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Pesticide Drift

Immigrants in California's Central Valley are sick of breathing poisoned air

BY REBECCA CLARREN, PHOTOGRAPHS BY CHRISTOPHER LAMARCA

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TERESA AVIÑA won't open the windows or door of her small apartment, despite a heat that plagues the soul. On the kitchen table, beside two jugs of bottled water, a small, green, electric fan pushes thick air around the room.

"What good is the wind?" she asks, glancing out the window at the breeze that flutters the trees in her front yard. "It's all poison."

When Aviña, sixty-four, first moved to Huron, California, from Ensenada, Mexico, eleven years ago, the planes that swooped low in the sky, close to the roof sometimes, fascinated her. She'd run outside to watch them fly to the end of her block, where they would drop pesticides like rain onto the cotton fields below.

"I would go outside and look at them without fear. I didn't know I could get sick," says Aviña in Spanish. "Now when I see planes, I run inside and shut the windows. Now I worry about breathing the air. I worry about the kids playing outside."

Todos los días, every day, Aviña says, she smells pesticides. She blames them for her headaches and dizziness, her nausea, for the cancer and miscarriages that have afflicted her neighbors. Like all of Huron's

seven thousand residents, she lives near *el campo*, the fields of tomatoes, cotton, lettuce, and melons that ring this cramped town in the heart of California's San Joaquin Valley, the country's most productive agricultural area. In 2006 Huron's Fresno County, one of the valley's eight counties, produced $4.85 billion worth of vegetables, fruit, and cotton. To foster such incredible fertility, growers sprayed nearly 32 million pounds of pesticides using planes, tractors, and irrigation pipe—enough to fill nearly six Olympic swimming pools.

Not all of these pesticides stay on the fields for which they're intended; they may lace the air and drift throughout town onto, say, the playground or Aviña's house. For the most part this isn't illegal. Federal and state law only requires pesticide applicators to ensure chemicals don't drift away from fields during or immediately after application. However, according to the California Air Resources Board, most pesticides volatize (turn from liquid to gas), and become prone to drift, within eight to twenty-four hours after application. Data produced by environmental groups, using statistics and risk assessment methodology from the Environmental Protection Agency, suggests that many of these drifting pesticides float into agricultural towns at unsafe concentrations.

In the past several years, Fresno County growers have applied pesticides an average of 273,000 times per year. The county's Agricultural Commission has twenty-nine staff, each with a host of competing duties, to monitor these operations. Neighboring Tulare County has six people in its pesticide enforcement department to monitor an average of 210,000 applications per year. The California Department of Pesticide Regulation has a toll-free hotline for people to use to report pesticide drift—but it has limited funding to spread the word that such a telephone number exists.

Federal and state agencies have long assured the people who live in these communities that the pesticides pose no threat to their health, that although they may smell chemicals outside their homes, there's no reason to assume they are in danger. But neither the federal Environmental Protection Agency nor state health agencies have launched any widespread epidemiological studies to investigate whether such statements are actually true. The absence of proof isn't proof of absence, and many in the San Joaquin Valley see a willful blindness to potential health problems. And so for the first time in memory, the Mexicans and Mexican-Americans who inhabit this slice of the valley have stopped waiting for governments to notice them. In an effort to challenge health agencies to better protect them from pesticides, over the past three years a dozen or so individuals in the towns of Huron, Lindsay, and Grayson have taken air samples from their yards. Though they are organized by Pesticide Action Network North America (PANNA), a national environmental group, and supported by regional organizations such as Latino Issues Forum and Lideres Campesinas, it's citizens such as Teresa Aviña—mostly uneducated and poor—who conduct the actual science of air sample collection.

THE HISTORY OF ECONOMIC PROGRESS is generally written with a bold font, leaving the story of the related environmental and human costs to footnotes. In the San Joaquin Valley this tendency is pronounced. Huron, incorporated in 1951, was created to house agricultural workers who would make the desert bloom. Arguably, such places were never intended to be more than a footnote in the story of a stunningly productive agricultural industry. Huron, twelve miles east of Interstate 5, is a forgotten town of dusty, broken streets. There is no high school, no ambulance, no walking postman, and no grocery store of significant size. A main road into town floods almost annually with heavy rains, but the bridge promised by politicians for nearly twenty years has yet to be built. The city manager lives in Fresno, an hour away. What Huron does have is high rates of teenage pregnancy, domestic violence, drug use, and gangs. Nearly everyone here works in the fields and speaks Spanish. Locals estimate at least 70 percent of residents are

undocumented, and of those who do have papers, many aren't citizens. Only around eight hundred people are registered to vote.

Across town from Teresa Aviña's house, on a block that ends where tomato fields begin, live Siboney Cruz, her mother Frances Arguis, and Cruz's five children. Visitors to their home are met by plaster that peels off the exterior wall, billowing pink curtains, and the persistent whine of a generator that powers an odd, capital I-shaped mechanical contraption. Situated just to the right of the front door, beneath an open bedroom window, this two-foot-tall device is a Drift Catcher. While her kids, who range in age from four to eleven, all big brown eyes and shy smiles, play hide and seek, Cruz, twenty-seven, takes a clipboard outside to check the machine.

Powered by the generator, the vacuum cleaner–like mechanism sucks air into two glass tubes, each about the size of a cigarette. Airborne pesticides adhere to an absorbent resin filter that PANNA scientists will analyze at a lab at the University of California, Berkeley. Every day for two weeks, Cruz changes the tubes, noting temperature, wind direction, and any strong smells. Today the wind stirs a nearby cherry tree, and a sharp smell slices the air.

"I get headaches sometimes when I smell this, or I feel sort of frustrated all day," says Cruz. Her round face is pock-marked and scarred, the result of a terrible rash she got several years ago after accidentally being sprayed by pesticides while she worked in the tomato fields. "We go to meetings and public hearings [about pesticide drift], but they don't actually do anything. If [the government] would care about the community, they would do something about it."

The U.S. Environmental Protection Agency hasn't created any federal standards for acceptable airborne pesticide exposure levels for those who live or work near sprayed fields. Dale Kemery, an EPA spokesperson based in Washington DC, explained in an e-mail that "most available monitoring data" suggests that exposure to airborne pesticides is far less of a health concern than drinking or eating these chemicals. He fails to mention that the EPA has only reviewed studies of volatilized fumigants—just five pesticides—to determine whether they may impact neighbors' health. The vast majority of active ingredients in pesticides—nearly a thousand chemicals—have not been similarly assessed. On the EPA website that describes how people may be exposed to pesticides, no mention is made of drift from nearby fields.

State and county government officials also downplay the potential for health impacts. "Everything we do, whether it's cattle with a methane gas problem or pesticides on our crops, everything's polluting something," says Karen Francone, deputy agricultural commissioner of Fresno County. "What's our tolerance of it? I'm not here to answer that question. People wearing perfume really bugs me. The person who wears the perfume thinks it smells great. I might say, well, I'll tolerate pesticides because I know it's applied to a commodity so I don't have worms in my fruit. It comes down to what's a person's tolerance."

Says Karl Tupper, a San Francisco–based PANNA scientist: "To acknowledge there's a problem would mean doing something about it, and doing something about it will be tough. It's easier to assume that bystanders simply aren't exposed to pesticides."

In the absence of EPA analysis, PANNA has set out to create its own safety standards. Using EPA data and methodology, Susan Kegley, a former Berkeley professor of chemistry and a PANNA senior scientist, calculated how much of any pesticide a child can inhale without getting sick. The air samples that people have taken over the past several years in both Huron, where cotton and other row crops are grown, and Lindsay, a town ringed by thick groves of orange trees, showed daily evidence of exposure to chlorpyrifos

and naled, both organophosphate pesticides, during the several-week-long sample period. Approximately 28 percent of the time, air samples in Lindsay were above "acceptable" exposure levels for a one-year-old child.

Infant and prenatal exposure to organophosphate pesticides such as chlorpyrifos leads to significant mental and developmental delays, according to recent studies published in *Environmental Health Perspectives* and *Pediatrics*. In one 1998 study, four-to-five-year-old children in Mexico who had been exposed to pesticides suffered significant lags in development—they had more trouble catching a ball, drawing pictures of people, or performing simple tasks involving memory and neuromuscular skills. Other studies link pesticide exposure to autism, infertility, neurological disorders, cancer, and birth defects.

Despite the steady drumbeat of government and industry assurances that such findings are no cause for worry, these reports do concern Drift Catcher operator Siboney Cruz and her mother, Frances Arguis. Most days, the abandoned field behind their house, once a landing strip for crop-dusting planes, becomes a makeshift playground where the kids play tag, duck-duck-goose and hide-and-seek. One of her boys, Adam, nine, has asthma, and when growers spray his wheezing kicks up. In fact, 30 percent of children in Fresno County have asthma, more than double the statewide rate, according to a 2005 survey conducted by the University of California, Los Angeles. "Every time you turn around, an unbelievable environmental justice issue slaps you in the face," says Tracey Brieger, agricultural policy coordinator for Californians for Pesticide Reform, a nonprofit group based in San Francisco. "It feels like the valley is the center of the modern civil rights movement in the country."

According to a 2003 study by Californians for Pesticide Reform, hundreds of thousands of Californians live in places where they're exposed to pesticides that drift away from farms. Throughout the country, suburban development is consuming agricultural areas, creating communities on the edge of farmland, faster than at any time in history. "Very nice, white, middle-class people will find themselves in this same situation," says Shelley Davis, executive director of the Farmworker Justice Fund, based in Washington DC. "We have this attitude that who cares about them. They're brown and they're poor. But this does not stay in the valley. You can't throw this shit away; it doesn't go away. DDT hasn't been used since 1972 but it persists, it shows up in breast milk of women who weren't even born in 1972. If you don't want this to happen to you, you'd better stop it now."

LUIS MEDELLIN LIVES IN LINDSAY, another poor community comprised almost entirely of immigrants, about an hour east of Huron in neighboring Tulare County. In the summer of 2006, he and eleven others from Lindsay volunteered to collect their urine every day for two weeks so that PANNA could test for the presence of chlorpyrifos in their bodies. Medellin, twenty-two, works as a dishwasher in a restaurant. He lives in a trailer park surrounded by orange trees, but figured he was young and strong and unlikely to have a toxic chemical in his bloodstream.

Yet Medellin had 7 micrograms of chlorpyrifos per liter of urine, or 4.5 times the amount of the average American adult. He fell within range, just barely, of the EPA's acceptable level for healthy adults (7.9 micrograms/liter). One woman, a former farmworker who no longer works in the fields, had levels twice that. Only two of the study participants worked in the fields during sampling, but eleven of the twelve people tested had levels above the level that EPA data and PANNA analysis indicate would be an acceptable daily exposure for pregnant and nursing women (1.5 micrograms/liter).

"I was mad when I heard about the levels," says Medellin as we walk the orange grove's long, narrow pathways between trees. Mornings after they've been sprayed, he says, the leaves look like they've been sprinkled with flour. "I want to have kids and not have serious health problems. Will this chemical stay in

my body and make some damage in the future? Will it stay in my body long enough to cause cancer?"

With a local immigrant advocacy organization called El Quinto Sol de América, and a coalition of regional groups, Medellin and others are working to shield residents from pesticides. For the past three years they've pushed for buffer zones between farmland and schools and homes, and for regulations requiring growers to notify schools, hospitals, and residents before they spray nearby. Activists have circulated petitions, held meetings with the Tulare agriculture commissioner and local school boards, and staged protests to attract media attention. They've had some success: beginning in December 2007, growers in Tulare County no longer may apply the most dangerous pesticides by plane within a quarter mile of schools, residential areas, and occupied labor camps. This is the first time a county has used a 2001 state law that permits the creation of buffer zones. Though activists hailed the change, it's far from everything they want. The law only applies to restricted pesticides that require an application permit. Chlorpyrifos, for example, isn't on that list in California.

The accomplishments of the valley residents and the nonprofits that support them may seem minor. But there's a significant, albeit slight, shift in the air. Gary Kunkel, agricultural commissioner for Tulare County, credits the creation of the buffer zones to numerous talks he's had with the activist coalition, and he says that the dynamic between government and local, mostly Latino communities is changing. "I, for one, ten years ago didn't know the names of all these groups, and now I do. And I think that's a very positive thing. They're becoming increasingly confident and they're getting somewhere," says Kunkel, ruddy and mustached, as he sits at the end of the long, wooden conference table. "They're having an impact and will have an impact on how we do business here."

For this trend, Gustavo Aguirre, a former farmworker from Mexico who is leading the buffer zone campaign for the Center on Race, Poverty & the Environment, credits those like Cruz, Aviña, and Medellin. "It's been successful because of the participation of people in the study. The Drift Catcher and the biomonitoring has a huge impact. One of the reasons the county ag commission can't say they don't like it is because they're not monitoring the pesticides. We're doing their homework for them," says Aguirre. "We are trying to organize rural communities to raise their voices and I think that's happening. I believe people have capacity without limits."

IF HISTORY IS ANY INDICATOR, the use of Drift Catchers and activism to pull people like Teresa Aviña and Luis Medellin up out of society's margins will take a long time. Even so, the fact that anyone is trying to do something, anything really, not only for themselves but for all San Joaquin Valley residents, carries its own heft.

On a day when the recently denuded cotton fields across the street from the elementary school are a brown sea of dust, and thick air obscures the mountains to the west, the playground at Huron Elementary is a mill of laughter and shrieking. It's the first day of school after summer break. As a bell rings to pull these small, mostly brown children away from their swings and tag games, Noella Saldaña, a veteran kindergarten teacher, sighs with relief at the momentary pause. Though she grew up in New Hampshire in a family of French Canadians, Saldaña has lived and taught in Huron for over twenty years. She has spoken Spanish for so long that she forgets how to say certain words, like sidewalk, in English. A woman who speaks in galloping straight lines, Saldaña talks with candor about how the Drift Catchers penetrate a pervasive indifference.

"This community, unfortunately, is a bit apathetic," she says, walking across the now quiet playground. "People ask me why I'm living in this community when you know that the rules get bent for some people

and not for others, when you're getting sprayed with pesticides. But we've been here so long. These people are my friends."

As the midday sun bakes the concrete slab of the playground, Saldaña pauses to consider what the Drift Catchers might mean for this town, for people like Teresa Aviña who are afraid to open their windows. She knits her brow and stares off toward the nearby fields. "It's a good start, it's a really good start because nothing's ever happened before."

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Dear EarthTalk: What is â€œpesticide drift,â€ and should I be worried about it?â€”Nicole Kehoe, Burlington, Vt. If you live near a big farm or an otherwise frequently manicured landscape, â€œpesticide driftâ€â€”drifting spray and dust from pesticide applicationsâ€”could be an issue for you and yours. Indeed, pesticide drift is an insidious threat to human health as well as to wildlife and ecosystems in and around agricultural and even residential areas where harsh chemicals are used to ward off pests. Pesticide drift is the aerial movement and unintentional deposit of pesticide outside the target area. There are two forms of pesticide drift. Particle drift is the movement of pesticide droplets or solid particles outside the area being treated.Â While drift-reducing adjuvants are available, check to ensure they are compatible with the pesticide in use. If not compatible, they can change the spray quality. This could damage the crop, make coverage uneven and/or reduce canopy penetration. Preventing Pesticide Drift. Studies have shown that a sizable percentage of pesticides may never reach the intended target site because of drift. Significant drift can damage or contaminate sensitive crops, poison bees, pose health risks to humans and animals, and/or contaminate nearby soil and water. It is impossible to eliminate drift, but it is possible to reduce it to a tolerable level. The drift of spray from pesticide applications can expose people, plants and animals, and the environment to pesticide residues that can cause health and environmental effects and property damage. Agricultural practices are poorly understood by the public, which causes anxiety and sometimes overreaction to a situation. Pesticide drift is the airborne movement of pesticides from an area of application to any unintended site. Drift can happen during pesticide application, when droplets or dust travel away from the target site. It can also happen after the application, when some chemicals become vapors that can move off-site. Pesticide drift can cause accidental exposure to people, animals, plants and property. Particle and Vapor Drift. You might think of pesticide drift as the movement of spray droplets during application. This is called 'particle drift.'