3. Rinse: Rinse the container and all other equipment with clean water.
4. Disinfect: Mix 1/2 cup of bleach and 15 gallons of water to disinfect the tank until ready to use, or for at least 30 minutes.
5. Rinse: Rinse the container again. You are now ready to haul water!

* Use clean food containers. Plastic milk jugs or other food containers maybe used. Scrub, clean, rinse, disinfect, and rinse the container if it was used for food.

1. Scrub and rinse with warm water, use bottle brush if needed, especially for milk jugs.
2. Clean with dish soap and hot water.
3. Rinse completely with warm water.
4. Disinfect by filling the container with a mixture of 3 tablespoons bleach and 5 gallons of water.

Hoses

* Use hoses that are made for drinking water, such as hoses for RVs and boats.

* Do not use gardening, green, or orange water hoses.

* Look for approval on the label for "Drinking Water".

* Do not let the hose fitting touch the ground.

* Clean hose fittings well and often.



A natural water reservoir near Shonto, Arizona. In the past, these natural ponds were the only water source for homes and livestock. Photo by Malcolm Benally.

Tuba City Native Explains The Work of A Research Field Staff

My name is Maria Welch. I am currently a member of Southwest Research and Information Center working as a research field staff with the Navajo Birth Cohort Study. I was born and raised in Tuba City, Arizona. I am an enrolled member of the Navajo Nation.

I have worked with the Navajo Birth Cohort Study for approximately one year as a clinical liaison, and as a part of the research field staff. Conducting field research for the study includes a Home

Environmental Assessment (HEA) for the consenting participants. This HEA is one source of data to investigate possible uranium contamination among the Navajo Nation for consenting pregnant Navajo Nation members. This home assessment includes, gamma radiation screening, radon testing, dust sampling, and inquiring about home water usage and sources. The HEA is conducted at the participant's residence and takes approximately one hour to

complete. If any causes for concern are present, the research team takes appropriate action. Each participant receives a HEA report that details the results/findings of the HEA investigation in the mail.

Maria Welch, Research Field Staff engaging the greater community posts a personal photo of herself on the Navajo Birth Cohort Study Facebook page. Like us on Facebook. Photo by Malcolm Benally



Percentage of Homes with Contaminant Levels Exceeding Screening Guidelines

(142 homes assessed thru 4/30/14; 100 homes with dust wipe results)

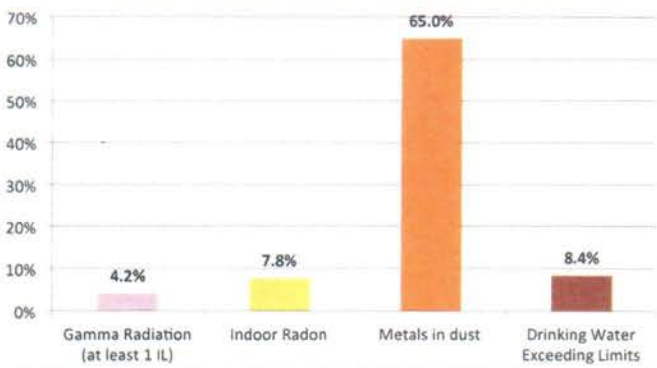


Figure 1: This graph shows results from the home assessment surveys. The most frequently occurring heavy metals found in dust samples during the HEAs are lead, arsenic, manganese, iron, and antimony; but at low levels. Keeping the home free of dust, especially in the kitchen area and around the wood stove is important.



Olivia Muskett, CHERS staff conducts an interview with a participants at her home. Photo by Chris Shuey.

Navajo Birth Cohort Study Videos on YouTube: Parts I to X

FOREST LAKE, AZ – The Navajo Birth Cohort Study has 10 videos featured on YouTube for public information and outreach to possible participants for this landmark study on Navajo lands. As the study kicked off in February 2013 the first participant was recruited at Chinle Comprehensive Health Care Facility. As the study got underway, more participants were recruited at Tuba City Regional Health Care Center, Gallup Indian Medical Center, Tsehootsoi Medical Center in Fort Defiance, AZ, and Northern Navajo Medical Center in Shiprock, NM. The Navajo Birth Cohort Study staff are trained, and each participating hospital has made a complete run through of the study's protocol. Here are the 10 Navajo Birth Cohort Study videos on YouTube.?

Overview of Navajo Birth Cohort Study Part I

An introduction to the Navajo Birth Cohort Study, a brief narration about why the study is taking place on moms-to-be, baby, and dad, too! Participants in the study must have lived on the Navajo reservation for at least five years or more. The study was approved and funded by Congress for five additional years in January 2013. The study will be conducted with partnerships between the University of New Mexico's Community Environmental Health Program (CEHP), Southwest Research and Information Center (SRIC), Navajo Nation Environmental Protection Agency, Navajo Nation Division of Health (NNDH), Navajo Area Indian Health Services, and the Center for Disease Control/Agency of Toxic Substances Disease Registry.

http://youtu.be/kcJebbN4e_I

Navajo Birth Cohort Study Part II Eligibility Screening.

The group of "staff-members-turned-actors" in this lively video featured Navajo actors and was produced with the help of Women's clinic staff at the Chinle Comprehensive Health Facility when the Navajo Birth Cohort Study staff trainings were first being conducted during winter and spring 2012. The production shows how a lot of younger Navajo women and youth alike wanted to, and then lent their support into spearheading the project from its very beginnings. The short mock survey that was re-enacted for this video can also be conducted entirely in the Navajo language at the participant's request during enrollment!

<http://youtu.be/gCVcHV1gx2E>

Navajo Birth Cohort Study Part III Legacy of Uranium?

A short educational piece about the history of uranium and the need for studies to be done on the Navajo reservation as told by co-Investigator for the Navajo Birth Cohort Study, Dr. David Begay from Ganado, Arizona. Dr. Begay has been instrumental in providing a communication link to the traditional Navajo speaking communities and the scientific community. This short video shows how the study utilizes both the Navajo and English languages to educate the public about uranium.

<http://youtu.be/I-hUV5hmMvg>

Navajo Birth Cohort Study Part IV Perspectives

After screening the first videos to the Navajo communities, a lot of Elders and community leaders suggested that the project use photos of the landscape and animals to temper the difficult story of uranium exposure and health. This video features President Ben Shelly giving a background on the work the Navajo communities took on until they testified before the U.S. Congress during the Waxman hearings in Washington D.C. The short video comes with perspectives from activists who gathered during the July 2013 Red Water Pond Commemoration of the Churchrock uranium spill over 30 years ago.

<http://youtu.be/BMLqB5w6LQg>

Navajo Birth Cohort Study Part V Red Water Pond Road?

Every year in mid-July, the Red Water Pond Road, a community near Church Rock, NM commemorates the 1979 United Nuclear dam break that is considered one of the worst uranium disasters comparable to Chernobyl and Three Mile Island. The leaders who speak out in this video represent the main issues that face Navajo communities today.

http://youtu.be/s1C_aAPdg6s

Navajo Birth Cohort Study Part VI Outreach?

The Navajo Birth Cohort Study staff is continually doing outreach throughout the Navajo Reservation with the goal of getting 1,500 moms-to-be and their baby to participate in this study. Videos like this serve as updates to the work that is ongoing with the study. The elders and community members who viewed these short videos enjoy the landscape photography that accompanies the more heart wrenching stories that belong to the Navajo legacy of uranium.

http://youtu.be/tUM_NdjvDs

Navajo Birth Cohort Study Part VII:

A Father Speaks Out

In this short video, a heavy metal musician and guitarist from the Pinon rural community talks about coping with health issues as a young father. The film is a monologue that reveals the vast resources available to Navajo youth and their willingness to take it for granted, until it really matters. It has been a great opportunity for the Navajo Birth Cohort Study to have many community members who provided their own stories and inspired more to come forward and tell their stories. The staff is always looking for fathers to tell their stories. Look out for more testimony from dads and dads-to-be. Or, join us on Facebook and share your views and your stories! Like Us!

<http://youtu.be/fUTBVQcoq8>

Navajo Birth Cohort Study Part VIII:

Get Your Water Tested

Produced and Directed by Melissa Samuels, this short piece on the importance of getting your water tested is just over two minutes long, but the depth of information in this piece makes this video compelling. The safety of water in Navajo communities has become a major issue reservation wide. Now, Navajo Birth Cohort Study participants can have their home, surrounding area, and water quality surveyed for environmental contaminants. Join the study, this is a good way to become more aware of your community with documentation through survey instruments.

<http://youtu.be/YcsUfn5H7oQ>

Navajo Birth Cohort Study Part IX: The Leadership

The Navajo Nation leaders speaking about the importance of doing more studies on uranium issues to develop a more comprehensive understanding about "environmental contamination" is ongoing. The idea that prevention is the best way to keep from getting sick requires good education, which the study is featuring as a public outreach initiative. The goal is to involve everyone! The goal of this outreach program on YouTube is to share the information that focuses on the development of children, their development, and their health. The need for more documentation of the lands and water that has already been contaminated and the need to find monies for specialists to help those afflicted by long-term exposure to uranium are all long-term goals.

<http://youtu.be/y-GV0bSWF0>

Navajo Birth Cohort Study Part X: Public Outreach

The Public Outreach video uses brochure information from the Navajo Birth Cohort Study along with information that has been discovered while implementing the study out in the field. The field staff often meets up with family and community members who want to speak out and tell their stories. Some are more than happy to have parts of their daily lifestyle captured on video. Here we have the land and sheep from the Blackhorse family, a Navajo family who lives near Big Mountain, Arizona. This video shows footage of the daily task of taking the sheep out to graze and to go to the nearest windmill with the flock get their daily drink of water, including the shepherd.

<http://youtu.be/gyrXvr124A4>

Navajo Birth Cohort Study Part XI: PSA

The short videos in our outreach series features our radio and public events portfolio. The Navajo Birth Cohort Study has been on radio shows like Native America Calling, KTNN Focus Forum, and on news reports on NPR and reservation radio stations. Some of these radio show are available on our www.healthyvoices.com

org website. Some of the earlier radio shows document the times when the inter-agencies and partnerships developed through the Navajo Birth Cohort Study, as the voices come from people coming together to promote the study. Getting everyone to talk about this important study and get people to participate requires support and leadership. You will find voices from the community, Navajo Nation leaders, service providers, and youth speaking out on behalf of the Navajo Birth Cohort Study. Like the Elders say, when the whole culture is speaking, that is when everyone learns. Let get everyone talking!

<http://youtu.be/kLWKGrOrcP>



Dorena Benally, Johnna Rogers, and Charlotte Swindal attend a NBCS report back and training session at Chinle I.H.S. Photo by Anna Rondon.



Chris Shuey and Jennifer Ong present information on gamma radiation, radons, and uranium exposure at Chinle I.H.S. Photo by Anna Rondon.



Daniel Jr. and Freedom Provancial-Blackhorse ride their bike and enjoy the summer weather. Photo by Davona Blackhorse (mom).