

Lights From New Mine May Pollute View of Tucson Night Sky



NOELLE HARO-GOMEZ/NYT INSTITUTE

Scientists fear intense 24-hour light from Rosemont Copper, an open-pit mine that is under development in Tucson, could interfere with the work of the Fred Lawrence Whipple Observatory.

By SARAH MCCLURE

Michael Calkins, a science technician at the Fred Lawrence Whipple Observatory, has spent nearly two decades observing Tucson's star-studded night sky. Lately, he has had a growing fear that one of the country's best vantage points to see the stars is under threat from a new neighbor 13 miles away.

Rosemont Copper, a Canadian-owned mining company, is in the process of developing an open-pit copper mine. It will be one of the largest copper mines in the United States.

The astronomical commu-

nity believes that light pollution caused by the mine's powerful artificial lights will reduce the observatory's ability to continue observing and discovering.

"Light pollution is just light going where it wasn't intended," said Richard Green, a professor of astronomy at the University of Arizona. "And in our case, that's light mostly that ends up in the sky that creates artificial glare in front of the celestial objects we would like to observe."

Mr. Calkins, to demonstrate his point that the mine is a threat, drove his motorcycle up Mount Hopkins, ascending nearly 9,000

feet to the observatory, which operates the third-largest optical telescope in the country.

He was surrounded by optical, spectroscopic and multiple-mirror telescopes that help the scientists there study not only stars, but also supernovae, exoplanets, spectral gamma-ray bursts and the galaxy itself.

"The public has to be aware that every photon that goes up has a good chance of landing right here in our telescope," Mr. Calkins said.

The proposed mining project will run 24 hours, which requires the installation of a lot of lighting

ONLINE: CELESTIAL GLARE

➤ An observatory could be hurt the most if a new mine produces too much light.
vimeo.com/nytinstitute/mining

for miners. The multiple observatory telescopes can pick up contaminants or light changes in the sky beyond the human eye's capability, Mr. Calkins said.

Rosemont's most recent lighting plan would produce six million lumen (a unit of measure of light), according to its website. This is a significant difference

from its initial light plan, which would have produced more than 20 million lumen.

The company said it is trying to minimize light impact and preserve Arizona's dark skies.

"You need good light out there at night when you're working around heavy equipment in the pits and processing facilities," said David Briggs, a geologist who has done consulting work for the Rosemont mine and has worked in mining for more than 35 years in Arizona.

"Tucson is really the copper-producing capital of North America," he said. "It's important

to Tucson's economy. It brings jobs to the local economy."

Rosemont is voluntarily complying with the Pima County Outdoor Lighting Code, even though it is bound by federal regulations, Mr. Briggs said.

The observatory's site was selected decades ago because of its mountaintop location, clear skies and isolation from city lights — a setting conducive to observations, Mr. Green said.

"A light right next door to me has the equivalent impact of something a hundred times brighter than that's 10 times farther away," he said.

Preparing Workers for Culinary Future

By LYANNE ALFARO

David Rogers dips a stainless steel bowl into a steaming cooking tank filled with curry and carbonara, then pours the aromatic mixture into a tray of pasta.

The tray is one of dozens — roughly 750 meals — that the Caridad Community Kitchen in Tucson will deliver to those in need in shelters and churches in Pima County recently.

The program to feed hungry people in Pima County — in a state where more than one in four children do not have access to or cannot afford enough food — began more than 20 years ago when the Rev. Joseph Baker of Holy Family Roman Catholic Church opened a food bank. It delivered 6,800 meals every month.

"He started this with a vision of 'We need to help those in the community,'" Jon Wirtis, 54, the chef and lead instructor at Caridad Community Kitchen, said. Caridad distributes about 18,000 meals monthly, he added.

But Caridad's mission goes beyond feeding the hungry; it also trains the unemployed to prepare the food and helps them find jobs in the restaurant business. Since 2012, Caridad's 10-week Culinary Training Program has served people like Mr. Rogers, 39, who have been troubled, down on

their luck and unemployable.

"It's an opportunity for me to do something I love to do and still give back to the community," Mr. Rogers said.

When Mr. Rogers was released from the Pima County Jail last November, he was recovering from drug addiction and alcoholism. He was one of the 23,000 people unemployed in Tucson, a city of 520,000.

"I had made a go in music for a while and was allowing my addiction to choose to dominate my life," he said. After he was released, Mr. Rogers said, he participated in Alcoholics Anonymous and Caridad's training program to turn his life around.

The training program has graduated about 91 students, and there are usually far more applicants than places. Roughly 50 people apply for each session, but only about 14 students are accepted, said Iliana Torres, the student services manager at Caridad. Training each student costs \$4,000, an amount offset by catering revenue and donations.

Ms. Torres said that with such a limited number of openings, commitment was essential.

"The main thing we are looking for when we are interviewing for prospective students is that they have an earnest desire and need to work," she said.

To be eligible for training at Caridad, candidates must be at least 18 and must provide proof of housing for the duration of the program. But Ms. Torres said that Caridad has worked with students who were experiencing homelessness at the time. The program refers applicants to local

organizations that offer housing, such as the Salvation Army.

The graduation rate of the program is 63 percent, Ms. Torres, said. And those who complete the program reap the rewards: employment by local businesses and chain restaurants like Olive Garden.

Marcella Solis, 22, was unemployed and living with her fiancé and two children when she decided to enroll in Caridad's program. For the next few months she will be working as the banquet assistant for the company's catering arm.

There are usually at least six cooks in the kitchen, several of whom graduated from the program.

"Everyone that has been enrolled or graduates from the program has very similar backgrounds of love of food, of love of cooking, and has had obstacles to employment, whether they be legal or domestic situations or addiction situations," Mr. Rogers said. "So knowing that we all kind of struggled creates a sense of community that is unstoppable."

The program will be on hiatus for the first time this summer. Caridad's kitchen, however, never sleeps. It buzzes as volunteers and employees prepare meals for the needy. For Caridad's catering division, an apple salad and gazpacho are in the works. Preparation of food here is a process, and the workers stand by their unofficial motto, "Mise en place," a French term for "Everything in its place."

"To me, it's the perfect metaphor for what happens not only in the kitchen but what happens in your life," he said. "To me, extending that piece of wisdom to my life outside of the kitchen is really cool."

Mr. Rogers first heard the term from Mr. Wirtis, who is known as Chef Jon to his students and the staff. A graduate of the Culinary Institute of America, Mr. Wirtis said that there is no more rewarding than the one he gets to play every day at the kitchen.

Mr. Wirtis described a time when he delivered food to First Church of God. He remembers that a group of clients rose as he entered the room to give him a standing ovation and to thank him for his work at Caridad.

"It's pretty impactful when you not only see it, but hear it," Mr. Wirtis said. "I know what goes on out there. But when you are actually in the moment and in there with them, eating your food, it's a world apart."



SAIYNA BASHIR/NYT INSTITUTE

A student at Santa Rosa Day School finished her corn but only toyed with white tepary beans.

Tribe Brings Back Traditional Foods

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fat, exacerbated diabetes rates throughout the reservation.

American Indians and Alaska Natives are 2.3 times more likely to have diabetes than non-Hispanic whites, according to the Centers for Disease Control and Prevention. But two research studies showed that consuming traditional foods helped lower diabetes rates in other tribes, according to the American Indian Culture and Research Journal in 2014.

In 2008, the C.D.C. gave 17 tribes, including the Tohono O'odham, \$100,000 a year for five years to restore local, traditional foods and encourage physical activity. Tribes in Arizona and Wisconsin are farming to improve food choices, and an Alaskan tribe is fishing.

TOCA, the Tohono's top civic organization, teaches students at Santa Rosa Day School and

others on the reservation how to identify and harvest the wild foods in hopes that connecting them back to their roots will prevent diabetes.

Arnoldine Smith, TOCA's food services development coordinator, meets with the cafeteria staff at least twice a week to talk about including healthier and traditional foods and teach recipes.

While a typical school meal last year was pepperoni pizza or chicken nuggets, a traditional lunch could be a prickly pear-glazed chicken wrap with tepary bean hummus and a side of corn chips. Young eaters can be hard to please, she has found, so Ms. Smith has been developing a more kid-friendly menu.

The ultimate goal is for TOCA's farm to become Santa Rosa Day School's only food supplier.

Traditional naturally grown beans like those TOCA provides from its farm have health benefits. White and brown tepary beans are high in protein and help

regulate blood sugar levels, while mesquite beans are insulin stabilizers. Desert people also benefit from eating two tablespoons of dried cholla buds because they have as much calcium as — but fewer calories than — a glass of milk. As for prickly pear fruit, it helps slow down digestion and keeps blood sugar levels stable. These superfoods are harvested only in the desert.

Other nearby schools already have functioning gardens and nutrition classes. On a recent meeting for parents, only two people showed up, a typical low turnout, Ms. Gonzales, the intern at TOCA, said.

She pointed out a Twix wrapper rustling in the wind.

Delvina Pablo, 13, still prefers the foods of her grandfather over chips and popsicles.

"Most people need to listen and try new things," Delvina said as she chewed her healthy traditional lunch. "Try something new, and there will be a change."

ONLINE: Cooking With Hot Oil

➤ Caridad's culinary program trains the unemployed and disadvantaged to be cooks for local businesses in Tucson.
bit.ly/caridadfoodbank



MAYA DANGERFIELD/NYT INSTITUTE

David Rogers, 39, graduated from the culinary training program at the Caridad food bank and now works as a cook there.

Returning to the Roots

These are some of the traditional foods the Tohono O'odham are incorporating into their schools and how they might be used. Along with having health benefits, these foods are harvested only in the desert.



PRICKLY PEAR CACTUS FRUIT

There is no need to cook this fruit. It makes a sweet addition to a salad or salsa. Excellent source of water and calcium. But don't eat the skin.



MESQUITE BEANS

These have twice the protein of common legumes. Mesquite flour is used in baked goods, like mesquite oatmeal cookies and mesquite granola.



TEPARY BEANS

These are popularly used in a stew that often includes beef short ribs. They have 23 to 30 percent more protein than many other beans.



CHOLLA BUDS

Comparable to artichoke and asparagus, they can be used as a side or in salad. They are rich in calcium and have less calories than a glass of milk.