Something in the Air

What's there poses a serious health threat to Indian Country

The Navajo Power Plant is a major source of air pollution in the Four Corners area of the southwest.

Photo by David Bropch

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Something in the Air —
What's there poses a serious health threat to Indian Country
By Michelle Tirado
Mercury, bad ozone and other toxic airborne substances circulate in and around Indian Country. Because so few tribes have air quality programs and monitoring equipment, many don't know what their tribal members are breathing and how the dirty air may be affecting their health.

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What's there poses a serious health threat to Indian Country

By Michelle Tirado

On any given day and at any given time, Toni Richards knows what's in the air flowing above the Bishop Paiute reservation. As the air quality specialist for the tribe's environmental management office, knowing is her job.

The Bishop Paiute reservation, population 2,000, is located on the eastern side of California's Sierra Nevada. It's within 60 miles of Owens Lake, the nation's largest source of what's called PM-10, particulate matter that is under 10 microns in diameter. In other words, the 100-square mile lake — dried up long ago to satisfy Los Angeles' water demands — is one giant dust bowl. Winds swirl up all sorts of particles from its surface, such as cadmium, chromium, chlorine and iron.

Though the state of California and the local Great Basin Unified Air Pollution Control District recently started working together to mitigate the effects, the lake is a major health concern for the Bishop Paiute and its neighbors. Pollution around the lake is sometimes greater than 20 times the limit acceptable under national standards.

The tribe started its air quality program in 2001 after conducting an emissions source inventory. That's when it learned its proximity to Owens Lake posed a health threat to tribal members. Richards says, "In this area, we're concerned primarily about particulate matter. We look at two sizes of particles: those that are under 10 microns and those under 2.5 microns. The reason you're concerned about those is because you can inhale them. They can get lodged in your lungs and exacerbate health problems, cardiac and respiratory conditions."

The Bishop Paiute has not done any of its own health studies, but the tribe is well aware of the results of studies conducted by other researchers. In 2000, the GBUAPCD published a report based on a survey of 114 Owens Lake area residents. The most common symptoms reported were increased allergies (54 percent), breathing problems (27 percent), asthma (26 percent) and aggravated sinus problems (25 percent). There were also reports of increased headaches, stuffy noses and nasal drip, ear infections and bronchitis.

Richards describes the air quality on the reservation as variable. On most days, it's good. However, there are those periods when the winds whip up those dust storms, usually during the fall and spring, and the air is thick with
Tribes are dealing with the same types of air quality problems as most other American communities. They’re getting the discharge from vehicle exhaust pipes, power plants and factories. They’re exposed to the same ozone conditions.

More than 152 million Americans are exposed to unhealthy levels of air pollution, according to the American Lung Association’s State of the Air 2005, a report released last spring. About 50.2 million live in areas with high levels of particulate and ozone pollution.

Large cities, such as Atlanta, Dallas, Chicago, Los Angeles and New York, may rank high on the report’s list of the worst areas in the nation for ozone pollution, but rural areas, including Indian reservations, can’t escape it. Recent studies have shown that rural areas often experience higher ozone levels than the cities that generate it. The reason is the wind takes ozone precursors from the urban areas, and the ozone forms while it’s on the move.

The earth’s circulation system just isn’t carrying harmful matter from one source. The Makah tribe, on the Olympic Peninsula, has an air quality monitor, and, Hartsfield says, it has picked up sand residuals from the Gobi Desert and mercury from Russia. Alaska Natives living within the Arctic Circle, which Hartsfield calls the “dumping ground of international air pollutants,” may be breathing in a wider variety of imported particles.

There are air pollutants that Hartsfield can with little doubt say disproportionately impact Indian and other rural communities. Mercury is one. Coal-fired power plants release mercury, as do mining operations. “In Nevada, they have some of the largest gold mines in the world. Those are actually very large and unregulated sources of mercury contamination,” he says. Many tribes don’t know if it’s there or not. That’s what has Hartsfield very concerned. “A lot of tribal diets are higher in fish and seafood, which is where mercury bio accumulates.”

Some of the biggest pollutants that American Indians and Alaska Natives are living with could be originating on their reservations. Many are involved in agricultural activities and have mining operations. And there are the less talked about pollutants — the dust kicked up from dirt roads and smoke spewed from wood-burning fireplaces and stoves.

In a rural environment, whether you’re a tribal member or not, your main source of heating probably is wood,” Hartsfield says. “For myself here in Albuquerque, I can cut as much wood as I want for free because there’s such a fire hazard with the forests being over-grown. Instead of paying $150 for gas, I can cut down wood for free. For some tribes, that’s the only option they have.”

In many tribal communities, wood burning is more than a source of warmth. It’s part of their cultures. But it’s not always burned efficiently and safely. Thanks to technology, there are wood stoves out there that emit cleaner smoke; however, Hartsfield says, they cost $4,000 to $5,000, hardly affordable for the average Native American family.

Though science can prove that there is air pollution in Indian Country, the research isn’t quite there to make broad conclusions about the health effects. The American Lung Association’s recently published Lung Disease Data in Culturally Diverse Communities 2005 provides some good evidence that Native Americans do have above average incidences of certain lung disorders. It highlights a study that found that respiratory syncytial virus rates among Navajo and White Mountain Apache children less than one year of age are three times higher than the national average for the same age group.

Tribal and state studies, according to the report, have revealed that Native Americans have higher rates of asthma. The 2001 California Health Interview Survey found that Native American rates of lifetime asthma are higher than all race groups. 25.5 percent of Native children and 20 percent of Native adults have been diagnosed with the disorder. At the low end, white children and adults have a 10 percent rate. With 16 percent, African-Americans have the second highest.

Influenza is the ninth leading cause of death among Native people, the sixth leading cause of death among Natives 65 years and older and the third leading cause of death in Native children ages five to nine. Lung cancer is the leading cause of cancer-related deaths among American Indians and Alaska Natives. Rates range from 4.1 per 100,000 Natives in Tucson to 28.5 per 100,000 in Billings.

“We can make a lot of assumptions,” Hartsfield continues. “It’s obvious that something’s happening. Rather than make assumptions, we really need the hard evidence and research.”

That an increasing number of tribes want to know what’s in their air and how what’s there impacts their members’ health, there is no doubt. More and more of those that do know what they’re breathing don’t want to sit back as if the pollution doesn’t exist. They’re taking it very seriously. As sovereign nations, they’re taking control and trying to clean up the air.

In May, for instance, the Navajo Nation entered an agreement that gives the tribe control of regulating air emitted from the Four Corners Power Plant, which is located on their reservation. It is one of the nation’s largest coal-burning power facilities, burning 28,000 tons of coal per day at full capacity. The transition is not immediate, but, come April 2006, the tribe’s environmental protection

Richard uses a TEOM to find out how bad or good the air quality is. An acronym for “Tapered Element Oscillating Microbalance,” it’s a big, expensive and complicated piece of equipment, one of the few precision air monitoring instruments available on the market. Richards compares it to a giant vacuum cleaner. It sucks the air in; separates the particles of interest out; and then measures the particles according to their weight. The TEOM performs a measurement every two seconds and then produces a one-hour average.

Besides operating the TEOM, Richards posts real-time air quality data online at the EPA’s Region 9 Web site. She also runs the tribe’s weather station, using forecasts to help her track where the pollution is coming from and going to.

The Bishop Paiute are fortunate. It’s one of a minority of tribes that have air quality programs and one of even a smaller minority that have monitoring equipment. The EPA’s Region 9 includes more than 140 tribal nations in Arizona, California and Nevada. Richards says the Bishop Paiute’s program is one of 23 tribal programs in the region and one of less than 10 reporting regular, real-time air quality data.

Why so few? Money. “Funding is an issue for all tribes and for all environmental programs right now,” Richards says.

Stephen Hartsfield, operations coordinator for the Albuquerque-based National Tribal Air Association, says funding has been a tremendous hindrance to tribes that want to develop and administer programs under the Clean Air Act. With the war in Iraq and the devastation caused by hurricanes Katrina and Rita, he doesn’t see the situation improving any time soon.

Hartsfield says that about 100 tribes nationwide received some type of EPA funding for air programs over the last two to three years. “I heard this past year that the number dropped to about 90.”

Bill Grantham, senior policy analyst for the National Tribal Environmental Council’s air program, says EPA’s total budget for all tribal air programs, approximately $11 million, has been stagnant for the last five to six years. “Which is not a lot of money,” he points out. “And EPA had encouraged tribes to develop air programs. Now, we’re to the point where tribes that have done so, there’s not the funding to continue.”

Because so few tribes have air programs and monitoring equipment, it’s hard to get answers for the really big questions. What air pollutants are Native Americans breathing? How are these specific pollutants affecting their health? Are tribes meeting the standards?

Owens Lake dust. Then there are days when it’s laden with smoke from nearby wildfires.

And EPA had encouraged tribes to develop air programs over the last two to three years. “I really need the hard evidence and research.”
agency, not the EPA, will be the one issuing the next permit for the plant. This plant became the sixth emission source that the Navajo has under its control.

About a year ago, the EPA delegated authority to the Navajo Nation to administer the federal Title V (industrial) air emission permits. Fees collected from permit issuance are being used to grow a comprehensive air quality program. There has been some groundbreaking in tribal-state cooperation. The Joint Air Toxics Assessment Project of the greater Phoenix metropolitan area is being jointly planned by the EPA, the Arizona Department of Environmental Quality, the Maricopa County Environmental Services Division, the Final

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**Mercury Air: How Sick Can It Make You?**

**Mercury**

**What is it?** Mercury is a naturally occurring element that can be found throughout the environment. Human activities, such as burning coal and using mercury to manufacture certain products, have increased the amount of mercury in many parts of the environment, including the atmosphere, lakes, and streams. Coal-burning power plants are the largest human-caused source of mercury emissions to the air in the United States, accounting for over 40 percent of all human-caused mercury emissions.

**Health Effects:** Mercury exposure at high levels can harm the brain, heart, kidneys, lungs, immune system, and people of all ages. It has been demonstrated that high levels of methylmercury in the bloodstream of unborn babies and young children may harm the developing nervous system, making the child less able to think and learn. In adults, methylmercury toxicity can affect fertility and blood pressure regulation and contribute to heart-rate variability and heart disease.

*Sources: EPA and Clear the Air*

**Ozone**

**What is it?** Ozone is a gas composed of three atoms of oxygen. Ozone occurs both in the Earth's upper atmosphere and at ground level. Ozone can be good or bad, depending on where it is found. Bad ozone forms in the Earth's lower atmosphere, near ground level, when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants and other sources react chemically in the presence of sunlight.

**Health Effects:** Ozone can irritate the respiratory system, causing coughing, creating an irritated feeling in the throat or chest. Over the long term, it can reduce lung function, making it more difficult to breathe deeply. Ozone can cause or aggravate asthma. When ozone levels are high, more people with asthma have attacks that require a doctor's attention or the use of additional medication. Ozone can also inflame and damage cells that line the lungs, aggravate chronic lung diseases, such as emphysema and bronchitis, and reduce the immune system's ability to fight off bacterial infections in the respiratory system.

*Source: EPA*

**Particulate Matter (PM)**

**What is it?** PM pollution is a mixture of substances. It includes dust, dirt, soot, smoke and liquid droplets. Particles can be suspended in the air for long periods of time. Some particles are large or dark enough to be seen, like soot or smoke. Others are too small to be seen individually with human eyes. Particles directly emitted into the air come from a variety of sources, such as cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing and burning of wood.

**Health Effects:** Scientific studies have linked breathing PM to a series of significant health problems, including aggravated asthma; increases in respiratory symptoms, like coughing and difficult or painful breathing; chronic bronchitis; decreased lung function; and premature death. As with all air pollution, PM increases the risk of lung cancer.

*Source: EPA*

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program on the reservation. The tribe was the first to be given this type of authority. It is responsible for 12 major industrial pollution sources. Fees collected from permit issuance are being used to grow a comprehensive air quality program.
There’s no covering up what Grantham calls a regulatory gap. States don’t have jurisdiction over tribes’ air space. Tribes do, either under their own inherent authority or power delegated by the federal government. “The problem there: the EPA has been extremely slow in their duty to promulgate regulations that cover Indian Country,” he says.

Last April, the EPA announced new federal rules for regulating air emissions on the 39 reservations in its Region 10. This was a first. The rules, created in consultation with the tribes, include a requirement for sources to report their emissions, procedures for air pollution emergencies, rules for open burns and some emission limitations for industrial sources.

Yes, tribes are becoming bigger players at the policy table. Yet, there are still a lot of people at that table who question why tribes are there. Hartsfield sits on the Air Quality Management Subcommittee (of the Clean Air Act Advisory Committee). Sitting next to him, he says, are big industry members, executives from Catepillar, United Auto Workers and the United Homeowners Association, and a few of them wonder why he’s there representing tribes. He has also forged some allies there, such as wood-burning stove industry people. He’s working with one of those allies now to develop some kind of cost-sharing program for the very expensive, but cleaner, stoves. “Because of the funding issues that tribes have, there is a perception of clean air,” Hartsfield says. “They probably will never have many hopes of ever having monitoring dollars under this current financial situation.”