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# In industry's shadow: After years of illnesses, family looks for answers

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<http://cir.to/GKqmKp>

The Martin family lives 10 minutes from downtown Los Angeles, in a neat yellow house in a city called Maywood.

Starting a few blocks from their home, nearly 2,000 factories churn out Southern California's hot dogs, pesticides, patio furniture and other products. Trucks rumble off the I-710 freeway into sprawling freight rail yards. Odors of rotting animal carcasses waft through the family's windows on hot summer nights.

The Martins also have endured years of illness.

From the time Anaiz Martin was born until she was a toddler, her father would carry her in his arms, his big mustache tickling her baby cheeks. This simple embrace carried a haunting consequence. By age 3, Anaiz weighed just 19 pounds and could barely raise her head. Her parents said they were told by doctors that Salvador Martin's mustache probably held sickening levels of lead from his plating factory job.

The heavy metal attacked her neurological system, permanently robbing her of critical learning skills.

Two decades later, her family's woes continue. Anaiz, now 21, her mother and siblings – Adilene, 22, and Sal Jr., 18 – have suffered irritable bowel syndrome, an ovarian cyst, skin rashes, chronic nausea, diarrhea, asthma and depression.

Their mother, Josefina, frets constantly about what she thinks are likely causes: the air they



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*Josefina Martin worries constantly about what she thinks are the likely causes of her family's illnesses.*

breathe, the ground beneath their home and, most of all, the gunky black, brown or yellow water that has intermittently run from their faucets for years.

"Sometimes I think, 'Oh my God, I can't take it anymore,' " Josefina, 45, said during an interview in the summer of 2010. "I try to keep myself up and going, but I am really upset all the time. I just want to know what's going on with my family and all of this contamination."

The USC Annenberg Dennis A. Hunt Fund for Health Journalism and California Watch commissioned tests to measure the family's exposure levels to dangerous metals and industrial byproducts.

Americans have been randomly sampled by the U.S. Centers for Disease Control and Prevention for 30 years for chemicals linked to cancer, developmental disabilities and other problems, in a process known as biomonitoring. But some experts say one group has not been adequately sampled: people living in the shadow of industry.

The Martin family is among millions of Americans in similar circumstances – forced by their meager wages to live near industrial areas, including aging smokestacks, landfills, locomotives and other potential hazards. Yet because government officials make little attempt to dig deep into toxic exposure in ordinary people, it is impossible to know if they are unique or part of a much larger potential problem in hundreds of neighborhoods across the nation.

## An 'isle in a sea of industry'

The Martins' home and their small city sit eight miles southeast of downtown Los Angeles, at the crossroads of an American manufacturing and freight-hauling juggernaut. About 1 square mile, Maywood is the state's most densely populated community. Nearly 50,000 residents – 98 percent Latino – are squeezed into aging apartment blocks and cozy tract houses between a smorgasbord of pollutants.

It wasn't always so. Named after a land agent's secretary, Maywood was marketed in the early 1900s as pleasant farmland with deep artesian wells near a Los Angeles River bend. Around the same time, Los Angeles civic leaders took note of prevailing winds and zoned for odiferous slaughterhouses and other businesses southeast of downtown. Bethlehem Steel, Alcoa, Firestone and others built area factories. By the 1950s, Maywood was "a residential isle in a sea of industry," according to a retired city clerk.

Today, the Martins roll up their car windows and cover their noses when they drive past fish processing facilities and open-air rendering plants where euthanized shelter dogs, slaughterhouse remnants and fast food grease are burned and recycled in makeup, pet food and other products. They live less than a mile downwind of one of the West's largest battery smelters, cited multiple times in the past decade for emitting illegal levels of lead; half a mile from a Superfund site; and close to one of the nation's busiest truck routes.

Public records show tons of air pollutants released annually, years of contaminated water readings, and troubling soil contamination near some shuttered and current manufacturers in Vernon, Maywood and the immediate vicinity.

Water quality is a concern, too. Manganese levels in Maywood water were among the highest in the region, according to a 2010 consultant's report required of the three local water companies. Records show the well two blocks from the Martins' home has routinely exceeded legal limits for the substance.

Manganese is a purplish-brown metal that is a necessary nutrient in small amounts. But chronic high exposure has been linked to severe neurological disorders. State health officials have not disclosed those risks to anxious residents, instead stating repeatedly in writing and at community forums that while manganese may stain laundry and isn't pleasant to look at, there is no health risk.

Despite the area's noxious brew, the Martins have called southeast Los Angeles home for two decades.

It is where Salvador Sr. and Josefina were able to afford property. Their Catholic church, Nuestra Señora de la Soledad, has helped Josefina keep faith through family illness and worry. Her mother, brother and other relatives live nearby on another tidy residential street. But her father died two years ago, and with her children sick and discolored water in the sinks and shower, Josefina is not sure how much longer she can stay.

One thing that would help is to know what's inside her family.

Josefina and her children agree to be tested for more than two dozen heavy metals and dioxins.

They volunteer unflinchingly to fast for 24 hours, to have a substantial amount of blood and urine drawn and sent to Brooks Rand Labs in Seattle and other certified labs in British Columbia and Sacramento for analysis, and to share the results. Experts say the outcome could offer a snapshot of possible contamination because the family has lived in the same home for 19 years. Long-term exposure to environmental conditions increases risk dramatically.

"I talked to my kids. I said this is good for us to do because we're going to help other people to find out what's going on, too," Josefina said. "We want to know if it's the water getting us sick, the air pollution or something else."

## **The Martins undergo testing**

On a July morning in 2010, the day samples are to be taken, Salvador Martin Sr. tends his front garden, the nicest on the block. He keeps an eye on his children's comings and goings and prunes his citrus trees.

Sal, 49, lost his longtime supervisory job at a factory that shut down in 2009. Luckily, he invested years ago in property with rental units. Although he is most at risk after decades of potential workplace exposure to contaminants, he declines to be tested.

"I don't want to know," he says.

He prefers to be proactive. He and other neighbors are fighting to penetrate the byzantine bureaucracy of Maywood Mutual Water Co. No. 2, which serves their neighborhood, to get the water cleaned up. Between making rounds to factories seeking work and driving his daughter Adilene to community college, he attends organizing meetings.

He stands at the edge of the driveway as his family drives away to be tested.

Adilene, owner of Lulu, a Maltese toy dog, has had the same boyfriend for about five years. She loves to run into shops or stop by street vendors and buy a little something. She had wanted to be a makeup artist. But now she attends nursing assistant classes at Los Angeles Trade Technical College, a walk and two bus rides across south LA when her dad can't drive her. Her teacher pulled her aside after the first test and told her she had aced it.

Adilene is the oldest of the three children and is ready to be tested. She's sick of the itchy rashes she gets on her arms sometimes after showering, and of the discolored water that runs out of the faucets, which she photographs indignantly with her cell phone.

She watches with interest as a phlebotomist straps a blue band tightly around her forearm and draws 10 vials of blood. She plans to do the same someday as a registered nurse.

Junior has been driving his mother crazy. He stays out late, has trouble in school, sleeps late and rises groggily to go to church. "I'm his mother, I speak for him, and he's going," she scolds one Sunday, handing his jeans to him.

Junior, as the family calls him, has had asthma since he was a baby and was diagnosed with an inflamed liver a year ago, according to emergency room papers. Follow-up testing showed it had returned to normal, but no one could explain what had happened.



Junior is polite around company and secretly adores his mother. He also is frustrated and frightened by where they live. As a pudgy seventh-grader, he was severely beaten by a gang of older teens with brass-knuckled fists. His mother got him into another school, where he was picked on again and began fighting back. This spring, she got him into a Utah residential school, away from bullies and bad boys. A few days after arriving, he called and begged her to come get him. It was worse than Maywood, he said.

He has slimmed down, lifts weights and eats healthily. He's in summer session at an area high school, but declines a field trip to nearby mountains. He doesn't want trouble on the bus, he says curtly.

"Maybe I didn't spend enough time with him because I spent so much time on Anaiz," his mother mourns.

He lies on the lab table, nonchalantly scanning text messages as the needle pricks his arm.

## **Effects of childhood lead poisoning linger**

Anaiz, like her older sister, is always perfectly coiffed and dressed, with eye shadow, lipstick and mascara applied to her heart-shaped face. She's had a boyfriend for the past three years. She's shy, but always listening, head on her mother's shoulder or a step behind her older sister as they head out in the evening.

She sleeps a lot during the day and is often depressed. Her parents discovered from medical check-ups that she had lead poisoning when she was 18 months old. She's had asthma since she was a toddler and now has irritable bowel syndrome.

Her life's work has been school. She remembers being forced to repeat kindergarten and how kids teased her at her first elementary school, and second, and third. She remembers the fifth-grade teacher, Mr. Correa, who worked patiently with her and let her go to "regular" class when she wanted, or stay in special education when she didn't. He cried when she got her sixth-grade diploma. For seventh through ninth grade, she went to a school for kids with Down syndrome and severe learning disabilities. She loved the team sports, but with nowhere near their level of problems, she felt out of place.

"I felt I could do more," she says.

At 15, she developed abdominal pains. Doctors found an ovarian cyst. After surgery, the pains continued. She shuttled between the emergency room and school several times a week. She continued to struggle with schoolwork and knew something was terribly wrong. At 16, she broke down sobbing, begging her mother to tell her why. Josefina had intended to wait until Anaiz was 18, but she relented. It might have been the neighbor near our old house spraying cars. It might have been you eating some dirt as a little girl. It probably was from your father.

"She was so sad," Josefina recalls. "She kept saying, 'Why did this have to happen to me?'"

Anaiz wanted out of the special high school, back to a regular Maywood high school. School administrators agreed because she "looked" normal, which angers her mother. She participated in

graduation but didn't receive a diploma. She began adult education, but the stomach pains continued.

"I would go to the restroom, and I would bleed from the stress," she says softly. Finally, a doctor told her it was not worth losing her life to go to school, and she gave up.

She lies down patiently to have her blood drawn. She's been doing this her entire life.

Josefina is the worrier and the warrior along with her husband. She came to the United States at 12, noting firmly that her parents came legally, with green cards. She was working by 18 at a metal pin factory on Slauson Avenue, Maywood's truck-clogged spine. She had always been healthy, but the smell of glue and paint fumes made her dizzy. She kept her head down, sorting freshly glued buttons. Within months, she was gasping. She'd developed a lung infection and asthma. She met Sal; they married, went to civics classes and became citizens. They began a family in Lynwood, another southeast Los Angeles community near his job.

"Those were the hard years," Josefina says.

Anaiz's lead levels were high, with no apparent cause. Finally, a doctor asked if her husband had a mustache. Another child had been poisoned by her father's facial hair. Sal refused to shave his trademark mustache, but began changing and showering when he arrived home from work, before saying hello. Her lead levels came down for good when he left the job.

Josefina wants to be tested because of what happened to her daughter. Because a few weeks ago, the water in the shower stung her, and when she opened her eyes, it was streaming brown onto her skin.

"Because I want to know," she says.

She lies down and tugs her dress demurely over her knees. Her blood is darker than her children's and comes out slowly. She reminds herself that her father did chemotherapy without flinching.

## **Waiting for results**

Human testing is not simple. The overnight express company fails to deliver half the samples at the proper temperature, meaning they have to be discarded. It takes months, a second round of fasting, of blood being drawn. Life continues.

Junior is having nightmares. He doesn't care if he graduates. His parents decide to send him to his uncle's near Mexico City after Christmas. Peace replaces tension in the house. He is nervous about the test results, which will come while he's away.

"I'm scared," he admits.

Christmas passes. His family is unwilling to let him go. On New Year's Eve, he wakes up numb around his mouth, fingers and feet. His mother rushes him to the emergency room. The doctors guess food poisoning, give him Benadryl and send him home. A few days later, he flies south.

Half a year after the initial samples were taken, the family finally will learn what is inside them. The news will come as brown water once again flows from their taps.

Adilene has braced herself for this moment.

"I'm not saying we should have something inside us," she says as they drive to the doctor's office

on Jan. 31. "But it'll be disappointing if nothing comes up and the water's still coming out like that."

Dr. Deborah Lerner, chief medical officer at Eisner Pediatric & Family Medical Center in south Los Angeles, has undergone such testing herself. She agreed to meet with the Martins and to deliver their results. She states firmly that she will not be able to tell them the sources of what's inside them or what harm the chemicals might do. She's doing this because she knows first-hand how unsettling it is to be told you have dangerous substances inside of you.

Lerner distributes a thick sheaf of papers and chooses her words carefully. The results still are jarring.

The Martin family had traces of eight dangerous heavy metals and 17 industrial byproducts in their bodies. Levels of arsenic, chromium, mercury, manganese and vanadium were far higher than for most Americans.

Junior had arsenic amounts in his urine that appeared to be above all Americans his age tested by the U.S. Centers for Disease Control and Prevention. Arsenic can be harmless, but the wrong kind in high amounts has been linked to liver, lung, kidney and bladder cancers. It is not clear what kind is in Junior. A recent study showed patients reported tingling of hands and feet at arsenic levels about twice what his were.

His sister Adilene had high amounts of vanadium in her blood, and her brother and sister exceeded national averages. Vanadium, a lesser-known silvery-blue substance, is in some foods and supplements, but fumes and dust can cause respiratory illness, and it is a possible carcinogen.

All four had higher levels of manganese than 95 percent of Americans tested, and Josefina appeared to be above all recorded levels. Manganese is the murky water pollutant that can cause Parkinson's disease-like symptoms with high chronic exposure.

All had mercury levels that caused another doctor to recommend a state investigation of their home and neighborhood for sources, though Lerner does not tell them that. Mercury of the wrong kind is extremely toxic and can damage or fatally injure the brain, nervous system and kidneys in small amounts.

Headaches, fatigue and depression similar to the symptoms reported by Josefina and Anaiz have been reported in patients overexposed to mercury. Arsenic or mercury can cause numbness, such as that reported by Junior. Many chemicals, including vanadium or chlorine used to treat their water, could cause rashes like those on Adilene's arms.

U.S. averages for copper aren't available, but the Martins' were two to five times higher than those for Germans. It is a necessary nutrient, but high levels have been linked to nose, mouth and eye irritation; nausea; stomach cramps; vomiting; and death. It is a possible carcinogen.

They had average levels of lead, cadmium, dioxins and furans. But experts caution that there are no known safe levels of lead or dioxins. The dioxins are the same type of powerful carcinogens released by the U.S. Environmental Protection Agency into Maywood residential streets in 1998 as part of its cleanup of the Superfund site. They can linger in landfills, unused attics and body tissue for years.

Josefina reacts first, laughing shakily.

“Well, I never expected all this, but it’s good to know what we have inside. I guess we just have to look at the information and ask the questions we have if someone else can answer them.”

Lerner tells them that the data will take time to digest, and they should not feel stupid if they can’t grasp it all, or are unnerved.

“This is going to help us in our community, because we’ve got all these problems in the water, and that shows right there,” says Josefina, pointing to the papers. Her fears tumble out. “I don’t drink from it, I drink bottled water; but still, I shower, I cook from that water.”

All summer, Josefina had stomachaches and bloody stool, even after having a polyp removed. Some days, she is nauseous; other days, she is simply exhausted, muscles aching. Lerner gently says the symptoms could be from any number of things, including stress.

Sal jumps in, “We got three water companies, and one had manganese, and the other has mercury.” He’s referring to the just-released regional manganese report and a water sample that contained mercury a few years earlier.

Lerner is intrigued. “I’m imagining in your community, there are going to be a lot of people whose exposures are like yours: high on things that you wouldn’t expect.”

They are given government ToxFAQs sheets about the substances, mercury advisories about Mexican skin creams and sheets explaining why the substances for which they were tested were picked.

At home, Josefina and Adilene pore over the materials. Josefina says they don’t have any Mexican



DANIEL A. ANDERSON/CALIFORNIA WATCH

*Salvador Martin collected water samples from the faucets of his family’s Maywood home. He marked the date and time of the samples.*



products, then remembers lotion she bought on a recent trip. It's not the type in the fliers. Adilene brings out a large can of dietary supplements she bought on the street. According to the label, it does not contain any of the substances for which they were tested.

Adilene finally starts cooking dinner. "Look at the white crust in the pan from the water," her mother exclaims.

## **Long-term exposure increases risks, experts say**

Numerous doctors and scientists who specialize in environmental contamination reviewed the results. Most said they didn't think the Martins were at immediate risk. While some of the levels were extremely high compared with average Americans, they are trace amounts, which do not typically cause immediate harm. For arsenic, chromium and mercury, it would depend on the type to which they were exposed. Follow-up testing showed that Junior did not have the dangerous kind of arsenic in him.

But experts agreed that if the family members continue to be exposed at higher levels, they face steeper odds of cancers and other serious health effects. Like tobacco smoke or radiation, these chemicals can build up for years in body fat or tissue, exacting a long-term toll.

"That's what I worry about a lot more. This is a snapshot, but if further testing established that their levels are that high over the long term, then it is a serious risk," said Scott Fruin, assistant professor of environmental health at the University of Southern California's Keck School of Medicine. "There's definitely something strange going on there with the extreme values. ... Some of the heavy metals were unusually high."

Scant research has been done on how combinations of chemicals can work together, several noted. All said that identifying sources was no easy task. The Martins eat fish and beef and use household cleaning products. But all of the substances present in them also are present in exhaust or manufacturing processes and byproducts within a mile of their home. The substances can enter the body via air, water or ground vapors. Even garden soil can collect dangerous contaminants.

Their area measured the highest levels of copper, lead, manganese and chromium across the entire 6,700-square-mile Los Angeles air basin in 2007, and the second-highest arsenic levels. Air quality was healthy just one in three days.

Living where they do increases the odds not just for them, but also for their neighbors, some said.

"When you think of the hundreds of families who live in very similar situations in their neighborhood, for each of these excessive exposures, they could be representative of many other people in their community," said Sonya Lunder, a public health analyst with the Environmental Working Group, which does biomonitoring and compiles U.S. pollution databases.

Fruin agreed that where the Martins live puts them at higher risk.

Junior's high arsenic, Adeline's vanadium, and all the mercury and copper levels stood out for him. His team at USC has measured high levels of copper in multiple areas across Los Angeles near heavy traffic. Copper is linked to brakes in cars and trucks, he said. Vanadium is associated with

highly polluting bunker fuel burned by cargo ships, and elevated levels in air have been found nearly 20 miles inland, he and regulators said. Arsenic and mercury are common in myriad industries near their home, and mercury is even in factory lighting and sky lifts.

One doctor was concerned about possible immediate health threats.

“There are some extraordinarily high numbers here; I’m puzzled and surprised they were exposed to that much mercury,” said Dr. Gina Solomon, a UC San Francisco associate clinical professor who treats patients for environmental contamination.

Solomon, also a senior scientist for the Natural Resources Defense Council, recommended the California Department of Public Health investigate the family’s mercury exposure and possible sources.

Nearby chemical processors and other industries could be sources if they were off-gassing substances improperly, she said. She agreed there could be other explanations, including what they eat and use to clean their home.

“The great part of biomonitoring is it tells you exactly what’s in your body,” she said. “The Achilles’ heel is it doesn’t tell you the sources.”

If the family were in the San Francisco area, she would order follow-up testing and break down mercury, arsenic and chromium samples to pinpoint any immediate risk.

“Being in the 95th percentile is pretty surprising,” she said. “This does need follow-up and shouldn’t just be dropped.”

State public health regulators from the same agency that has failed to tell Maywood residents about the risks of manganese declined to do testing or investigate.

“If the family has concerns about their lab test results, they should contact their clinical medical doctor,” Dr. Rick Kreutzer, chief of the Division of Environmental and Occupational Disease Control, said in an e-mail.

Through a spokeswoman, federal biomonitoring officials also declined comment, saying, “We don’t provide that kind of service.”

The family’s COBRA benefits from Sal’s job had expired. The one nationally certified environmental health clinic in Los Angeles County, at UCLA, was closing.

Funding was obtained to further analyze Junior’s first arsenic sample – the single highest reading. His contained no dangerous forms, meaning he was in the clear for that substance.

Ruthann Rudel, a toxicologist and director of research for the Silent Spring Institute near Boston, which examines cancers and environmental factors, said she was not surprised by the Martins’ biomonitoring results, their difficulty getting follow-up care or officials’ lack of interest.

She said regulators routinely are underfunded and subject to political pressures, while most doctors across the U.S. are poorly trained in environmental health issues. The gap is even greater in poor communities that have fewer doctors and potentially face greater hazards. Maywood has one full-time doctor for every 4,840 residents, according to the California Office of Statewide Health Planning and Development.

“There is a completely inadequate ability to get help around environmental contamination in these communities,” Rudel said. “There’s very little medical infrastructure, and clinical doctors in

particular do not receive adequate training in environmental health and contamination.”

Some regulators agree there are hazards.

“These communities are under attack,” said Florence Gharibian, who recently retired as manager for the Southern California Enforcement and Emergency Response Program of the state Department of Toxic Substances Control.

Critics note some of the substances detected in the Martins are not monitored or regulated in the U.S., including manganese, vanadium, copper and carcinogenic forms of chromium.

“It’s an unconscionable gap,” said Solomon, who co-authored a recent paper on disease clusters in neighborhoods near hazardous industrial facilities that concluded that “the regulation of toxic chemicals in America has been a failure.”

Davis Baltz with Commonweal, a California nonprofit that does biomonitoring, said he thought the Martins’ results actually were like most Americans’, with spikes in particular substances that could be fleeting, while others could signal serious risk.

He said all biomonitoring illustrates the need for a national overhaul of chemicals testing and tighter regulation of harmful substances.

“I would like to see a lot of these polluting industries shut down and a lot of these chemicals banned,” Baltz said. “Until we get a handle on how we regulate them ... we’re going to have continued medical evidence piling up.”

## **After test results, life goes on**

Adilene speaks with Baltz for an hour on the phone after receiving their results. “It sounds like we’re not going to die right now, but we could be worse off in the future. It’s not good.”

She is struggling to find scholarships to continue her nursing studies and works for minimum wage at a T-shirt shop meanwhile.

“When I grow up, I want to move out of here,” she says. “If someday I do have a family, I want my family, as well as me, to go somewhere else and hopefully be healthy.”

Sal has looked for properties elsewhere, but prices are too high. The family’s only income right now is from its rental units. He and other neighbors have taken control of their water district board. This May, for the first time in four years, manganese levels did not exceed state secondary limits. But disinfectants that can carry their own long-term risks are being mixed in the water supply.

Junior hates the results.

“I wish I hadn’t done it, so I wouldn’t know. I want to move, but there’s nowhere to go,” he says. He does return to high school after a doctor praises his weight loss and exercise. She tells him to quit wasting time and get back in class. He’s earning excellent grades.

Josefina is satisfied. She says such testing may not be for everyone, but for her, it was worth it. The next chance she has to see a doctor, she will bring her biomonitoring results and ask about the mercury.

“It doesn’t end all the worries, but at least we get to follow up on these results and see about all

this stuff,” she says. “It’s really good to know what we have in our bodies.”

Anaiz is happy not to be “the one” with the worst readings.

And she’s gotten her high school diploma. She worked with her brother’s English teacher three days a week at the dining room table, reading stories and doing quizzes. He told her to watch television shows and write him grammatically correct complaint letters.

She has the diploma tucked in the living room armoire between her siblings’, and if she can do it, she wants to attend community college.

“I overcame,” she says.

By late September she is sick again – experiencing more asthma attacks and symptoms of irritable bowel syndrome.

By October, discolored water is once again flowing from their taps.

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