

2016 Health Impact Summary of Oil Well Exposure Counselor Chapter San Juan Basin, New Mexico



2017 Well near turn-off to Chaco Cultural National Historic Park Photo by D. Tso

Counselor Chapter President, Harry J. Willetto:

*“Nobody listens. It’s getting worse. Don’t know what to do. Don’t know who will help.
BLM is just bringing all this out here.”*

*“Do something about these problems in this area – safety problems, health risks need
to be addressed. We need to have someone listen to us, to our concerns.”*

**RE: Resolution of Counselor Chapter
Counselor, New Mexico
#COUN-2015-03-_____**

“Furthermore, Counselor Chapter requests assistance to secure funding to conduct health impact assessments, baseline water and soil testing and air quality monitoring for the impacted acres.”

Executive Summary

Health Impact Reports are the preliminary steps in preparing a full Health Impact Assessment, (HIA) and are being conducted currently by resident volunteers and community health workers with the assistance of additional organizations. *This work is independently funded and is citizen driven.*

The Health Impact Report summary presents community concerns regarding the impacts of oil and gas well exposure on public health and safety in the Counselor, Lybook and Nageezi area, the psychological, emotional and societal impacts of the loss of cultural and sacred landscapes, and air and water pollution. This summary will address reported concerns regarding the impacts of oil and gas development near the communities and on allotment owner lands.

The following 11 Navajo Chapter subdivisions in the Eastern Agency have passed resolutions that state, in part:

1. The Chapter is against all pending and future federal fluid mineral BLM leases within Navajo Eastern Agency areas (or other lease sales which could directly or indirectly impact Eastern Agency Areas) until a reasonable revenue sharing mechanism is developed, the new Farmington Field Office Resource Management Plan Amendment is developed, and a full understanding of potential environmental and health impacts of horizontal hydraulic fracturing is developed: and
6. The Chapter shall cooperate with other chapters, the Navajo Nation, and federal entities to better understand potential environmental and health impacts of horizontal hydraulic fracturing activities that could affect Navajo communities.

Becenti Chapter, Counselor Chapter, Huerfano Chapter, Lake Valley Chapter, Nageezi Chapter, Ojo Encino Chapter, Olijato Chapter, Pueblo Pintado Chapter, Torreon/Star Lake Chapter, Whitehorse Lake Chapter and Whiterock Chapter.

All the above Chapters are located in the FFO-RMPA Planning Area with the exception of Olijato Chapter.

Part One: What is a Health Impact Assessment

Preface

*HIA is used to evaluate objectively the potential health impacts of a project or policy before it is built or implemented. **HIA can provide recommendations to increase positive health outcomes and minimize adverse health outcomes.** The HIA framework is used to bring potential public health impacts and considerations to the decision-making process for plans, projects, and policies that fall outside of traditional public health arenas, such as transportation and land use. - Centers for Disease Control*

Public health researchers have developed the Health Impact Assessment (HIA) approach to improve the accessibility and utility of existing scientific knowledge as it applies to program and policy development.

Part Two: Tri-Chapter Community Health Concerns



Flaring along US 550 across from Lybrook Community School

2015

Chapter Houses in Counselor, Ojo Encino & Torreon pass Resolutions with health concerns from flaring & air pollution.

Drilling near Counselor and Lybrook intensifies with over 350 wells approved



Wells move closer to towns and start causing health problems

2015-2016

Community members experience unsafe roads, dust & air pollution

Heavy tanker & truck traffic causes accidents, & construction causes dust, destruction of herbs & vegetation



Unfenced wastewater pits are used by livestock causing mortality

2016

Polluted surface water causes health problems in local livestock

Deformed lambs born in Counselor and unable to survive are reported in the Farmington Daily Times

Public Health concerns discussed at Counselor Chapter Meeting

May 23, 2016

Chapter speakers outlined health concerns in the Counselor area followed by a community discussion of health problems and a presentation on the benefits of a HIA, and a description of the 3-step process a community follows in preparing the initial health impact report:

1. Identification of the health problem(s)
2. Collecting data and supporting information about the health problem(s)

3. Making recommendations to ensure a better outcome and resolution of the health problem(s)

Following the presentation, Chapter members voiced dozens of concerns including some written comments:

- “How is our younger generation going to survive? Is the open air going to be safe? Will it cause birth defects or not? I am concerned because my spouse and I have a baby on the way.”
- “Drilling on the land causes cancer among our people. I have been diagnosed with breast cancer.”
- “I have asthma and upper respiratory problems with the smell that is coming from the drilling. The air quality is very poor.”
- “We are in need of more education on the reality of the wrongs of the oil companies in both languages.”
- “The air we breathe is being poisoned. Nose, eyes, throat irritation, tearing, headaches. Some animals are really skinny and bony, ready to die.”
- “Semi trucks are damaging our dirt roads. Speeding on roads. Chaining up their trucks causing potholes. They do not make room for on-coming traffic. My grand children play outside. When trucks pass my residence they release smoke in the air and dust. Many locations smell of gas.”
- “Air quality – at times it (pollution) is visible and most of the time it is not. People complain about it but they do not report it to the right people. We need basic education – need fracking education - on its negative impacts.”
- “Elders can’t sleep because they’re located close to the drills and wells.”
- “The drilling has a lot of smells. The flares cause a lot of smells causing headaches and feeling of nausea.”
- “My concern (is) the damage to the land along Hwy. 550 – the smell, waking up with severe headaches, feeling nausea from the unpleasant smell, seeing all the damage to the land is very depressing, cannot find the natural healing herbs that have been destroyed by the oil companies uprooting them.”
- “Water – fresh clean water for the people, livestock, crops, soil, drinking, bath/shower, cleaning up. When we go around into the Counselor area I notice the smell and there are less animals, less birds. The pollution needs to go back down so our Mother can regain its life and natural perfection again.”
- “Within the past 3 years, “mild” asthma has worsened. Prescriptions for DZ Health have been changed or added to: Asmanex, Montlucast, Albuterol. Sinus problems have increased.”
- “I have noticed in the past year some elderly folks got cancer. They are no longer with us.”

The Counselor Chapter Health Representative reported 13 cases of cancer in 2015-2016 and 10 deaths due to cancer in that period. The Navajo Nation Mortality Report (October 27, 2016) shows **cancer as the second leading cause of death** with 506 cases on the

Navajo Nation accounting for 12.7% of all deaths. The Eastern Agency, which comprises the portion of the Navajo Nation in New Mexico, has the **leading number of cancers**, followed by Western Agency, Northern Agency, Chinle and Ft. Defiance.

The most prevalent cancer types reported in the Navajo nation are stomach, pancreatic, colorectal, breast, liver, prostate and lung cancer.
 ("Navajo Nation Mortality", presented 10/27/2016, David Foley, Navajo Epidemiology Center)

Health Concerns over High Ozone levels in San Juan Basin

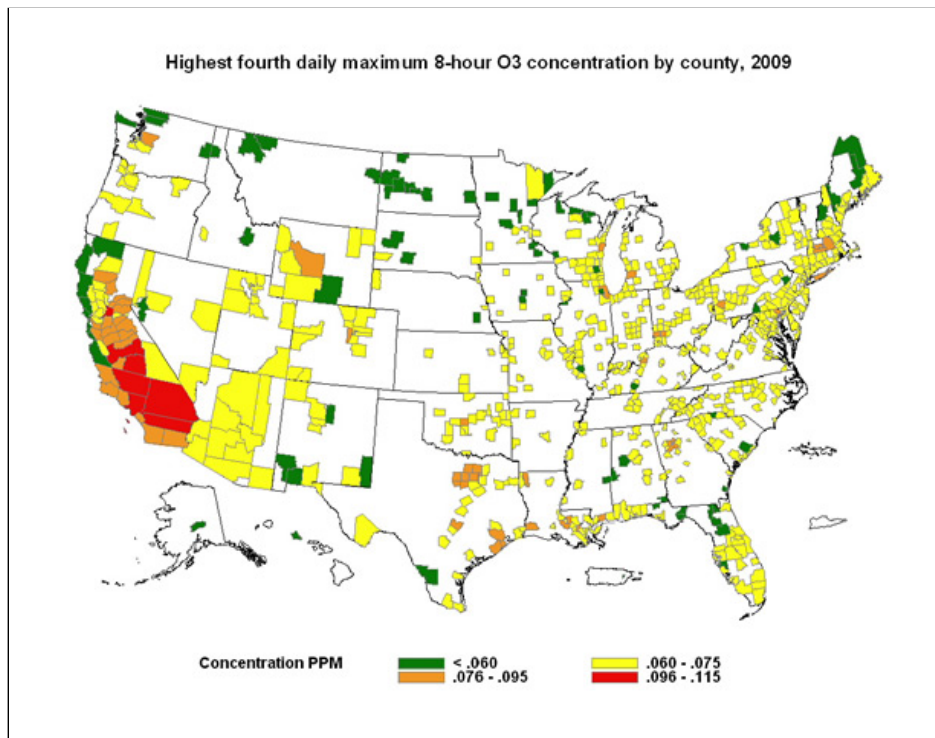


Figure 1: U.S. counties with high ozone concentrations in 2009. This map depicts ozone

What is ozone and where is it in the atmosphere?

Ozone (O₃) is a highly reactive gas composed of three oxygen atoms. It is both a natural and a man-made product that occurs in the Earth's upper atmosphere (the stratosphere) and lower atmosphere (the troposphere). Depending on where it is in the atmosphere, ozone affects life on Earth in either good or bad ways.

Stratospheric ozone is formed naturally through the interaction of solar ultraviolet (UV) radiation with molecular oxygen (O₂). The "ozone layer," approximately 6 through 30 miles above the Earth's surface, reduces the amount of harmful UV radiation reaching the Earth's surface. Tropospheric or ground level ozone – what we breathe – is formed primarily from photochemical reactions between two major classes of air pollutants, volatile organic compounds (VOC) and nitrogen oxides (NO_x).

When inhaled, *ozone* can damage the lungs. Relatively low amounts of *ozone* can cause chest pain, coughing, shortness of breath and, throat irritation. It may also worsen chronic respiratory diseases

such as asthma as well as compromise the ability of the body to fight respiratory infections. ("Health Effects of Ozone in the General Population", US Environmental Protection Agency)

Birth Outcomes due to proximity to Oil and Gas Development



Photos – T. Seamster

Public rally at Santa Fe BLM Lease Sale opposing further oil leases on April 20, 2016.

Benzene, Toluene, Ethylbenzene and Xylene (BTEX) emissions are released during the routine flaring period (up to 75 days) of gases from oil wells.

BTEX emission exposure has been repeatedly cited¹ as a leading cause of life-threatening birth defects in infants born to mothers exposed to benzene in their first trimester of pregnancy. Birth defects include congenital heart defects (CHDs), neural tube defects (NTDs), pre-term and low weight birth. (¹ EHP Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado, McKenzie et al, Vol. 122, April 2014)

General Health concerns discussed at Counselor Chapter BLM Meeting

September 28, 2016

BLM Farmington Office Field Manager, Richard Fields, and Realty Specialist, Mark Ames, heard dozens of residents, organization representatives and chapter officials speak in opposition to more leasing of Tribal land or BLM land for oil development citing contaminated water, air pollution, traffic danger, public safety problems and health concerns of residents.

Major concerns from the community heard by BLM:

- WPX New Storage Facility explosion and fire that destroyed 36 storage tanks and caused the evacuation of 55 local residents and extensive damage to private property located closest to the accident site, as well as extensive release of chemicals and pollutants, as yet unidentified, into the Tri-Chapter communities' air and water over a 5 day period while the fire burned out of control.
- Constant danger to local drivers, children getting off school buses and walking home and local livestock from speeding oil company trucks on highways and rural roads.
- Oil company employees taking off-road short cuts through properties and causing

damage

- Lack of fencing around waste water pits that attract livestock
- Lack of public notice of flaring periods and no resident protection from flaring emissions, flaring for 75 days instead of 7-14 days (BLM regulation)
- Impact of air emissions on local Lybrook Community School on Highway 550
- Lack of communication to the public regarding air quality alerts, safety of community drinking water or sudden road closures due to oil company activities

Different members of the Health Impact Assessment committee spoke about:

- Need for well site emission monitoring in the Tri-chapter communities
- Water testing for contaminants in public drinking water and livestock ponds
- Health impacts from fracking in different organs and areas of the human body
- Scientific studies on infant mortality and birth defects caused by exposure to oil field air pollution and other contaminants
- Psychological impacts of continuous human exposure to the noise, smells, vibration and night lighting of nearby well sites
- Impacts to spiritual life of residents whose local sacred and ceremonial sites have been destroyed by oil development activities
- Increase in cases of cancer, asthma and respiratory illness in the Tri-Chapter communities

The BLM's Environmental Assessment report (EA) reported "Findings Of No Significant Impact" (FONSI) to the surrounding communities, water, air, land or sacred sites. This finding was repeatedly challenged by chapter members' testimony at the BLM meeting.

At Home Health Concerns collected 10/1/16

Resident A

"Sometimes I get a headache and then sometimes when I take my medicine I'm still dizzy. I don't know what's wrong with me. Before I wasn't like that. Sometimes I have a stomachache and I thought I was hungry I would eat something. It was like that for a while. I think it's from that. I have runny nose and I got some medicine for my nose. It helps a little bit but not a lot. My eyes too. I got my new glasses in March. It looks like I can't see sometimes. I have to take my glasses off. They checked my glasses and told me there's nothing wrong with my glasses. Sometimes I feel like throwing up. They can go here, they get something from here those diesels. When we go downhill, by the crossroads, I can smell it. At the cattle guard, I can smell it especially in the evening and night. The workers go really fast even at the curve. They can chase you off the road. They can drive fast. They don't care. That's what I don't like. I don't like to go down that way but I have to. One of my daughters and my grandson live in Phoenix. They used to live here for one year. My grandson has asthma and he uses an inhaler. In middle of December he got worse. He has to go into Albuquerque where he got more medicine. They moved back to Mesa and he's still taking the medicine. His mom had to take him to the hospital yesterday. Sandoval County is taking care of the road all the way to the highway. When they fix the road the next two days the diesels ruin it. It's bad. Sometimes my throat gets bad and I think that's what it is, the dust.

Resident B

"Some of them when they drill they go out this way and they go fast. Other than that the sign has NO WPX Traffic and that helps. I have to talk to my parents cause the locations close to their house. The sheep come out and some of these oil field workers go through here; they don't slow down.

Another thing is when they blow gas. That flaring is probably what caused the explosion.

Resident C

"Last night, around 11:30, I went to bed. I heard something. I put my shoes back on and I looked out and saw the cows. I went outside and chased them. Coming back I saw smoke and flames. It looked like it's over here by this house and I thought maybe it was burning trash. Why was there thick smoke? Black smoke. Then I smelled oil. Sometimes I think about what's going to happen. Sometimes I don't care.

Resident: Tulle Butler

"That information that I got was some places are more cared for maintaining those wells so it doesn't leak out. But here there's no such thing. Even they don't have a fence. There's sheep. They're in a low spot where the water gathers. That's my main concern. They use some kind of machine to indicate there's a lot of leakage. So that's my concern. These old folks they breathe in. Even the young, kids or babies. And their health is not really good. I was just thinking since the last two years we have cancer. Escalating. And the death. I'm concerned. The older people. It does damage us. The way I understand is these guys are supposed to take care of those wells. Not any leaking at all. That was a regulation. I'm concerned about the community. I know we can't stop all that. I know. It's so much money involved. I don't think we can stop but to me if they take care of it better it might slow down. That's my prayer. That's our prayer. Sometimes when you drive through that valley you can smell. It gets you tired. Your eyes are watery. It takes time to recover from all that. Sometimes you just sit for a couple of days and you just don't feel like getting up. You don't feel like doing anything. Maybe it's related. Something's out there. It really does do something. We can't pinpoint what it is but it's out there. We're breathing in whatever it is that chemical in those wells. I don't know what it is. We tried to tell people that got money to come *to the meeting*. They will not come. If you trade in health with money that's not going to work. It's good to have money, but.... It's like we created a monster.

Resident: Dorothy Keetso

"Yes it bothers me. My lambs are being born deformed. My family, father, sister have medical issues. It really smells. The people that are doing the work must have no sympathy for us because we're sick. I went to the chapter house one time where they were having a meeting and I voiced my concern. The drillers are all over the place. You can't just let the cattle go free. They might go to the site and eat some of the dirt, grass, or whatever it is that's there. I think whatever they're doing right now needs to stop. Even nearby they can frack and drill beside allotments, near my homesite. They told me they can even drill right next door. The road is getting really busy. Trucks go really fast and it's really dangerous.



Photo-M. King-Flaherty

Part Three: HNDA data research model on Fracking and Diné Cultural Values

Hózhóogó na'adá is a process of discussion, a Diné - centered lens, for participants to assess their personal and interpersonal values in relation to ancient Hózhóogó na'adá philosophy, principles and values. They will discuss the question: "Given the pros, cons, good and bad regarding the fracking situation of our region, how does this impact the overall health and wellbeing of our communities?"

Facilitator: Dr. Herbert Benally.

Dr. Benally is fluent in both Navajo and English and reads and writes Navajo. He is very familiar with the use of his model in this research and evaluation technique.

Part Four: Drinking Water and Air Quality Monitoring Data Collection

Drinking Water Analysis in the Tri-Chapter area

Hall Environmental Analysis Laboratory, Albuquerque, NM, a New Mexico state certified water-testing lab, conducted a baseline analysis of 4 sites.

Water Quality Monitoring Sites and Results

- Sampling of 3 public drinking water facilities in Counselor, Lybrook and Nageezi (October, 2016) conducted by Eric Patterson, Taos Water Sentinels
- Sampling of 2 livestock ponds in Tri-chapter area (one was too dry for testing)

CW1 (Lybrook Mission)

Water samples taken from public water faucet.

CW2 (Christ of all Nations)

Water samples taken from public water faucet.

CW3 (Counselor Chapter House)

Water samples taken from kitchen faucet

- No detected contaminants that violate any EPA water regulatory standards.
- The water in all 3 CW samples (CW1, CW2 and CW3) show no *e. Coli*
- Total dissolved solids (TDS) are flagged and are high in CW2 (621 mg/L) and are over 600 in ALL three CW samples. 500 mg/L is the EPA secondary regulatory limit. This means that although the water is potable, it does not meet this non-enforceable

standard for TDS. When this water dries, it leaves a crusty, white, salty residue that is un-desirable in terms of taste. impact on pipes, surfaces and for cooking

- High sodium, sulfates and overall alkalinity are also high in all 3 samples along with Conductivity (1000 $\mu\text{mhos/cm}$), but not at levels that make the water unsafe

LP1 - Harvey Livestock Pond sample

- Total dissolved solids are lower (256 mg/L)
- Alkalinity is within regulatory limits

Conclusion: Residents can continue using these water supplies for drinking and livestock use. The tests were limited to checking for *E. coli*, Total Coliform, Anions, Conductivity, Metals, Diesel, Gasoline, Volatiles, Alkalinity and Total Dissolved Solids. Testing at active drilling sites is recommended.

Air Quality Testing in Counselor area

(Testing done by ALS Environmental and additional analysis done by Mark Chernaik, Ph.D., staff scientist with the Environmental Law Alliance Worldwide.)

Two toxic substances were detected in the two air samples collected on October 14th, relatively modest levels of ethyl acetate and toluene. The levels of ethyl acetate in the two samples (21 $\mu\text{g}/\text{m}^3$ and 24 $\mu\text{g}/\text{m}^3$) are not of a health or environmental significance because of the low toxicity of this chemical.

The levels of toluene in the two samples (19 $\mu\text{g}/\text{m}^3$ and 72 $\mu\text{g}/\text{m}^3$) are also not of a health or environmental significance and are below relevant health-based standards, such as the acute Reference Exposure Level of 37,000 $\mu\text{g}/\text{m}^3$ and the chronic Reference Exposure Level of 300 $\mu\text{g}/\text{m}^3$ developed by the California Office of Environmental Health Hazard Assessment (OEHHA). <http://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary>

However, these two toluene levels are unusually high. A 2013 survey of air quality in more than 100 locations across the United States found daily arithmetic mean concentrations of toluene ranging from 0.073 $\mu\text{g}/\text{m}^3$ to 19.0 $\mu\text{g}/\text{m}^3$, implying that there is some anthropogenic source of toluene in the samples (at least for the second sample which has a toluene level of 72 $\mu\text{g}/\text{m}^3$). <https://www.atsdr.cdc.gov/toxprofiles/tp56-c6.pdf>).

Summary of HIR Findings

Due to lack of initial funding, community water testing and air quality monitoring were delayed until November 2016, after active fracking and flaring operations were shut down in the area. These results will be used as baseline data and testing will be repeated when drilling resumes.

Recommendation: Chapter Health Representatives should be allowed to collect clinical data to submit to medical researchers to assess residents' symptoms and ongoing impacts.

Counselor Chapter
HIA Committee
P.O Box 93, Counselor, NM 87018