Honorable Chair Liane Randolph
Honorable Board Members
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

July 9, 2021

Re: Pesticides Must Be Addressed in the 2022 Scoping Plan

To Chair Randolph and the Air Resources Board,

For too long, synthetic pesticides have been omitted from California's Scoping Plan. Studies have established the immense harm synthetic pesticides inflict on environmental and community health, including increasing greenhouse gas emissions and placing Latinx and farmworker communities in further precarity. It is past time that the California Air Resources Board ("CARB") correct years of oversight and commit to the inclusion of synthetic pesticides in the 2022 Scoping Plan. The Center on Race, Poverty, and the Environment ("CRPE") requests that CARB fulfill its legal mandate and honor its commitment to racial equity and the Principles of Environmental Justice by committing to the explicit inclusion of agricultural pesticides and actions to support reductions of synthetic pesticide use in the 2022 Scoping Plan.

CARB is mandated to include synthetic pesticides in the Scoping Plan. In 2006, the legislature charged CARB with the task of preparing and approving a scoping plan in order to achieve the "maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gas emissions." Cal. Health & Safety Code § 38561(a). CARB was ordered to consult with all relevant state agencies in order to fulfill this mandate: "The state board *shall* consult with *all* state agencies with jurisdiction over sources of greenhouse gases." *Id.* (emphasis added). It was discouraging to see CARB's reaffirmation of the need for interagency involvement and noted collaboration with various "sister agencies" at the June 24 CARB board meeting, while entirely leaving out the Department of Pesticide Regulation ("DPR"). CARB's continued omission of DPR from the list of "sister agencies" CARB consults with is not only disappointing, but constitutes a failure of CARB's legal duty. Synthetic pesticides significantly contribute to greenhouse emissions, both in the production and application of these petrochemicals. As such, CARB is mandated to consult with DPR and must correct this oversight.

Moreover, CARB has committed to "racial equity and environmental justice as a fundamental part" of all of its programs.[1] In October 2020, CARB passed Resolution 20-33, Commitment to Racial Equity and Social Justice, acknowledging that "impacts from air pollutants and greenhouse gases disproportionally affect communities of color" and stating that its mission includes the reduction of the "harmful effects of these emissions where socioeconomic and racial disparities are most pronounced."[2] Yet, despite studies highlighting the disparate impact on Latinx and farmworker communities, synthetic pesticides have been left out of Scoping Plans with barely a mention since 2008.

I. The Production of Synthetic Pesticides is a Threat to Environmental and Community Health

a. Pesticides are a petrochemical, the production of which increases fossil fuel usage and greenhouse gas emissions.

The production of pesticides is an energy intensive process and reliant on the usage of fossil fuels.[3] Pesticides are petrochemicals, meaning they are derived from petroleum chemicals, such as ethylene, propylene, and methane.[4] Fumigant production alone, which accounts for roughly 17% of California's agricultural pesticide use, conservatively utilizes approximately 500,000 gigajoules of energy per year.[5] In 2018, petrochemicals increased greenhouse gas emissions by 80.1%.[6] By 2025, those emissions are projected to be increased by 143.6%.[7]

b. Pesticide production disproportionally harms Latinx and Farmworker communities.

Currently, there are four petroleum refineries in the Central Valley, all located in Bakersfield within Kern County: Alon USA Bakersfield Refinery, Tricor Refining, Kern Oil and Refining Company, and San Joaquin Refining Company. The San Joaquin Refining Company, which serves the insecticides industry, alone has the capacity of 8000,000 barrels and maintains a

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[1] California Air Resources Board, *Environmental Justice*, http://ww2.arb.ca.gov/our-work/topics/environmental-justice (last visited Jul. 3, 2021).

[2] Ca. Air Resources Board Res. 20-33 (2020). https://ww3.arb.ca.gov/board/res/2020/res20-33.pdf. *Id.* (This finding is a step forward from the prior 2017 Scoping Plan that stated "the exact relationship between GHGs and air pollutants is not clearly understood at this time." 2017 Scoping Plan at 38. The 2017 EJAC Recommendations requested removal of this phrase. 2017 EJAC Recommendations at 1, https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/2030sp_appa_ejac_final.pdf)

[3] Zane R. Helsel, *Energy in Pesticide Production and Use*, in ENCYCLOPEDIA OF PEST MANAGEMENT 157, 159 (David Pimentel, ed. 2007), http://1.droppdf.com/files/ioiJk/encyclopedia-of-pest-management.pdf.

[4] *Id.* at pp. 157.

[5] The range of energy required for production of some common organic chemicals ranges from 10-70 gigajoules per tonne. Approximately 13,600 tonnes of fumigants are used every year in California. A central estimate of energy use per tonne of 35 gigajoules per tonne indicates that fumigant production alone utilizes approximately 500,000 gigajoules of energy in California.

[6] Environmental Integrity Project, *Greenhouse Gases from Oil, Gas, and Petrochemical Production* 3 (2020), https://www.environmentalintegrity.org/wp-content/uploads/2020/01/Greenhouse-Gases-from-Oil-Gas-and-Petrochemical-Production.pdf.

[7] *Id.*

tank farm of over 90 tanks.[8] Kern County as a whole is the largest oil-producing and most polluted county in the state and these facilities are predominately located in low-income, Latinx neighborhoods.

The health risks to these communities from exposure to the petrochemical facilities is well documented. The region is subjected to the worst air quality in the nation, exacerbated by emissions from the petroleum refineries in the area.[9] The refineries release pollutants that contribute to ground level ozone formation, exposure to which can result in asthma attacks, decreased lung function, irregular heartbeat, and increased mortality. Exposures to refinery released toxic air containments can further cause cancer, developmental defects, memory impairments, cataracts, and pre-term birth.

II. The Application of Synthetic Pesticides is a Threat to Environmental and Community Health

a. Synthetic pesticide application significantly harms environmental health.

i. Pesticide Applications Contribute to Greenhouse Gas Emissions

Synthetic pesticides contribute significantly to greenhouse gas emissions, with studies showing application of three fumigant pesticides alone (chloropicrin, metam sodium, dazomet) causes anywhere from 7- to 100-fold increases in nitrous oxide (N_2O), a greenhouse gas considered 300 times more potent than carbon dioxide.[10] This was a significant increase compared to non-fumigated controls, and the effects were still evident after 48 days, in contrast with fertilizer-induced N_2O emissions, which generally return to background within two weeks after application.[11] Approximately 20 million pounds of these fumigants are applied to California fields each year.[12] Applications of two other fumigants, dimethyl disulfide and allyl isothiocyanate, have also been shown to increase N_2O emissions 6.5–7.3 and 11.2–20.7 times, respectively.[13]

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[8] *Industries Served*, San Joaquin Refining Company, https://www.sjr.com/industries-served/ (last visited Jul. 2, 2021).

[9] Oscar Espino-Padron, *Central Valley Communities Fight to Hold Petroleum Refineries Accountable*, EARTHJUSTICE (Mar. 18, 2020), https://earthjustice.org/news/press/2020/central-valley-communities-fight-to-hold-petroleum-refineries-accountable.

[10] Kurt Spokas & Dong Wang, *Stimulation of Nitrous Oxide Production Resulted from Soil Fumigation with Chloropicrin*, 37 ATMOSPHERIC ENVIRONMENT 3501 (2003). https://doi.org/10.1016/S1352-2310(03)00412-6; Kurt Spokas, Dong Wang, & Rodney Venterea, *Greenhouse Gas Production and Emission from a Forest Nursery Soil Following Fumigation with Chloropicrin and Methyl Isothiocyanate*, 37 SOIL BIOLOGY & BIOCHEMISTRY 475 (2005). https://doi.org/10.1016/j.soilbio.2004.08.010.

[11] *Ibid.* Spokas K., Wang D., Venterea. R. (2005).

[12] *Pesticide Use Reporting (PUR)*, DEPARTMENT OF PESTICIDE REGULATION (last visited Jul. 2, 2021), https://www.cdpr.ca.gov/docs/pur/purmain.htm.

[13] Wensheng Fang et al., *Biochemical Pathways Used by Microorganisms to Produce Nitrous Oxide Emissions from Soils Fumigated with Dimethyl Disulfide or Allyl Isothiocyanate*, 132 SOIL BIOLOGY AND BIOCHEMISTRY 1 (2019). https://doi.org/10.1016/j.soilbio.2019.01.019.

ii. Pesticides Inhibit the Soil's Ability to Sequester Carbon

Healthy soil is critical for carbon sequestration, especially stable carbon sequestration, which appears to derive primarily from soil microbial processes.[14] Healthy soil holds billions of soil microorganisms that sequester carbon and form symbiotic relationships with plant roots through mycorrhizal fungi. These fungi help plants access nutrients from the soil in exchange for carbon that the plant photosynthesizes from the air. But toxic pesticides can damage this microbial bridge, impacting soil health and inhibiting carbon as well as nitrogen sequestration.[15]

iii. Organic Farming Free of Synthetic Pesticides and Fertilizers Better Sequesters Soil Carbon

Multiple meta-analyses comparing thousands of farms have shown that organic farming, which is virtually free of synthetic pesticides and fertilizers, results in higher stable soil organic carbon and reduced nitrous oxide emissions when compared to "conventional" farming reliant on synthetic chemicals.[16] Most stabilized soil organic matter appears to derive from microbial processing of root exudates and other organic residues.[17] Thus, the detrimental effect of agricultural chemicals on soil microbes undermines formation of stable soil organic matter.

iv. Pesticides are One of the Greatest Contributors of Biodiversity Loss

Pesticides are one of the greatest causes of pollinator and biodiversity loss worldwide, with farming areas 48 times more toxic to honeybees and other organisms due to pesticides than they were 25 years ago.[18]

b. Synthetic pesticide application disproportionally harms the health of Latinx and Farmworker communities

California averages 200+ million pounds of pesticides each year, roughly 20% of which are known to cause cancer and many of which are linked to a variety of health impacts including

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[14] NATIONAL SUSTAINABLE AGRICULTURE COALITION (NSAC), AGRICULTURE AND CLIMATE CHANGE: POLICY IMPERATIVES AND OPPORTUNITIES TO HELP PRODUCERS MEET THE CHALLENGE, at 18, 20 (Nov. 2019), https://sustainableagriculture.net/wp-content/uploads/2019/11/NSAC-Climate-Change-Policy-Position_paper-112019_WEB.pdf.

[15] KENDRA KLEIN, FRIENDS OF THE EARTH, PESTICIDES AND SOIL HEALTH (2019). https://foe.org/wp-content/uploads/2019/08/PecticidesSoilHealth_Final-1.pdf; Tucker J. Matta & Margaret Reeves, *Pesticides and Soil Health: State of the Science and Viable Alternatives*, PESTICIDE ACTION NETWORK (Dec. 2020), http://www.panna.org/sites/default/files/soil-pesticides-report.pdf.

[16] NATIONAL SUSTAINABLE AGRICULTURE COALITION (NSAC) *supra* note 14, at 18-21; David Pimentel et al., *Environmental, Energetic and Economic Comparisons of Organic and Conventional Farming Systems*, 55(7) BIOSCIENCE 573 (2005). https://doi.org/10.1641/0006-3568(2005)055[0573:EEAECO]2.0.CO;2.

[17] Keith Paustian et al., *Climate-Smart Soils*, 532 NATURE 49 (2016). https://www.nature.com/articles/nature17174.

[18] Michael DiBartolomeis et al., *An Assessment of Acute Insecticide Toxicity Loading (AITL) of Chemical Pesticides Used on Agricultural Land in the United States*, 14(8) PLOS ONE 1 (2019). https://doi.org/10.1371/journal.pone.0220029.

asthma, autism, Parkinson's, and developmental and reproductive harms. The Environmental Protection Agency (EPA) lists 7 of the top 10 pesticides used in the state as causing death or injury through contact with the skin and acute pesticide poisoning is a regular occurrence, with an average of 88 cases a year.[19] Pesticide exposure causes farmworkers to "suffer more chemical-related injuries and illnesses than any other workforce in the nation" [20] and the health impact is not limited to just the workplace. Pesticides move beyond target application areas as dust or droplets through the air during and after application in a process called "pesticide drift."[21] Nontargeted adjacent areas such as "nearby homes, schools, and playgrounds" and "farm workers in adjacent fields" are subjected to health risks from pesticide exposure such as: headaches, migraines, allergic reactions, nausea, asthma, vomiting, diarrhea, skin conditions, seizures, shortness of breath, cancer, infertility, respiratory problems, neurological issues, tumors, lung failure, leukemia, hypertension, diabetes.[22]

Latinx and Farmworker communities in the Central Valley are put at disproportionate risk to pesticide exposure, risking their health and safety. Analysis of pesticide data from the Department of Pesticide Regulation ("DPR") combined with demographic data reveals a pronounced racial disparity in concentration of pesticide use. Counties with a majority Latinx population use 906% more pesticides per square mile than counties with fewer than 24% Latinx residents.[23]

In 2017, Fresno County reported the use of 32,865,437 pounds of pesticides, more than any other county in California.[24] Nearly 50% of Fresno County residents live within 0.5 miles of heavy pesticide use.[25] 38.9% of schools in the area are exposed to pesticide use applied within ¼ mile of the school property boundary. [26]

In 2017, Kern County reported the use of 28,600,576 pounds of pesticides that year alone, second only in California to Fresno County.[27] Nearly 30% of Kern County residents live

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[19] Elizabeth Lincoln, *Accountability for Pesticide Poisoning of Undocumented Farmworkers*, 24 Hastings ENVT'l L. J. 383 (2018). https://heinonline.org/HOL/P?h=hein.journals/haswnw24&i=410.

[20] *Id*. (quoting *Pesticide Safety*, FARMWORKER JUSTICE (2017), https://www.farmworker justice.org/content/pesticide-safety [https://perma.cc/BL5J-BQ3U]).

[21] *Id. (*quoting *Introduction to Pesticide Drift*, ENVTL. PROT. AGENCY, https://www.epa.gov/ reducing-pesticide-drift/introduction-pesticide-drift).

[22] *Id.* at 24.

[23] The two groups of counties have a similar total population and area. In the eleven counties with a majority Latinx population, there were 22 pounds of pesticides used per person in 2018, or 2,373 pounds per square mile. By contrast, for the 25 counties with the lowest proportion of Latinx residents (fewer than 24%), pesticide use was just 2.4 pounds per person, or 262 pounds per square mile.

[24] Cresencio Rodriguez-Delgado, *Chemical exposures in California's vast cropland spark fear for growers and workers*, THE FRESNO BEE (Sept. 20, 2019), https://www.fresnobee.com/news/local/article234705742.html.

[25] Zev Ross & Jonathan Kaplan, *Poisoning the Air: Airborne Pesticides in California*, CALIFORNIANS FOR PESTICIDE REFORM, at 5 (1998). https://www.pesticidereform.org/wp-content/uploads/2016/10/poisonAir.pdf.

[26] California Environmental Health Tracking Program, *Agricultural Pesticide Use Near Public Schools in California* 17 (2014). https://trackingcalifornia.org/cms/file/agricultural-pesticides-near-schools/report.

[27] Zev Ross & Jonathan Kaplan, *Poisoning the Air: Airborne Pesticides in California*, Californians for Pesticide Reform, at 5 (1998). https://www.pesticidereform.org/wp-content/uploads/2016/10/poisonAir.pdf.

within 0.5 miles of heavy pesticide use. [28] 19.6% of schools in the area are exposed to pesticide use applied within ½ mile of the school property boundary. [29]

The majority of students attending these schools exposed to high levels of pesticide use are Hispanic. Hispanic children compromise 67.7% of the population for schools in the highest quartile of pesticide use within ¼ mile of the school property boundary and are 91% more likely than White children to attend a school in the top quartile of pesticide usage, when compared to children attending schools with no pesticide use nearby.[30]

The majority of these students are also from low-income backgrounds. In Fresno County, 61.8% of students attending schools within the top quartile of pesticide use are eligible for free or reduced price meals. [31] In Kern County, 54.6% of students attending schools within the top quartile of pesticide use are eligible for free or reduced price meals. [32]

III. Incorporating Pesticide Reduction Strategies into the 2022 Scoping Plan Will Serve Equally Important Co-Benefits of Protecting Community Health and the Environment

It is past time for pesticides to be recognized for both their contribution to greenhouse gas emissions and their disproportionate effect on community and environmental health. California's Latinx and farmworker communities are placed in further precarity by the continued use of these petrochemicals. If CARB is meaningfully committed to racial equity and environmental justice, it must commit to the explicit inclusion of agricultural pesticides and actions to support reductions of synthetic pesticide use in the 2022 Scoping Plan.

We therefore urge CARB to counteract the omission of pesticides from prior Scoping Plans by coordinating efforts across agencies and departments to adopt solutions to help move agriculture in California away from reliance on chemical pesticides.

Sincerely,

Paulina Torres
Neha Malik
Staff Attorney, CRPE

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[28] *Id.*
[29] California Environmental Health Tracking Program, *Agricultural Pesticide Use Near Public Schools in California* 17 (2014). https://trackingcalifornia.org/cms/file/agricultural-pesticides-near-schools/report.
[30] *Id.* at 21.
[31] *Id.* at 22.
[32] *Id.* at 22.