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Pesticide Use and Civil Rights in Central California: Slow Violence and the State

by Gregg Macey, Caroline Farrell, Kayla Anderson, Angel Garcia, Yanelly Martinez, Jane Sellen, Alexis Temkin, and Mark Weller

Why has modern environmental policy, after more than half a century, failed to address racial disparities in access to clean air and water, safe working conditions, and community health?¹ A growing chorus of social scientists and legal scholars argue that

existing environmental justice policy does not advance the principles of environmental justice.² For example, the first decade of environmental justice policy in California, which began in 1999 and involved the enactment of more than 20 laws, was described as “symbolic politics,”³ a narrow view of environmental justice that “stagnated at the point of

procedural justice”⁴ or participation and achieved few results “translating broad themes into actual, enforceable law.”⁵ Federal and state actions largely “deviate from core movement goals” and fail to reduce environmental burdens.”⁶ Scholars point to legal approaches such as Equal Protection claims under the U.S. Constitution and challenges to agency



Farmworkers harvesting yellow bell peppers near Gilroy, California.

Stock/Neuhing

decisions under civil rights law that are rarely successful (for example, administrative complaints filed with the U.S. Environmental Protection Agency (EPA) under Title VI of the Civil Rights Act of 1964 had a success rate of 0.3% by 2014).⁷ And they call for a “fundamental rethinking”⁸ of the social movement’s approach to and reliance on the state to redress environmental harms.

At the same time, environmental justice policy could benefit from more precise analysis of the mechanisms by which the state perpetuates, or organizes only limited response to, environmental harms experienced disproportionately according to race, gender, age, physical ability, and other factors. To address this research question, we compare the prevailing civil rights framework for environmental justice scholars, attorneys, and agency staff—referred to as “disparate impact analysis” under Title VI of the Civil Rights Act of 1964 and state laws such as California Government Code § 11135—to the experience of environmental harm by farmworker communities⁹ in Central California. To do so, we apply an approach to the dynamics of environmental harm known as “slow violence” to the daily lives, risk avoidance, and caretaking responses of farmworkers and their families.

Compared to traditional approaches to environmental justice research, the concept of slow violence holds the potential for more robust analysis of how forms of brutality beyond direct acts work in combination in a given context.¹⁰ To give a sense of the theoretical potential of the concept of slow violence, legal scholar Aya Gruber juxtaposes violence according to criminal law, such as the murder of an unarmed civilian by the police, and slow violence, such as “the cumulative conditions of racialized inequality and disenfranchisement [that] leave an island vulnerable to a hurricane.”¹¹ The concept, developed by Rob Nixon in his book *Slow Violence and the Environmentalism of the Poor*, shares a vibrant intellectual history in the United States and abroad,¹² including its use to explain the progression and impacts of slow-onset events such as climate change, contamination of soil and groundwater with hazardous substances,

and natural disasters that interact with infrastructure in complex ways.¹³

The diverse disciplines that inform slow violence build on a structural approach to environmental harm—it is produced by combinations of practices and institutions (“assemblages”) that sustain, routinize, and normalize suffering over time. Slow violence also centers on patterns of harm experienced by the human body—“the state originates population-wide health crises as much as it responds to them” and “upon originating these ecological and health crises, the state then withholds protection.”¹⁴ A slow violence approach to environmental justice policy responds to sociologist Jill Harrison’s call for researchers to treat the state as more than monolithic and entirely repressive. Rather, she argues, we should engage in more nuanced accounts of the state as a “necessary site of struggle,” an “ensemble of institutional structures and practices” that yield contradictions and inconsistencies and offer the potential for policy change.¹⁵ Application of the concept of slow violence in this research continues the work of geographers such as Laura Pulido who argued that environmental racism is reproduced through a range of public and private actions at multiple spatial and temporal scales.¹⁶ She was among the first to rebuke the forms of statistical analyses that predominated in early environmental racism research.¹⁷

Slow Violence and Civil Rights Law

Beyond viewing the state as an enabler of environmental harm, the concept of slow violence encourages us to identify the mechanisms by which state actions, processes, and neglect produce or intensify “group-differentiated vulnerability to premature death.”¹⁸ The drivers of environmental racism often operate beyond classic distributive causes (e.g., siting a certain land use within poor or minority communities) and procedural challenges (e.g., denial of adequate notice and comment for environmental review or rule-making).¹⁹ From deprivation to death, environmental harms are difficult to

trace from a single act or decision. Instead, the root causes of harm are ongoing and spatially extended. The nature of slow violence—the gradual accretion of harms “out of sight” and “dispersed across time and space”—explains why it is so difficult to identify, research, or remedy, and is largely ignored by government agencies.²⁰

In response to the representational challenge of slow violence, scholars identify its characteristics through case study research and critical social science methods. Slow violence can be, at once, *dispersed* (the source of damage is spatially distant or scattered across time), *ambiguous* (crossing multiple boundaries), *delayed* (temporally distant), *incremental* (specific contributions to damage may be small), *durative* (damage accrues over time in repetitive or periodic ways and produces a sense of “stalled present”), *cumulative* (accretion of harm occurs in additive or synergistic ways over time), *entangled* (damage is linked to historical practices), the product of *assemblages* (such as layers of oil and gas infrastructure in former plantation towns along the Mississippi River that result in displacement, constriction, sensory siege, and disruption or erosion of social patterns), *corporeal* (subtle and acute changes occur to the human body), and *invisible* (damages are difficult to see and track).²¹ What is less understood is how these dynamics operate within specific geospatial contexts and produce the slow violence effects that most affect socially vulnerable communities and persons according to race, gender, age, physical ability, and other factors.

Documenting these dynamics and comparing them to existing legal and other state-centric forms of redress is vital if we are to carefully assess the extent to which underserved communities can or should rely on the state for recognition, restorative, or social justice.²² Importantly, those who are subject to slow violence are already attuned to it—their “slow observation” or bearing witness to slow violence shares little with traditional forms of participatory community science.²³ Thom Davies, who writes about the petrochemical assemblages of Cancer Alley,²⁴ argues that “it is

not the toxic materiality of pollution that is necessarily invisible. Rather, it is the people themselves who are reduced to invisibility—their stories, perspectives, and lives overlooked and unnoticed—to the point they are rendered expendable.²⁵ Their bodies, as with those of family members, co-workers, and neighbors, lie at the center of human and material entanglements—“toxic mundane encounters”²⁶—that intensify the state’s discrete decisions, practices, and formal and informal institutions through feedback loops, tipping points, and other dynamics. They are attuned to subtle changes to their bodies, their immediate physical and natural world, and the scales and speeds at which violence propagates. And they have already begun to respond to slow violence, to build paths of resilience through interpersonal connections, risk avoidance practices, and networks of care.

By comparison, one of the two most important sources of environmental justice legal authority in California²⁷—California Government Code § 11135—holds little space for farmworker families or their observations of slow violence. Section 11135 provides:

No person in the State of California shall, on the basis of sex, race, color, religion, ancestry, national origin, ethnic group identification, age, mental disability, physical disability, medical condition, genetic information, marital status, or sexual orientation, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state.²⁸

Section 11135 is an analogue to a federal civil rights law, Title VI of the Civil Rights Act of 1964. On paper, it is also more expansive than its federal counterpart: It prohibits discrimination—intentional as well as unintentional (in the form of disparate impact)—by state-funded agencies and programs against a greater number of protected classes. Yet

case law narrows the focus on discrimination to linear relations between a state practice and harm through a series of questions: What decision, program, or activity can be identified? Was it sufficiently and directly state-funded or -operated? What is the population base affected by the policy? What is the group negatively affected by the policy within that population base? What is the statistical disparity between the two populations? Is the disparity greater than two or three standard deviations? If not, is there some other reliable indicator of disparate impact? As a *program or activity* that is *operated or funded by the state* is identified and investigated for whether it results in a *disparate impact* to a protected class, much of the lived experience of slow violence and its production of environmental harm falls away.²⁹

Disparate Impact versus Ongoing Civil Rights Violation

Agricultural pesticide use is, by nature of growing practices and land use patterns, concentrated in certain geographic regions of the state (see Figures 1 and 2). The well-documented demographic elements of pesticide use in California are striking. For example, 11 majority Latino/a counties experience 900% more pesticide use per person and per square mile than the 25 counties with the lowest Latino/a populations.³⁰ Use of 13 active ingredients linked to childhood cancer is similarly concentrated according to protected classes under state civil rights law such as race and national origin.³¹ In Fresno County, there is 17.8 times more pesticide use per person than in the 25 counties with the lowest Latino/a populations.³² Kern and Tulare counties experience similar pesticide use patterns (12.1 and 6.9 times more pesticide use per person vs. the 25 counties with the lowest Latino/a populations in California, respectively).³³

By any measure, from lack of occupational safeguards to residential- and school-based exposure to acute and chronic health outcomes, farmworkers and agricultural communities are among the least protected and most vulnerable populations in the United States.

According to the Public Policy Institute of California, 96.5% of California farmworkers are Latino/a and 90.8% are immigrants.³⁴ Latino/a children in California are 91% more likely than non-Hispanic White children (defined according to U.S. Census data) to attend school with the highest levels of hazardous pesticide use nearby.³⁵ Historically, counties with the most pesticide use issued few fines for pesticide misuse or failure to adequately protect workers or the public.³⁶ By the close of the 20th century, the average life expectancy of a migrant farmworker in the United States was 49 years, compared to the national average of 75 years.³⁷

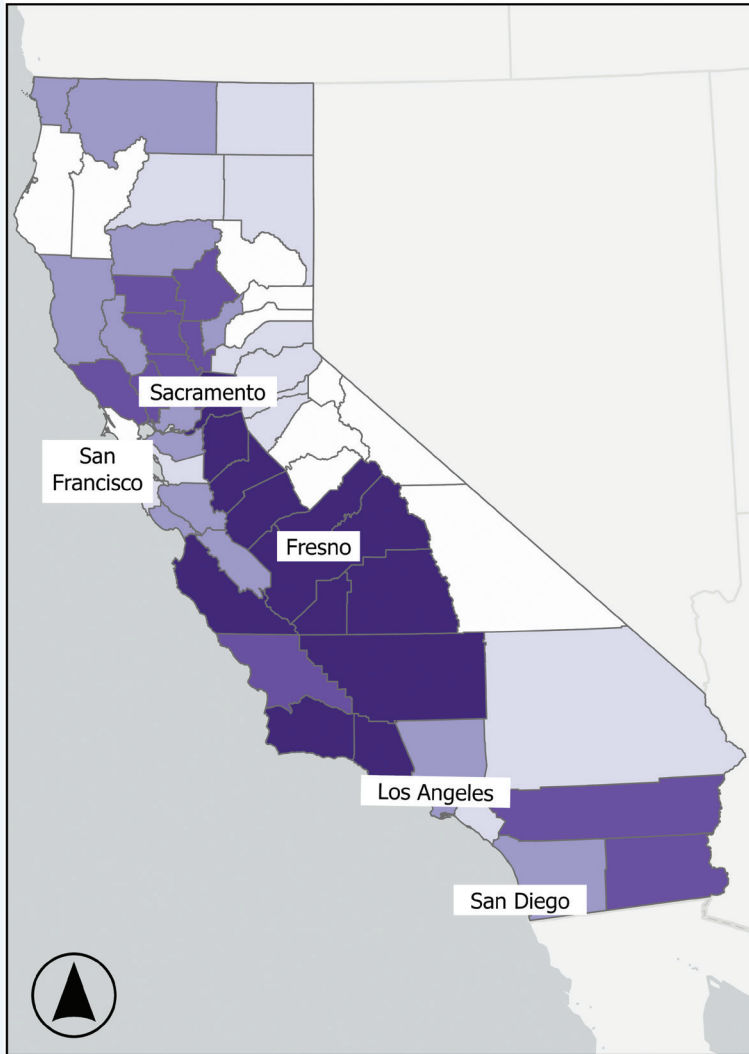
Stark demographic figures regarding pesticide use and where people live, work, and attend school are quickly muddled by civil rights practice. For example, it took EPA a half century to make its first preliminary finding of a violation of Title VI of the Civil Rights Act of 1964. Not surprisingly, the issue regarded pesticide use in California. The case is known as *Angelita C.*³⁸ In 1999, an administrative complaint was filed with EPA’s Office of Civil Rights against the California Department of Pesticide Regulation (CDPR). Its claim was simple: CDPR renewed registration for methyl bromide without considering its potential health effects on children who attend schools within 1.5 miles of where it was applied. Greater amounts of methyl bromide were applied in areas near schools with high percentages of Latino/a schoolchildren, compared to areas near schools with lower percentages of Latino/a schoolchildren. Therefore, CDPR, a recipient of federal funds, made a decision that resulted in a disparate impact on Latino/a schoolchildren in the state.

Angelita C. and other attempts to show that agencies charged with protecting the public from pesticide use, oil and gas production, and other practices violate civil rights laws tend to rely on complex epidemiological, geospatial, and other data to show patterns of exposure and disparate impact.³⁹ This is a product of the disparate impact standard, which is established under federal and state laws and rules and articulated through court proceedings and agency practice. For example, to establish disparate impact in

Figure 1. Average annual pesticide use in California by county in 2017–2021.

Average Annual Pesticide Use by County (Thousands of Pounds)

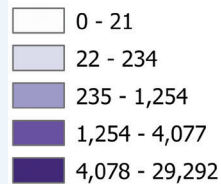
California, USA | 2017-2021



A. All Active Ingredients

Average Annual Pesticide Use

Rounded to the Nearest Thousand Pounds



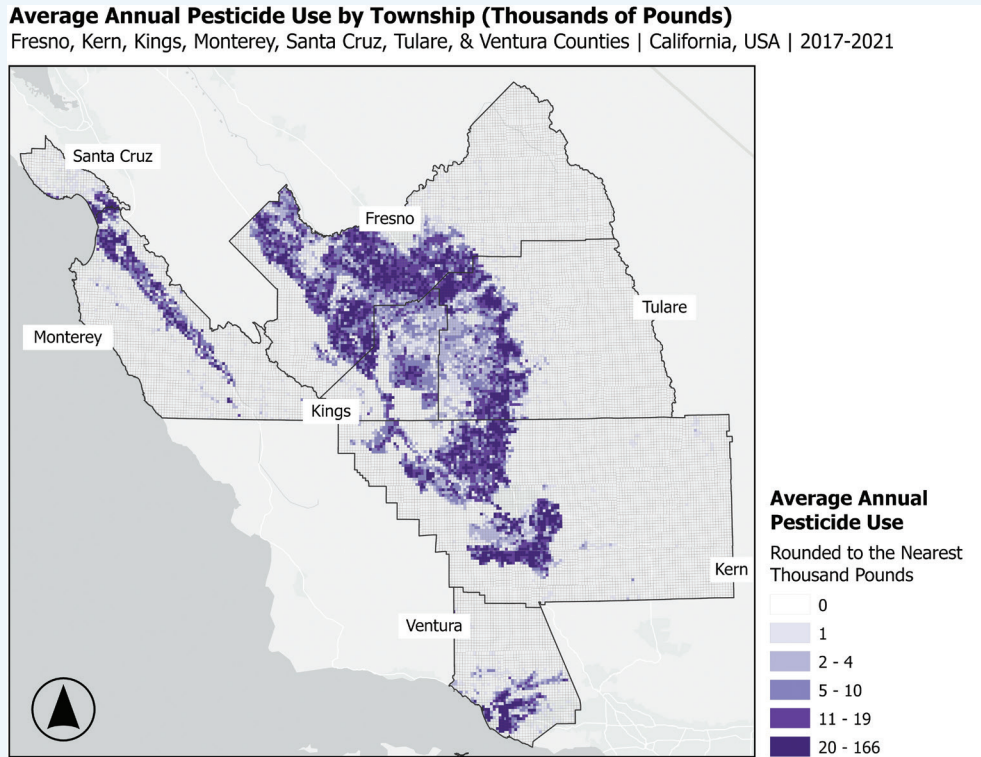
B. Carcinogenic Active Ingredients



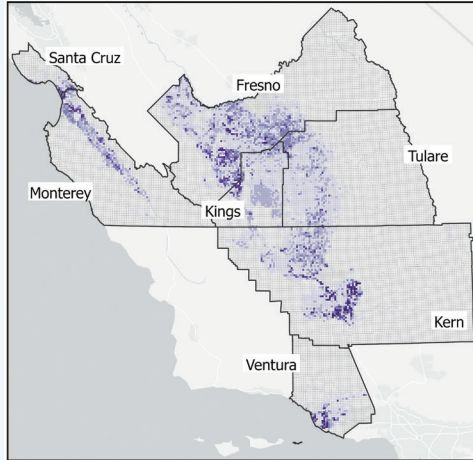
C. Restricted Use Active Ingredients

Note. Pesticide use data were aggregated by county for pounds of all active ingredients (a), carcinogenic active ingredients (b), and restricted-use active ingredients (c). Carcinogenic active ingredients were identified by authoritative agency classifications including EPA, IARC, Prop65, and harmonized classifications from ECHA. Restricted use active ingredients were those described in Title 3, California Code of Regulations (3 CCR) section 6400. See Supplementary Material for full lists.

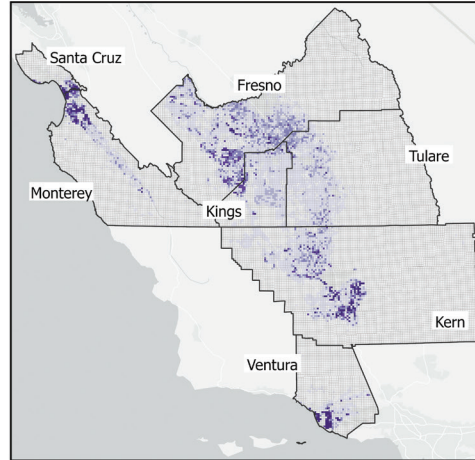
Figure 2. Average annual pesticide use in Central California by township section (1 square mile) in 2017–2021.



A. All Active Ingredients



B. Carcinogenic Active Ingredients



C. Restricted Use Active Ingredients

Note. Pesticide use data were aggregated by township section (MTRS) in Fresno, Kern, Kings, Monterey, Santa Cruz, Tulare, and Ventura counties for all active ingredients (a), carcinogenic active ingredients (b), and restricted-use active ingredients (c). Carcinogenic active ingredients were identified by authoritative agency classifications including EPA, IARC, Prop65, and harmonized classifications from ECHA. Restricted use active ingredients were those described in Title 3, California Code of Regulations (3 CCR) section 6400. See Supplementary Material for full lists.

Angelita C., the complaint focused on a discrete act by CDPR that involved a single pesticide—use of CDPR authority to issue permits for methyl bromide, a highly toxic pesticide the use of which is banned globally, notwithstanding critical

use exemptions. The complaint defined the impacted population as children attending public schools within 1.5 miles of the application of at least 35,000 pounds of methyl bromide over the course of a year. The complaint relied on

the most conservative estimates of acute and chronic health effects of exposure to methyl bromide on children as the basis for its claim of environmental harm.⁴⁰

EPA staff processed the complaint. Data analysis proceeded as follows: EPA

staff statistically analyzed data from monitoring sites throughout the state combined with methyl bromide usage data, local weather patterns, and distance to predict concentrations within one-square-mile blocks. Then they calculated schools with one or more predicted exposures above an existing standard and labeled those schools “affected.” Then EPA staff carried out another assessment of “disparity.” EPA used algorithms to estimate the number of Latino/a and non-Latino/a children present at each school during an exceedance over a 7-year period. EPA then calculated the probability that Latino/a and non-Latino/a children would experience an exceedance at a school.⁴¹ The result was a preliminary finding of disparate impact. The investigation into the complaint, which concerned the lives of thousands of students, took more than a decade to complete. It did not result in any notable change in regulatory practice.⁴²

Given EPA’s focus on developing a model to predict daily air concentrations of methyl bromide at California schools “based on nearby methyl bromide usage for the same day as well as previous days, modified by factors including proximity, wind speed, wind direction, and temperature,”⁴³ farmworker observations of slow violence did not inform the analysis. Their collective role as complainant was reduced, to use EPA’s own word in a policy document, to that of a “tipster.”⁴⁴

Pesticide Use in California’s Central Valley

Our case study concerns the experience of pesticide use, exposure, and harm by farmworker communities in California’s Central Valley and Central Coast. In California, roughly 200 million pounds of pesticides are applied per year. Approximately one-fifth by volume of the pesticides are carcinogenic.⁴⁵ People who live, work, and attend school near agricultural sites face an elevated risk of exposure to pesticides. Farmworkers commonly experience this during “routine work—not applying pesticides”⁴⁶ (see Figure 3). Pesticides move beyond areas of application as dust or droplets—they persist in the immediate

environment and can drift for miles⁴⁷ (see Figure 4). What this means for a given community can be devastating. For example, if an active ingredient such as the fumigant 1,3-dichloropropene (1,3-D) can drift for up to several miles, entire communities such as Watsonville in Santa Cruz County, California, are potentially exposed to the compound.⁴⁸ Farmworker and agricultural communities experience acute and chronic effects of exposure to pesticides; for example, exposure to organophosphates can result in headaches, respiratory distress, blurred vision, cognitive and psychomotor defi-

cits, seizures, and an increased risk of stomach and brain cancer as well as non-Hodgkin’s lymphoma.⁴⁹ Long-term exposure is inevitable for workers and for families who live or attend school nearby.⁵⁰

To provide a clear overview of the civil rights challenges faced by California’s farmworker communities, we analyzed pesticide use data and vulnerability indicators statewide as well as by township for each county within our case study region. CDPR requires pesticide use reporting for agricultural pesticide application throughout the state. Data records for pesticide use were

Figure 3. Farmworker harvesting in California’s Central Coast.



Calliformians for Pesticide Reform

Figure 4. Pesticide application in California’s Central Valley.



Calliformians for Pesticide Reform

Data sources to identify carcinogenic pesticides included EPA's 2022 report, "Chemicals Evaluated for Carcinogenic Potential,"⁵² for classifications listed as "suggestive," "possible," "probable," and "likely"; *International Agency for Research on Cancer (IARC) Monographs*, Volumes 1–136, for groups 1, 2A, and 2B;⁵³ Proposition 65 (Prop65) listings by California's Office of Environmental Health Hazard Assessment; and the harmonization classifications found in European Chemicals Agency (ECHA) Annex XI to the Classification, Labelling, and Packaging (CLP) legislation for chemicals listed as Carc 1A, 1B, and 2.⁵⁴ In total, 158 carcinogenic active ingredients were included in the analysis. Restricted use pesticides were identified as outlined in Title 3, California Code of Regulations (3 CCR) section 6400 and summarized on CDPR's website (<https://www.cdpr.ca.gov/docs/enforce/dpr-enf-013a.pdf>) and included 44 active ingredients. Federal restricted-use pesticides included were those listed at Title 40, Code of Federal Regulations (40 CFR) section 152.175.⁵⁵ The restricted-use pesticide list may not be fully comprehensive of all federal restricted use pesticides, as the classification is given to registered pesticide products and not necessarily by active ingredient, while PUR data from CDPR are aggregated by active ingredient for all registered products. A full list of pesticides included in our analysis and associated classification can be found in the Supplementary Material available online.

obtained from the California Pesticide Use Reporting (PUR) website (<https://www.cdpr.ca.gov/docs/pur/purmain.htm>) for the years 2017 through 2021. Carcinogenic pesticides were identified using multiple authoritative lists for cancer classifications as previously described in Temkin et al.⁵¹ with the addition of one data source.

To develop county- and township-level pesticide use datasets, statistical software⁵⁶ was used to join the California PUR data and the lists of identified carcinogenic pesticides and restricted use pesticides to calculate the total pounds of all active ingredients, total pounds of carcinogenic active ingredients, and total pounds of restricted use active ingredients. Data were aggregated to the county level for all California counties and to the township section level for all township sections located within Fresno, Kern, Kings, Monterey, Santa Cruz, Tulare, and Ventura counties in California's San Joaquin Valley and Central Coast, which include counties represented at the People's Tribunal (see below) as well as neighboring counties.

To analyze the overlap of pesticide use and community vulnerability indicators, we replicated the methodology outlined in Temkin et al. and applied by Uche et al.⁵⁷ Using the National Historical Geographic Information System, we downloaded the U.S. Census Bureau's American Community Survey (ACS) 5-year estimates at the block group and county levels for the years 2017–2021 for pre-identified community vulnerability

variables. These variables include race and ethnicity, proportion of households that speak limited English, proportion of the population without health insurance, proportion of children with public health insurance, and proportion of households with at least one member with a disability. For race and ethnicity variables we used the following Census categories: Not Hispanic or Latino/a: Black or African American alone; Not Hispanic or Latino/a: White alone; and Hispanic or Latino/a.

Our analysis provides a visual and spatial representation of pesticide use and vulnerability among Central California farmworker communities. Pesticide use, including the use of carcinogenic or restricted-use pesticides, is heaviest within a subset of California counties and further concentrated within a subset of square-mile township sections within counties (Figures 1 and 2). Strikingly, many of these counties and township sections also have high proportions of community vulnerability indicators. There is clear overlap between high pesticide use, for carcinogenic active ingredients, and areas with a high percentage of Hispanic residents for counties and for township sections within a subset of counties (Figures 5A and 6A). Areas with a high percentage of non-Hispanic White residents notably have some of the lowest amounts of pesticide use (Figure 6C). Other demographic and community vulnerability indicators including the proportion of non-Hispanic Black individuals, children and adolescents with

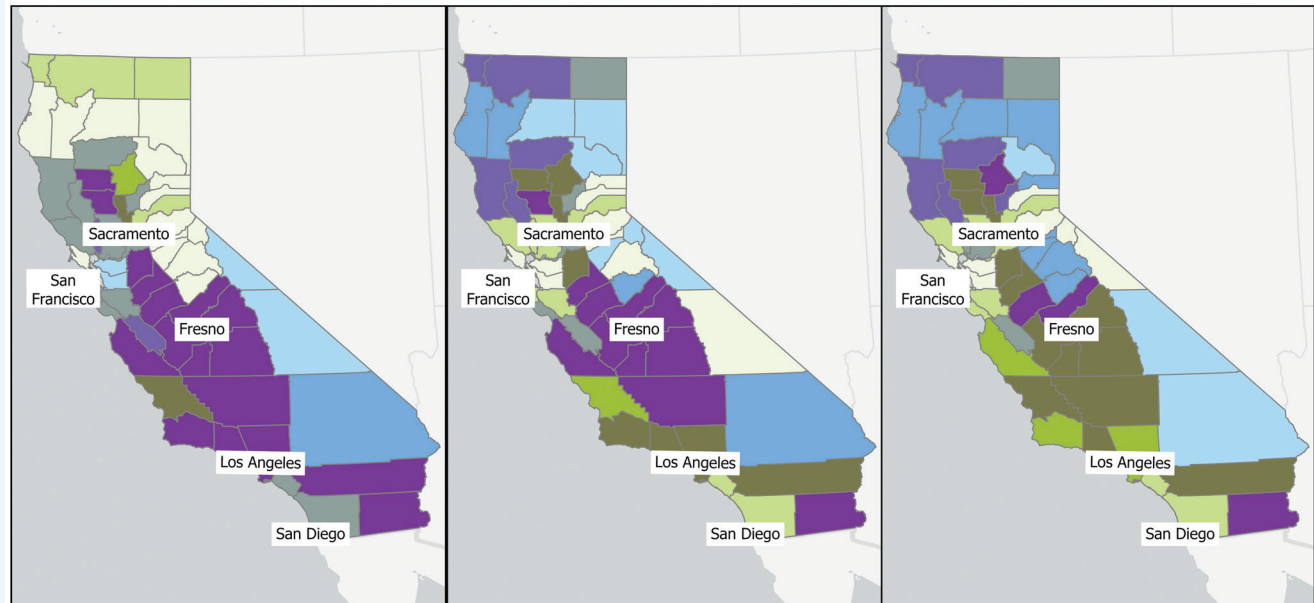
public health insurance, individuals with disabilities, and households that speak limited English also frequently overlap with areas of high carcinogenic pesticide use at the county and township level (Figures 5B, 5C, 6B, 6D, and 6E). Importantly, neighboring townships with similar demographic makeup regarding vulnerability indicators may also be impacted by pesticide use due to pesticide spray drift or transport in dust, or via take-home pathways from farmworkers, even if pesticide use in the township is reportedly low.

California Pesticide Regulation: State and Local Authority and Responsibility

Given the concentration of pesticide use and community vulnerability within California counties and townships, how does the regulatory system seek to protect farmworkers and their families? In the United States, pesticide regulation begins with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and its implementing regulations. FIFRA gives EPA the authority to regulate the sale, use, and distribution of pesticides to preserve the environment and protect human health. The statute favors broad approval of pesticides over protection of human health and grants primacy to consumers over workers or communities.⁵⁹ Historically, FIFRA was plagued by slow rulemakings and notable, long-standing failures to regulate certain active

Figure 5. Carcinogenic pesticide use overlaid with community vulnerability indicators in California by county in 2017–2021.

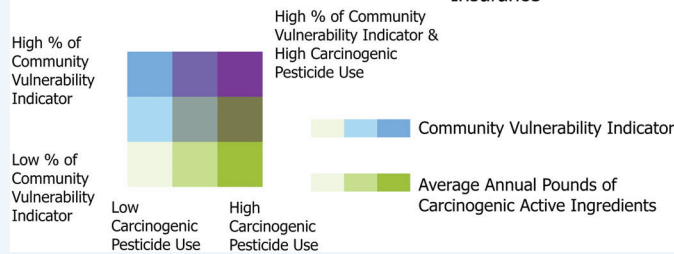
Overlap of Average Annual Carcinogenic Pesticide Use and Community Vulnerability Indicators by County
California, USA | 2017-2021



A. Percent Hispanic

B. Percent Under 19 on Public Health Insurance

C. Percent Households with at Least One Person with a Disability



Note. Community vulnerability indicators were assessed for population variables collected within American Community Survey data, including percent Hispanic (a), percent under age 19 years on public health insurance (b), and percent households with at least one person with a disability (c).

ingredients such as methyl bromide.⁶⁰ FIFRA's foundational approaches such as risk assessment and reentry intervals—during which farmworkers should not be allowed to enter recently sprayed fields—and their failure to consider and protect vulnerable subpopulations are well-known.⁶¹ For example, reentry intervals were initially determined based on a 154-pound adult male without preexisting health conditions exposed to a single pesticide and no synergistic effects of combinations of active and inert ingredients.⁶² From the outset, such standards would not have afforded sufficient protection to people weighing less or subject to synergistic interactions.

FIFRA grants primary authority to enforce pesticide-related regulations to

states. In California, farmworkers could not organize and were excluded from fair labor standards until the late 1960s. Agencies such as the CDPH carry out limited air quality monitoring.⁶³ There is a near-complete absence of public health surveillance, or the ability to track the extent to which pesticides enter and persist within environments where disadvantaged communities live, work, and attend school.⁶⁴ In other words, there is a surprisingly limited attempt within the regulatory community to gauge the air that people breathe near agricultural sites.

In California, civil rights violations related to pesticide use were recognized by the California Environmental Protection Agency (CalEPA) and CDPH years ago. For example, in 2015, CalEPA

identified areas of the state “that disproportionately experience pollution burdens, including pesticide exposure.”⁶⁵ In 1999, California was among the first states in the United States to codify environmental justice into law. State law defines environmental justice as “the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.”⁶⁶ Environmental justice includes, “but is not limited to,” ensuring “a healthy environment for all people.”⁶⁷ CalEPA works with boards, departments, and offices, including CDPH, “to achieve environmental justice through various efforts.”⁶⁸

Using ArcGIS Pro 18.3.2, county-level ACS data were joined with county boundaries and then linked to the county pesticide use dataset using the county name as the unique identifier. For township-level analysis, areal interpolation was used to assign community vulnerability variables to township sections. See Temkin et al. (note 51) for a detailed description of this process. This approach assumes an even population distribution across each block group and does not account for possible spatial heterogeneity within the block groups. The interpolated data were then linked to the township pesticide use dataset using co_mtrs as the unique identifier.

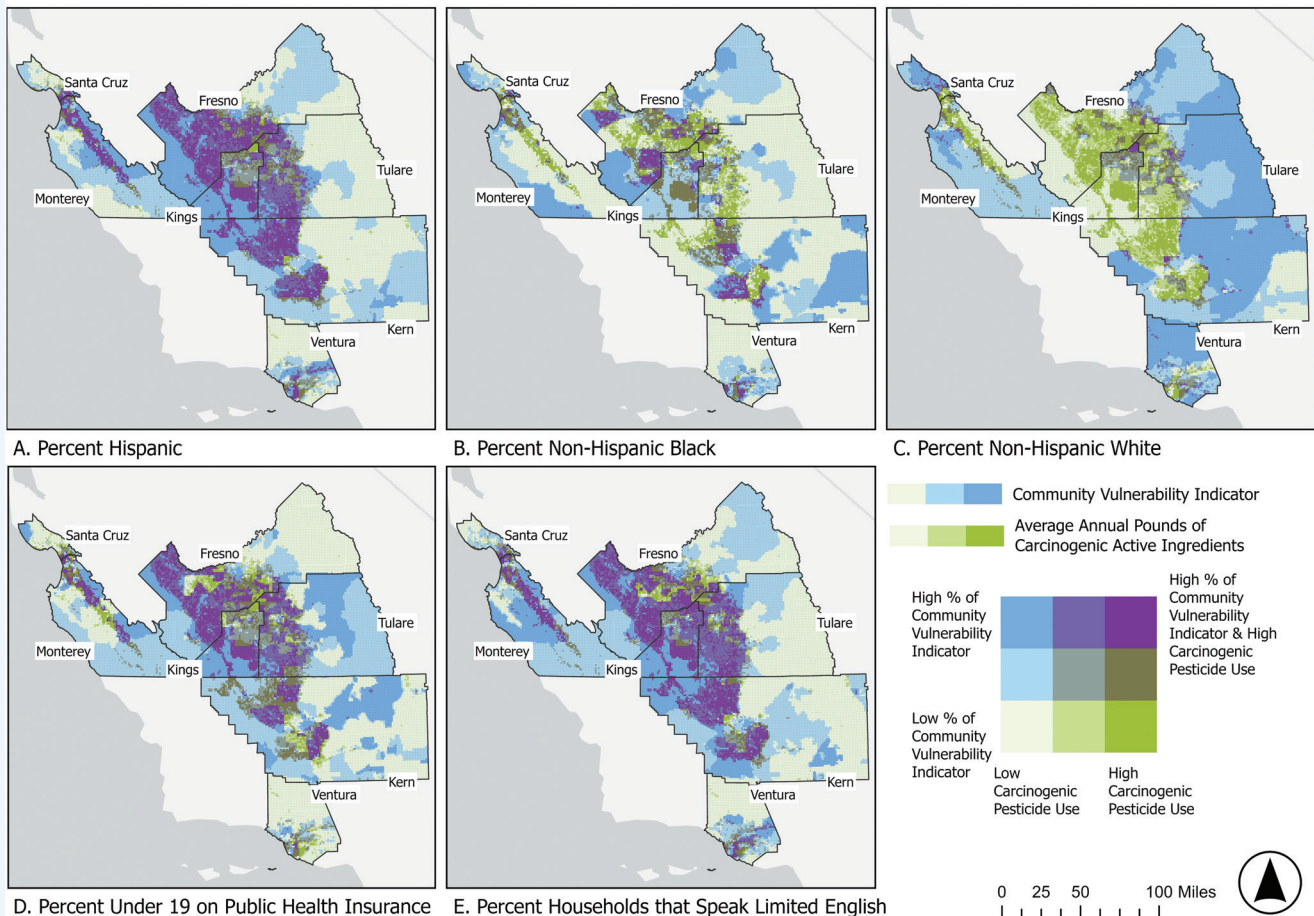
Annual pesticide use per county and township for all active ingredients, carcinogenic active ingredients, and restricted-use active ingredients was calculated in ArcGIS Pro by dividing the pounds of active ingredients by five to account for the 5-year time period. These data are visualized using the quantile breaks for all active ingredients for county and township, respectively (see Figures 1 and 2). Bivariate choropleth maps were used to explore the overlap of carcinogenic pesticide use, given the serious health risks from exposure to this group of pesticides, and community vulnerability indicators (see Figures 5 and 6).⁵⁸

The authors

Figure 6. Carcinogenic pesticide use overlaid with community vulnerability indicators in Central California by township section (1 square mile) in 2017–2021.

Overlap of Average Annual Carcinogenic Pesticide Use and Community Vulnerability Indicators by Township

Fresno, Kern, Kings, Monterey, Santa Cruz, Tulare, & Ventura Counties | California, USA | 2017-2021



Note. Community vulnerability indicators were assessed for population variables collected within American Community Survey data, including percent Hispanic (a), percent non-Hispanic Black (b), percent non-Hispanic White (c), percent under age 19 years on public health insurance (d), and percent households that speak limited English (e).

Among the commitments made by CalEPA departments a quarter century ago, CDPR stated in 1999 that it would resolve sources of ambiguity over its role vis-à-vis County Agricultural Commissioners to better prevent disproportionate exposure.⁶⁹ In addition, CDPR stated that it needed to design and implement performance standards—written, up-to-date, uniform guidelines for County Agricultural Commissioners to follow—and provide better protection of farmworkers via outreach and education, enhanced illness reporting, and improved incident investigation.⁷⁰

Today, CDPR remains the “agency responsible for delivering an effective statewide pesticide regulatory program.”⁷¹ Its regulations are designed “to assure agricultural and pest control workers of safe working conditions.”⁷² CDPR claims to achieve “strict control” through evaluation of health effects, including estimates of levels of exposure that may cause or contribute to adverse health effects,⁷³ as well as through registration, licensing, reevaluation,⁷⁴ canceling registrations,⁷⁵ illness surveillance and risk assessment, environmental monitoring, preventing drift, and field enforcement.⁷⁶

CDPR’s website states that the agency “regulates pesticides under a comprehensive program that encompasses enforcement of pesticide use in agriculture and urban environments.”⁷⁷ EPA vested primary responsibility to CDPR to enforce federal pesticide laws in California. For example, CDPR has a duty to investigate all reports of potentially significant adverse effects,⁷⁸ to reevaluate pesticides,⁷⁹ to monitor pesticide exposure, to collect data on potential exposure patterns, to assess the effectiveness of existing controls,⁸⁰ and to conduct inspections to prevent misapplication or drift and possible contamination of workers or the public.⁸¹ CDPR in turn directs and oversees County Agricultural Commissioners “who carry out and enforce pesticide and environmental laws and regulations locally.”⁸² While CDPR frequently minimizes its responsibility for pesticide program implementation and enforcement, it does recognize and assert its oversight authority regarding agricultural commissioners and is responsible for their compliance with pesticide law and civil rights protections.

CDPR and County Agricultural Commissioners are responsible for implementation and enforcement of the pesticide program in California. The roles and responsibilities are outlined in a cooperative agreement with EPA, the state’s Food and Agricultural code, and the Health and Safety Code. CDPR provides oversight, guidance, review, and approval to County Agricultural Commissioners and thus is responsible for their action or inaction. The range of grower responsibilities monitored and enforced by CDPR and County Agricultural Commissioners to protect farmworkers and their families is vast.⁸³

People’s Tribunal Community Testimony

The purpose of the People’s Tribunal on Pesticide Use and Civil Rights in California was to focus on and bring attention to farmworkers and their slow

observations of violent harm. For the past three decades, a coalition of community organizations in California has amassed a record of state practices that limit the effectiveness of pesticide regulatory programs. In 2023, the coalition, Californians for Pesticide Reform (CPR), worked with the University of California, Irvine School of Law to carry out interviews and focus groups with 55 participants, including farmworkers and their families, as well as regulators, public officials, and researchers who focus on pesticide use, exposure, and impacts. In addition, we organized a People’s Tribunal in Lindsay, California. We invited the public to meet and give testimony in a forum that was not bound by the strictures of an official proceeding such as a civil discovery process, rulemaking, or legislative session (see Figure 7). More than 100 farmworkers and their families attended.⁸⁴

Figure 7. Californians for Pesticide Reform flyer for the People’s Tribunal distributed in fall 2023.

A People's Tribunal on Pesticide Use and Civil Rights in California

September 12, 2023 1:00 - 4:00 PM (PDT)

Lindsay Wellness Center 860 Sequoia Ave, Lindsay, CA 93247

attend virtually: <https://conta.cc/44wziDf>

Californians for Pesticide Reform

Figure 8. Farmworkers present testimony before a panel of judges at the People’s Tribunal on Pesticide Use and Civil Rights in Lindsay, California (September 2023).



Community testimony was provided on September 12, 2023⁸⁵ (see Figure 8). Community testimony at the People’s Tribunal was presided over by individuals of great stature within the community.⁸⁶ The judges presented an advisory opinion based on community testimony at a press conference in Watsonville, California on February 15, 2024 (see Figure 9).

Slow observations provided at the People’s Tribunal reveal that farmworkers endure dynamics that do not fit neatly within a disparate impact frame.

Specifically, community testimony points to practices beyond subjecting farmworkers and their families, as members of a protected class (such as according to race, national origin, and ethnic group identification), to discrimination in the form of greater exposure to a pesticide through a permit decision. Farmworkers identified ongoing and unique combinations of practices that impair or even defeat state programs that are designed to regulate pesticide use and ensure their health and safety. In other words, these practices gradually or completely strip

away protections and leave farmworker communities to fend for themselves, endure repeated and illegal pesticide exposures, and develop their own networks of risk avoidance and caretaking as stand-ins for state oversight, monitoring, and enforcement.

The results, which are presented in Table 1 and include representative excerpts from community testimony and interviews, are clear and consistent: Farmworkers and their families reported a set of daily practices that impair and defeat state-operated and -funded

Our analysis is based on data reduction, thematic coding, and triangulation across interview, focus group, and tribunal testimony; archival data, including agency and nongovernmental organization websites, reports, correspondence, and media accounts; and relevant case law, statutes, rules, and policy and guidance documents.

Figure 9. Community leaders present findings from the People’s Tribunal in Watsonville, California (February 2024).



programs designed to protect public health and safety in areas of agricultural pesticide use. First, community testimony demonstrates that CDPR and County Agricultural Commissioners do not receive most reports or complaints that they would otherwise receive from the Latino/a and transnational Indigenous communities they serve. “We can’t complain—we don’t speak the language.” Farmworkers almost never report when they want to. They fear doing so. Many are undocumented. They have close family members or co-workers who were retaliated against when they tried to report. “What would it mean for me and my family if I did [speak out]?” Among other things, crew leaders do not call them back to work. Farmworkers state that “if you complain, next year you won’t get work. They note your name. You are ‘marked.’” “The companies know each

other.” “The stewards know each other.” “They form a chain.” The only way to speak out is as a group. “We all have to speak up to not lose our jobs.” Most of the time, they do not. “For every 100 cases that warrant a complaint, one may be filed.” Resigned to this reality, farmworkers “must come silently to work and not speak about anything.”

Second, community testimony demonstrates that CDPR and County Agricultural Commissioners do not ensure that warnings, trainings, and other essential protections for Latino/a and transnational Indigenous farmworkers are equally available. When farmworkers build up the nerve to speak out, they do not know what questions to ask, what they are exposed to, or what protections they should take. They often do not know what is being sprayed. Applicators do not know what

they are mixing into air blast sprayers. They work in fields with posted signs that the stewards “don’t respect.” Stewards fail to pass along reports to the supervisors. “[The stewards] don’t tell you anything about pesticides.” “They don’t give us any notice.” “They don’t provide information to us.” Farmworkers provided multiple examples of working in fields that were recently sprayed. The foreman ignores when they fumigate and has people work immediately adjacent to it. “They’re spraying while we’re picking.” “We’re out where the tractors are spraying.” “They spray without warning.” “It burns the eyes, throat, and stomach.” “We get allergies, skin allergies, itching and rashes all over the body.” Farmworkers use the word “inside” to mean “in the field.” A company leaves after spraying, and workers go right back “inside.” Many farmworkers do not

Table 1. Slow Violence and Observation by Central California Farmworkers

Spatial/Temporal Dynamics (Harm Production)	Representative Community Testimony (Slow Observation)
Residents endure exposure to pesticides on a daily, yearly, and long-term basis. This includes sensitive populations such as pregnant farmworkers (FW), who continue to work into their third trimester.	Air blast sprayers seen and heard at a distance from homes. Residents “feel” pesticides as they drift near front yards, backyards, and inside homes. “We are surrounded.” “We are invaded.” “We must come silently to work and not speak about anything.” “They bring us in there until 7 or 8 months.”
FW carry out responsibilities in fields that were recently sprayed.	“The foreman ignores when they fumigate and has people work immediately adjacent to it.” “They’re spraying while we’re picking.” “We’re out where the tractors are spraying.” FW go right back “inside” after an area is sprayed.
Growers spray without warning in fields, near schools.	“It’s without warning.” “It burns the eyes, throat, and stomach.” “We get allergies, skin allergies, itching and rashes all over the body.”
Pesticides accumulate in soil, on crops, in trees, and other elements of FW immediate environment.	FW harvest, prune, remove tarps, and carry out other activities that trigger exposure.
Lack of information regarding potential exposure.	FW do not know what is being sprayed. Applicators do not know what they are mixing into air blast sprayers.
Lack of information regarding protective post-exposure action.	FW feel droplets/experience complex symptomatology and do not know where to go or whom to call. FW do not know what questions to ask.
Lack of information sharing regarding exposure.	Stewards do not pass along reports to supervisors. Q: What happens when you report? “Nothing.” “They don’t tell you anything about pesticides.”
Information asymmetry between FW/families and growers, regulators. At best, FW have 1 × 1 square mile, years-old pesticide use reporting data or air monitoring at a few locations statewide or underreported illness data—these do not tell the FW, household, or community how to protect themselves.	“The best data are in the hands of growers, commissioners, and the state.” “They have real-time grower-to-grower notification data among growers and commissioners.” “They have exact locations.” “They have shapefiles that identify fields with permit numbers.” “They know where risk assessment found unacceptable risk and where mitigations have yet to be put in place.”
Lack of adherence to formal (e.g., statutory, rule-based) precautionary practices by growers; lack of enforcement of formal precautionary practices by County Agricultural Commissioner or CDPR staff.	FW in fields with posted signs that stewards “don’t respect.” “A class for one’s safety, there isn’t any.” “They don’t give us any notice.” “They don’t provide information to us.” “Sign this acknowledgment of training so you can work.” Many FW do not wear personal protective equipment so that certain crops will “yield more.” Their hands “break out all over.”
Interaction with growers after pesticide exposure report (e.g., stewards, supervisors).	FW told to sit down. “It’s allergies.” “You’re the only one who got sick.” “You’re too delicate.” “You’re always behind.” “If you’re sick, go home.”
Interaction with public officials after pesticide exposure report (e.g., teachers, County Agricultural Commissioners).	FW told grower is “within his right,” has a “right to farm.” FW told what they experience is “water,” the pesticide is “not a restricted material,” “smell is not exposure.” FW are asked very specific questions and do not know the answers: “What’s the name of the company near that field?” “Give me the exact location.” “We come with real cases, evidence of what’s happening to us.” “You do your best to show them your skin. You show them you have rashes, your red face, your eyes are crying.” “The commissioner doesn’t receive you.” “They never call.”

(Continued)

Table 1. Continued

Spatial/Temporal Dynamics (Harm Production)	Representative Community Testimony (Slow Observation)
Grower retaliation.	Personal, close family member, and co-worker accounts. “We are afraid.” “What would it mean for me and my family if I did speak out?” “If you complain, next year you won’t get work. [Crew leaders] note your name. You are ‘marked.’”
Cross-grower retaliation.	“The companies know each other.” “The stewards know each other.” “They form a chain.”
Interpersonal isolation.	The only way to speak out is as a group. “We all have to speak up to not lose our job.” “For every 100 cases that warrant a complaint, one may be filed.”
Language isolation.	Vast majority of FW do not speak English fluently. Often Spanish is not well understood. “We can’t complain—we don’t speak the language.” Complaint response letters are in English. “You don’t know what to do anymore.” FW speak one of over 20 transnational Indigenous languages and dialects. Little to no training in those languages. Agricultural Commissioners often do not have someone to address concerns brought to office, “even when the concerns are brought in Spanish.”
FW children as early warning system/risk avoidance/networks of care.	Children of FW have a sense of smell that has not degraded. They develop allergies at school. They return home with bumps on their hands and feet. They require stronger inhalers when the fall growing season begins. At times many students at a school leave with eye and skin allergies, vomiting, and fever. Parents afraid to ask teachers about it.
FW children and indirect exposure/risk avoidance/networks of care.	FW do not know where to change before picking up their children from school, day care. “We bring the sickness to our children.” FW fear hugging their kids.

Note. FW=farmworker(s); CDPR=California Department of Pesticide Regulation.

know that it is not okay to be sprayed upon. This is attributed to a lack of training. “A class for one’s safety, there isn’t any.” There is also a strong transnational Indigenous presence in several regions of the state, including Central California and the Central Coast. Many farmworkers in those regions speak one of more than 20 Indigenous languages and dialects. There is no training in those languages. Sometimes, farmworkers are told to “sign this acknowledgment of training so you can work.” Many do not wear personal protective equipment, so that crops such as strawberries will “yield more.” Their hands “break out all over.” When they harvest, prune, or remove tarps, their eyes burn from pesticide-laden dust that remains in trees, soil, and on crops. They continue to work. They work through pregnancy. “They bring us in there until 7

or 8 months [of pregnancy].” They feel droplets and do not know where to go or whom to call. In place of adequate warnings, trainings, or protections, farmworkers build their own networks of care. Often, their children serve as their early warning system, because they have a sense of smell that has not degraded. Their children develop allergies at school, return from school with bumps on their hands and feet, or require strong inhalers when the fall growing season begins. At times, students who attend a particular school leave together with eye and skin allergies, vomiting, and fever. But their parents are afraid to ask the teachers about it. Even as they rely on their children, farmworkers endure a daily fear of “bringing the sickness” home. They do not know where to change before they pick up their kids from daycare. They fear hugging their children.

Third, community testimony demonstrates that CDPR and County Agricultural Commissioners miss multiple opportunities to find that health hazards appear generally throughout a farmworker community, triggering a field inspection and potentially canceling permits or specifying that no additional permits be issued. What happens when farmworkers report a potential health hazard? “There’s hardly any reporting.” On rare occasions where they report at work, to teachers, or even to their agricultural commissioner, they are told that “smell is not exposure” or that a farmer is “within his right” or has a “right to farm.” They are told that what they experienced is “water” or “not a restricted material.” Often, an agricultural commissioner will not have someone to address concerns brought to their office, “even when the

concerns are brought in Spanish.” Farmworkers and their families are asked “many questions we don’t know,” such as “what’s the name of the company near that field?” or “give me the exact location”—“and that’s when you know English.” “Sometimes the commissioner doesn’t receive you.” Or “they never call.” “We come with real cases, evidence of what’s happening to us, because we all bring examples, testimony.” “We’re ignored.” “You do your best to show them, and you show them your skin. You show them you have rashes, your red face, your eyes are crying.” While “the best data are in the hands of the growers, commissioners, and the state,” these data are not used to inform the individual, household, or community how to protect themselves in the near term or as growing cycles and seasons shift. Instead, farmworkers are told to “go sit down.” “It’s allergies.” “You’re the only one who got sick.” “You’re too delicate.” “You’re always behind.” “We already talked about those things.” “If you’re sick, go home.”

Given these complaint and reporting dynamics, community testimony also makes clear that CDPR and County Agricultural Commissioners lack much of the available data to give adequate attention to local conditions when granting permit approvals, including the effects that pesticides will have on Latino/a and transnational Indigenous communities. In the absence of such data, CDPR and County Agricultural Commissioners also lack available data that should result in reevaluation of pesticides and whether pesticide use practices must change—analyses that are supposed to be triggered when agencies have reason to believe that pesticide use may cause unreasonable adverse effects to people or environment.

The picture that emerges from community testimony lies in stark contrast to the duties of growers to employees and communities, and of agencies to ensure that grower and state responsibilities are enforced. For example, growers must post mandatory information and warnings, and inform farmworkers of the location where pesticides are applied. They must provide on-site notice of pesticide applications⁸⁷ that must include

dates, start times, estimated end times of scheduled applications, the location and description of the field to be treated, pesticide product names, active ingredients, and applicable restricted entry intervals.⁸⁸ They must provide specific instruction to workers who actively apply pesticides,⁸⁹ as well as sufficient personal protective equipment⁹⁰ and decontamination supplies.⁹¹ Growers are not allowed to spray pesticides while workers are in the fields, and farmworkers should not be allowed to enter recently sprayed fields during prohibited reentry intervals.⁹² Trainings must include information about protecting yourself from pesticide exposure.⁹³ Growers must provide trainings to all workers “in a manner that the worker can understand”—a right based on not only pesticide law but other laws as well, such as the Migrant and Seasonal Agricultural Worker Protection Act, Proposition 65, and the California Translation Act.⁹⁴ When farmworkers register a complaint, growers are to refrain from retaliation⁹⁵ and are not to take any action that prevents or discourages workers from complying with the law. In the event of pesticide exposure, growers must give prompt transportation to an appropriate emergency medical facility⁹⁶ and inform medical personnel as to the type of pesticide involved and circumstances of exposure.⁹⁷ And under California law, it is their duty to not knowingly or intentionally expose *any individual* to a chemical known by the state to cause cancer or reproductive toxicity, without first giving a clear and reasonable warning to that individual.⁹⁸

This complex legal tapestry of responsibility and duty of care is shattered by the slow observations of farmworker communities. Farmworkers point to breakdowns of notification, reporting, and complaint processing due to language and other barriers, including fear, isolation, misinformation, intimidation, and retaliation. In light of these breakdowns, CDPR fails to investigate all reports of potentially significant adverse effects, adequately assess the effectiveness of existing controls, ensure that County Agricultural Commissioners conduct inspections to prevent misapplication or drift and

possible contamination of workers or the public, and ensure that County Agricultural Commissioners investigate pesticide illnesses and injuries, revise their understanding of local conditions, or condition approval of restricted materials permits on appropriate mitigation measures.

Through these breakdowns, community testimony points to adverse and disproportionate impacts to members of protected classes by state programs as well as state-funded programs, which begin with CDPR’s Restricted Materials Permitting, Pesticide Illness Surveillance, Pesticide Notification, Worker Health and Communication, and Registration and Reevaluation programs and also include the County Agricultural Commissioners responsible for enforcing state pesticide programs in the San Joaquin Valley and Central Coast. In Kern, Tulare, Fresno, Ventura, Santa Cruz, and Monterey counties, “disparate impact” as traditionally understood under civil rights law is a faint shadow of the experience of communities that endure pesticide exposure and its impacts on a daily basis.

Discussion

Importantly, we did not determine the nature of civil rights violations on California farms and in agricultural communities through complex civil discovery or epidemiological study with human subjects. The dynamics of slow violence were characterized by farmworkers who share a deep connection to otherwise inaccessible spatial and temporal scales. Their observations center on embodied encounters through which violence is organized in California’s Central Valley and Central Coast. Through slow observation, farmworkers and their families are attuned to the ebb and flow of toxic releases and exposures, gradual accumulation of environmental stressors, otherwise prosaic encounters with agency and corporate staff, altered rhythms of daily life, and caretaking and risk avoidance (a reworking of personal networks and relations) that emerge as stand-ins for administrative responsibility.

These encounters, practices, and behaviors become taken for granted, even as people remain in harm's way. The brutality is incremental, ongoing, accretive, rhythmic, recurring, and scattered. Because the infrastructure of state-sanctioned violence is built around embodied experience and interactions, it is largely out of sight and leaves few visible traces. The characteristics of slow violence outlined in Table 1 form an "ongoing present" of farmworker experience—the gradual wearing down of a population over time. The corporeal violence is administered through unique amalgams of spatial and temporal dynamics. It is, at once, durative (e.g., working in fields into the third trimester of pregnancy), repetitive (e.g., working in fields recently sprayed; growers spraying without warning near schools and in fields), periodic (e.g., harvesting, pruning, or removing tarps in areas where pesticides regularly accumulate for varying periods of time), entangled (e.g., historical practices that result in language isolation, lack of information available or shared regarding potential exposure or post-exposure action; institutionalized grower and County Agricultural Commissioner responses that minimize perceived risk or farmworker reporting capabilities), and within unique socio-material assemblages (e.g., grower/agricultural commissioner equipment and practices for monitoring, reporting, enforcement, and notification that result in grower retaliation, cross-grower actions, and interpersonal isolation). In each instance, the violence is incremental and delayed and therefore difficult to see and track.

The People's Tribunal showed the inner workings of slow violence in Central California's farmworker communities, with implications for research, legal practice, and community organizing. An important feature of slow violence is its ability to conceal intentionality. While attorneys and legal scholars spent much of the past several decades concerned with disparate impact standards, our research argues in favor of a renewed focus on slow violence as intentional discrimination. Exposure assessments and disparity analysis are laborious and rarely carried out in the context of pesticide use near

farmworker communities. In contrast, slow observation renders the production of environmental harm visible, identifying the mechanisms that degrade or completely nullify state protections and safeguards. These dynamics are well known not only to farmworkers but also to agency staff. Therefore, future research should revisit legal arguments for *intentional* discrimination—such as deliberate indifference⁹⁹ under Title VI—as an alternative to presenting claims of disparate *impact*.

Our findings also point to the potential for proactive or affirmative civil rights enforcement by state agencies. To date, California, the world's fifth largest economy, takes few steps to limit the daily discrimination that Latino/a and transnational Indigenous farmworkers and their families face. Staff at multiple environmental agencies note that there is "not a lot of understanding of civil rights laws," civil rights claims are "not in common discussion," and state civil rights law in particular "lacks visibility."¹⁰⁰ State agencies "need guidance" because "11135 expertise is lacking"¹⁰¹ and there is no system in place to "gauge disparate impacts of programs or decisions" or "adapt equity metrics and add them to various programs."¹⁰² These arguments collapse under slow observation. Testimony at the People's Tribunal makes clear that performance measures beyond differential exposure or impact—measures that gauge the gradual or complete erosion of regulatory programs and safeguards over time—are vital, necessary under existing law, practicable, and would benefit from more robust forms of community engagement than currently exist.

Conclusion

The framework presented here for analysis of the social dynamics of environmental harm in Central California farmworker communities opens new avenues for environmental protection, legal practice, and social science research. Slow observation, provided by residents at the People's Tribunal for Pesticide Use and Civil Rights, described the mechanisms by which civil rights violations persist in the Central Valley and Central Coast. These civil rights violations do not require a

statistician, epidemiologist, or attorney to point them out. They do, however, warrant more careful analysis of how slow violence proliferates at unique and overlapping spatial and temporal scales and, in turn, the prospects for state intervention. Our research makes clear that intermittent activities by the state, referenced in California Environmental Protection Agency program updates, such as appointing a liaison, limited hiring of bilingual staff, workshops, declaring environmental justice "a priority," or the distribution of brochures,¹⁰³ do little to address more insidious dynamics that result in disproportionate harm.

Disclosure Statement

The authors report there are no competing interests to declare.

Supplementary Material

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29. Under California law, a "program or activity" includes "any project, action, or procedure." Cal. Code of Regs. tit. 2, § 11150. A plaintiff must show that discrimination occurs under a program or activity that is "conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state." Cal. Gov. Code § 11135(a). County Agricultural Commissioners receive funding for pesticide enforcement from CDPDR and their county government. They also receive funding from fees, fines, grants, and the California Department of Food and Agriculture. California Department of Pesticide Regulation, "A Guide to Pesticide Regulation in California" 13 (2017), <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm> (accessed 2 June 2024). CDPDR receives funding from EPA as part of the Cooperative Agreement on Pesticide Enforcement. *Id.* at 108. In 2019, EPA provided CDPDR with \$5.8 million in total funding through 2022 as part of a cooperative agreement and program to strengthen partnerships between EPA and CDPDR. The grant included funds for compliance and field programs administered locally by County Agricultural Commissioners. USASpending.gov, "Award Summary," https://www.usaspending.gov/award/ASST_NON-00T11420_6800. CDPDR also provides funding to County Agricultural Commissioners through the mill fee, equal to 7.6 mills (\$0.0076) per dollar of sales. These funds constitute reimbursement for enforcement costs. California Department of Pesticide Regulation, "A Guide to Pesticide Regulation in California" 113 (2017), <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm> (accessed 2 June 2024). Under California state

- law, discriminatory practices applicable to § 11135 include utilizing “criteria or methods of administration that: (1) have the purpose or effect of subjecting a person to discrimination on the basis of ethnic group identification, religion, age, sex, color, or a physical or mental disability; (2) have the purpose or effect of defeating or substantially impairing the accomplishment of the objectives of the recipient’s program with respect to a person of a particular ethnic group identification, religion, age, sex, color, or with a physical or mental disability; or (3) perpetuate discrimination by another recipient.” Cal. Code of Regs. tit. 2, § 11154.
30. Californians for Pesticide Reform, “Disproportionate Impact of Hazardous Pesticides on Latinx Communities in California” (2021), <https://www.pesticidereform.org/wp-content/uploads/2022/03/DisproportionatePesticideHazardsLatinx01-21.pdf> (accessed 2 June 2024).
 31. Californians for Pesticide Reform, “There’s Something in the Air, and It Causes Childhood Cancers” (December 2021), <https://www.pesticidereform.org/wp-content/uploads/2021/12/FINAL-202111-CPR-Childhood-Cancer-v4.pdf> (accessed 2 June 2024).
 32. *Ibid.*, p. 8.
 33. *Ibid.* See also L. Cushing et al., “Racial/Ethnic Disparities in Cumulative Environmental Health Impacts in California: Evidence from a Statewide Environmental Justice Screening Tool,” *American Journal of Public Health* 105, no. 11 (2015): 2341–48, <https://doi.org/10.2105/AJPH.2015.302643>.
 34. Public Policy Institute of California, “Health Care Access among California’s Farmworkers Technical Appendix” (April 2022), <https://www.pplic.org/wp-content/uploads/0422pcr-appendix.pdf> (accessed 2 June 2024).
 35. Letter from Jane Sellen and Sarah C. Aird, Co-Directors, Californians for Pesticide Reform to California Air Resources Board re: Pesticides must be included in the 2022 Scoping Plan Update (August 3, 2021).
 36. E. Gauna, “Farmworkers as an Environmental Justice Issue: Similarities and Differences,” *Environ Environmental Law and Policy Journal* 25 (2021): 67–75.
 37. S. Sandhaus, “Migrant Health: A Harvest of Poverty,” *American Journal of Nursing* 98 (1998): 52–54.
 38. Letter from Rafael DeLeon, Environmental Protection Agency to Christopher Reardon, California Department of Pesticide Regulation re: Preliminary Finding, *Angelita C. et al. v. California Department of Pesticide Regulation* (April 22, 2011) (hereinafter “Angelita C. complaint”).
 39. See, e.g., *Romo v. Newsom*, 2019 WL 5280967 (unpublished opinion, October 16, 2019).
 40. *Angelita C. complaint* at 29–35.
 41. U.S. Environmental Protection Agency, Office of Civil Rights, “Exposure Assessment and Disparity Analysis for Administrative Complaint 16R-99-R9” (Washington, DC, 2011), 10–15, 25–33, 52.
 42. B. Newell, M. Stano, and A. Mody, *A Right Without a Remedy: How the EPA Failed to Protect the Civil Rights of Latino Schoolchildren* (Center on Race, Poverty & the Environment, 2016). Meetings between EPA and CDPH resulted in a settlement agreement. It included a commitment by CDPH to carry out air monitoring, with the addition of a monitoring site in the Watsonville area of the state, “through December 31, 2013.” CDPH also promised to “continue its education and outreach efforts to the Latino community.” U.S. Environmental Protection Agency, “Agreement between the California Department of Pesticide Regulation and the United States Environmental Protection Agency” (August 2011), <https://www.epa.gov/sites/default/files/2016-04/documents/title6-settlement-agreement-signed.pdf> (accessed 2 June 2024).
 43. U.S. Environmental Protection Agency, “Preliminary Finding, Title VI Complaint 16R-99-R9” (April 22, 2011), <https://www.epa.gov/sites/default/files/2016-04/documents/title6-c42211-preliminary-finding.pdf> (accessed 2 June 2024).
 44. U.S. Environmental Protection Agency, Office of Civil Rights, “Draft Policy Paper, Title VI of the Civil Rights Act of 1964: Role of Complainants and Recipients in the Title VI Complaint and Resolution Process” (Washington, DC, 2013).
 45. Letter from Jane Sellen and Sarah C. Aird, Co-Directors, Californians for Pesticide Reform to Chair Bill Quirk, Assembly Environmental Safety and Toxic Materials Committee and Chair Richard Bloom, Assembly Budget Subcommittee #3 (March 21, 2022).
 46. E. Lincoln, “Accountability for Pesticide Poisoning of Undocumented Farmworkers,” *Hastings Environmental Law Journal* 24 (2018): 383. See, for example, A. Park, B. Ritz, F. Yu, M. Cockburn, and J. E. Heck, “Prenatal Pesticide Exposure and Childhood Leukemia—A California Statewide Case-Control Study,” *International Journal of Hygiene and Environmental Health* 226 (2021): 113486, <https://doi.org/10.1016/j.ijheh.2020.113486>; C. Lombardi, S. Thompson, B. Ritz, M. Cockburn, and J. E. Heck, “Residential Proximity to Pesticide Application as a Risk Factor for Childhood Central Nervous System Tumors,” *Environmental Research* 197 (2021): 111078, <https://doi.org/10.1016/j.envres.2021.111078>.
 47. U.S. Environmental Protection Agency, “Introduction to Pesticide Drift,” <https://www.epa.gov/reducing-pesticide-drift/introduction-pesticide-drift> (accessed 2 June 2024).
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 49. A. J. Busby and G. Eckstein, “Organophosphates, Friend and Foe: The Promise of Medical Monitoring for Farm Workers and their Families,” *UCLA Journal of Environmental Law and Policy* 27 (2009): 39–69.
 50. See, for example, B. Eskenazi et al., “Association of Lifetime Exposure to Glyphosate and Amino-methylphosphonic Acid (AMPA) with Liver Inflammation and Metabolic Syndrome at Young Adulthood: Findings from the CHAMACOS Study,” *Environmental Health Perspectives* 131 (2023): 037001, <https://doi.org/10.1289/EHP11721> (higher exposure to glyphosate during childhood linked to metabolic syndrome, increased risk for diabetes in children).
 51. A. M. Temkin, U. I. Uche, S. Evans, K. M. Anderson, S. Perrone-Gray, C. Campbell, and O. V. Naidenko, “Racial and Social Disparities in Ventura County, California Related to Agricultural Pesticide Applications and Toxicity,” *Science of the Total Environment* 853 (2022): 158399, <https://doi.org/10.1016/j.scitotenv.2022.158399>.
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 54. European Chemicals Agency, “Understanding CLP,” <https://echa.europa.eu/regulations/clp/understanding-clp> (accessed 2 June 2024).
 55. U.S. Environmental Protection Agency, “Restricted Use Pesticides—40 CFR 152.175: Pesticides Classified for Restricted Use” (metadata last updated May 3, 2024), <https://cdxapps.epa.gov/oms-substance-registry-services/substance-list-details/385> (accessed 2 June 2024).
 56. The R Project for Statistical Computing, “R Statistical Software (version 4.3.2),” <https://www.r-project.org/?2827> (accessed 2 June 2024).
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 58. For Figure 1, pesticide use data were aggregated by county for pounds of all active ingredients (a), carcinogenic active ingredients (b), and restricted-use active ingredients (c). Carcinogenic active ingredients were identified by authoritative agency classifications including EPA, IARC, Prop65, and harmonized classifications from ECHA. Restricted-use active ingredients were those described in Title 3, California Code of Regulations (3 CCR) section 6400. For Figure 2, pesticide use data were aggregated by township section (MTRS) in Fresno, Kern, Kings, Monterey, Santa Cruz, Tulare, and Ventura counties for all active ingredients (a), carcinogenic active ingredients (b), and restricted-use active ingredients (c). Carcinogenic active ingredients were identified by authoritative agency classifications including EPA, IARC, Prop65, and harmonized classifications from ECHA. Restricted use active ingredients were those described in Title 3, California Code of Regulations (3 CCR) section 6400. For Figure 5, community vulnerability indicators were assessed for population variables collected within American Community Survey data, including percent Hispanic (a), percent under age 19 years on public health insurance (b), and percent households with at least one person with a disability (c). For Figure 6, community vulnerability indicators were assessed for population variables collected within American Community Survey data, including percent Hispanic (a), percent non-Hispanic Black (b), percent non-Hispanic White (c), percent under age 19 years on public health insurance (d), and percent of households that speak limited English (e).
 59. For an historical treatment of EPA’s consideration of cumulative risk when setting safe pesticide residue levels in foods, see M. Reeves, K. Schafer, K. Hallward, and A. Katten, “Fields of Poison: California Farmworkers and Pesticides” 12 (Californians for Pesticide Reform, 1999). See also C. Curme, “Regulation of Pesticide Residues in Foods: Proposed Solutions to Current Inadequacies under FFDCA and FIFRA,” *Food and Drug Law Journal* 49 (1994): 615–16.
 60. L. Niland, “The Cost of the Bright Red Strawberry: The Dangerous Failure of Pesticide Regulations to Account for Child Farmworkers,” *Golden Gate University Environmental Law Journal* 4 (2011): 363–97.
 61. C. Libre, “Stranded Pesticides: U.S. Agricultural Worker Vulnerability in the Wake of the 2021 Chlorpyrifos Food Ban,” *Ecology Law Quarterly* 49 (2022): 471–99.
 62. U.S. General Accounting Office, “Pesticides: Improvements Needed to Ensure the Safety of Farmworkers and Their Children” (publication number GAO/RCED-00-40, 2000).
 63. CDPH claims to engage in “continuous monitoring and surveillance” to “determine the fate of pesticides in the environment, detect and address unforeseen effects on human health and find ways to prevent pesticide contamination.” Factors that may trigger reevaluation include “public or worker health hazard; environmental contamination; unwanted damage to plants; inadequate labelling; lack of efficacy; disruption of pest management; availability of an effective and feasible alternative material or procedure which is demonstrably less destructive to the environment; discovery that data on which CDPH relied to register a product is false, misleading or incomplete; or other information suggesting a significant adverse risk.” California Department of Pesticide Regulation, “A Guide to

- Pesticide Regulation in California” (2017), <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm> (accessed 2 June 2024).
64. California Department of Pesticide Regulation, “Addressing Pesticide Applications Near Schools and Childcare Facilities,” https://www.cdpr.ca.gov/docs/enforce/pesticide_applications_near_schoolsites.htm (accessed 2 June 2024).
 65. California Environmental Protection Agency, “Environmental Justice Compliance & Enforcement Working Group Fresno Initiative Report” (2015), <https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/Enforcement-Publications-2015yr-FresnoReport.pdf> (accessed 2 June 2024).
 66. Cal. Gov. Code. § 65040.12(e)(1).
 67. Cal. Gov. Code. § 65040.12(e)(2)(a).
 68. California Environmental Protection Agency, “Environmental Justice Program” (2024), <https://calepa.ca.gov/envjustice> (accessed 2 June 2024).
 69. V. Clark, “Enforcement of Pesticide Regulation in California: A Case Study of the Experience with Methyl Bromide,” *Golden Gate University Law Review* 31 (2001): 465–527.
 70. *Ibid.*, pp. 482–83.
 71. California Department of Pesticide Regulation, “A Guide to Pesticide Regulation in California” (2017), <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm> (accessed 2 June 2024).
 72. Cal. Food & Agric. Code § 11501.
 73. California Department of Pesticide Regulation, “A Guide to Pesticide Regulation in California” (2017), <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm> (accessed 2 June 2024).
 74. Cal. Food & Agric. Code § 12824.
 75. Cal. Food & Agric. Code § 12825.
 76. CDP’s authority reaches broadly, as “CDPR’s strict oversight begins with pesticide product evaluation and registration and continues through statewide licensing of commercial applicators, dealers, consultants, and other pesticide professionals; evaluation of health impacts of pesticides through illness surveillance and risk assessment; environmental monitoring of air, water and soil; field enforcement (with county agricultural commissioners) of laws regulating pesticide use; residue testing of fresh produce; and encouraging development and adoption of least-toxic pest management practices through incentives and grants.” California Department of Pesticide Regulation, “A Guide to Pesticide Regulation in California” (2017), <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm> (accessed 2 June 2024).
 77. California Department of Pesticide Regulation, “Pesticide Use Enforcement,” https://www.cdpr.ca.gov/docs/enforce/pest_enf.htm (accessed 2 June 2024).
 78. Cal. Code of Reg. tit. 2, § 6220.
 79. Cal. Food & Agric. Code § 12824.
 80. CDP and County Agricultural Commissioners share responsibility for monitoring pesticide use. CDP must monitor pesticide exposure, including exposure and residue studies to collect data on potential exposure patterns and to assess the effectiveness of existing controls. California Department of Pesticide Regulation, “A Guide to Pesticide Regulation in California” (2017), <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm> (accessed 2 June 2024).
 81. County Agricultural Commissioner staff conduct inspections to prevent misapplication or drift and possible contamination of workers, the public, and the environment. County Agricultural Commissioners are responsible for investigating pesticide illnesses and injuries. California Department of Pesticide Regulation, “County Agricultural Commissioner Resources,” <https://www.cdpr.ca.gov/docs/county/comenu.htm>; California Department of Pesticide Regulation, “County Plays Key Role in Regulating Pesticides,” <https://www.cdpr.ca.gov/docs/dept/factshts/cac.pdf> (accessed 2 June 2024).
 82. *Ibid.*
 83. See “People’s Tribunal Community Testimony” section and Table 1 for examples.
 84. People’s Tribunal speakers included residents of six counties—Kern, Tulare, Fresno, Ventura, Santa Cruz, and Monterey. Tribunal speakers provided testimony on September 12, 2023. Interview and focus-group participants ($n=55$) provided community accounts in spring and summer 2023. See People’s Tribunal on Pesticide Use and Civil Rights in California, Lindsay, CA (October 13, 2023), <https://www.youtube.com/watch?v=YUYeZVwFTq4> (accessed 2 June 2024). Community testimony appears at 31:25–52:50 (Monterey and Santa Cruz counties), 53:00–1:11:45 (Ventura County), 1:26:48–1:58:20 (Kern, Tulare, and Fresno counties); People’s Tribunal scientific testimony appears at 24:30–30:35 (“The Department of Pesticide Regulation has failed to take advantage of California’s scientific expertise about pesticides”), referencing UC Berkeley CHAMACOS “community studies” in California and related publications, such as B. Eskenazi et al., “Association of Lifetime Exposure to Glyphosate and Aminomethylphosphonic Acid (AMPA) with Liver Inflammation and Metabolic Syndrome at Young Adulthood: Findings from the CHAMACOS Study,” *Environmental Health Perspectives* 131 (2023): 037001, <https://doi.org/10.1289/EHP11721> (higher exposures to glyphosate during childhood linked to metabolic syndrome, increased risk for diabetes in children); S. K. Sagiv et al., “Prenatal Exposure to Organophosphate Pesticides and Functional Neuroimaging in Adolescents Living in Proximity to Pesticide Application,” *Proceedings of the National Academy of Sciences* 116 (2019): 18347, <https://doi.org/10.1073/pnas.1903940116> (higher exposure to organophosphates during pregnancy linked to changes in teen brain activity); and S. K. Sagiv et al., “Gestational Exposure to Organophosphate Pesticides and Longitudinally Assessed Behaviors Related to Attention-Deficit/Hyperactivity Disorder and Executive Function,” *American Journal of Epidemiology* 190 (2021): 2420, <https://doi.org/10.1093/aje/kwab173> (higher exposure to insecticides during pregnancy linked to ADHD behaviors in pre-teens); as well as studies conducted by UCLA’s Fielding School of Public Health that utilize California state data and cooperation with patient groups: N. Omidakhsh et al., “Thyroid Cancer and Pesticide Use in a Central California Agricultural Area: A Case Control Study,” *Journal of Clinical Endocrinology and Metabolism* 107 (2022): e3574, <https://doi.org/10.1210/clinem/dgac413> (living near applications of 10 pesticides in Tulare, Kern, and Fresno counties linked to higher risk of thyroid cancer); S. Li et al., “Proximity to Residential and Workplace Pesticide Application and the Risk of Progression of Parkinson’s Disease in Central California,” *Science of the Total Environment* 864 (2023): 160851, <https://doi.org/10.1016/j.scitotenv.2022.160851> (living near farms that use any of 10 pesticides linked to faster progression of Parkinson’s disease); and *Id.* (pregnant mothers living near farms that use any of nine pesticides linked to higher risk of their children developing brain tumors). See also People’s Tribunal scientific testimony at 1:18:30–1:26:30 (summarizing the results of 30 studies that detailed the impacts of pesticide exposure to neurodevelopment and brain-based outcomes, including cognition, memory, learning, executive function impairments, and behavioral change) (“Compelling evidence [from 27 studies] indicates that prenatal exposure [to organophosphates during pregnancy as well as childhood] at low levels is putting children at risk for cognitive and behavioral deficits and for neurodevelopmental disorders”).
 85. People’s Tribunal on Pesticide Use and Civil Rights in California, Lindsay CA (Oct. 13, 2023), <https://www.youtube.com/watch?v=YUYeZVwFTq4> (accessed 2 June 2024).
 86. The People’s Tribunal was presided over by three judges: Robert Chacanaca, former president of the Monterey Bay Central Labor Council; Caroline Farrell, former executive director of the Center on Race, Poverty & the Environment; and Ann López, executive director of the Center for Farmworker Families.
 87. 40 C.F.R. §§ 170.120–.122, .222.
 88. Cal. Code Reg. tit. 3, §§ 6618, 6761.1.
 89. 40 C.F.R. §§ 170.230–.234.
 90. 40 C.F.R. §§ 170.240–.250.
 91. 40 C.F.R. §§ 170.150, .250.
 92. 40 C.F.R. §§ 170.112, .210.
 93. 40 C.F.R. §§ 170.130, .230.
 94. Cal. Code of Reg. tit. 3, § 6618.
 95. 40 C.F.R. § 170.7(b).
 96. 40 C.F.R. § 170.160.
 97. 40 C.F.R. § 170.260.
 98. Cal. Health & Safety Code § 25249.5 (except as provided in § 25249.9).
 99. B. Faerstein, “Resurrecting Equal Protection Challenges to Environmental Inequity: A Deliberately Indifferent Optimistic Approach,” *University of Pennsylvania Journal of Constitutional Law* 7 (2004): 561–89.
 100. Interviews with California Agency Officials by U.C. Irvine Center for Land, Environment & Natural Resources staff (spring 2021).
 101. Cal. Gov. Code § 11135.
 102. See note 100.
 103. California Environmental Protection Agency, “Environmental Justice Program Update, 2016–2018,” 8, 26–27, 37, 53 (December 2019), https://calepa.ca.gov/wp-content/uploads/sites/6/2020/10/ej_report_2016-2018_a.pdf (accessed 2 June 2024).

Additional Resources

- Inside Climate News, “California’s Latino Communities Most at Risk From Exposure to Brain-Damaging Weed Killer” (March 27, 2024), <https://insideclimatenews.org/news/27032024/california-latino-communities-most-at-risk-brain-damaging-weed-killer/> (accessed 5 August 2024).
- Californians for Pesticide Reform, “There’s Something in the Air, and it Causes Childhood Cancers” (December 2021), <https://www.pesticidereform.org/wp-content/uploads/2021/12/FINAL-202111-CPR-Childhood-Cancer-v4.pdf> (accessed 5 August 2024).
- B. Newell, M. Stano, and A. Mody, *A Right Without a Remedy: How the EPA Failed to Protect the Civil Rights of Latino Schoolchildren* (Center on Race, Poverty & the Environment, 2016), <https://www.crpe-ej.org/wp-content/uploads/2016/12/Right-without-a-Remedy-FINAL.pdf> (accessed 5 August 2024).
- L. Cushing et al., “Racial/Ethnic Disparities in Cumulative Environmental Health Impacts in California: Evidence from a Statewide Environmental Justice Screening Tool,” *American Journal of Public Health* 105(11) (2015): 2341–2348, <https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2015.302643> (accessed 5 August 2024).
- California Department of Public Health, “Agricultural Pesticide Use Near Public Schools in California” (April 2014), <https://www.phi.org/wp-content/uploads/migration/uploads/application/files/m0lv3kqvtqh6897f65fyegso0p8qqdtkrto9v13d6uiocq0r.pdf> (accessed 5 August 2024).