The COSECHA Study:

Latinx Youth Empowerment and Environmental Health

in an Agricultural Community

California uses more than 185 million pounds of pesticides each year, approximately 7 million of which have been identified as probable or possible carcinogens or hormone disruptors. Yet, scientists know little about how teenage girls living in agricultural communities may be exposed to pesticides used on fields near their homes. One concern is that pesticide exposure during puberty, when breast tissue is rapidly developing, may increase risk for breast cancer later in life. The COSECHA study ran from 2016-2018 to investigate these concerns and empower the next generation of environmental health leaders.

Named by our youth researchers, COSECHA stands for
The Chamacos Of Salinas Evaluating Chemicals in Homes & Agriculture study. The word means "harvest" in Spanish, indicating that we prioritize the optimization food and labors systems so that communities can more equitably prosper. COSECHA was a three-year project of the CHAMACOS Youth Council, a cohort of teen leaders living in Salinas, and was funded by the California Breast Cancer Research Program. Its principal investigators were Dr. Kim Harley (UCB) and Mr. Jose Camacho (la Clinica de Salud de Valle de Salinas) and it was managed by Mr. James Nolan, MPH (UCB). COSECHA participants were nested within the larger CHAMACOS Study. Initiated in 1998, CHAMACOS is the longest running longitudinal birth cohort study of pesticides and other environmental exposures among children in a farmworker community. Though Salinas is rich in history, culture, art, agriculture and diversity, it also faces disproportionate socio-economic inequities. Previous CHAMACOS studies have indicated that the combination of such adversities and exposures to some pesticides may be associated with increased severity of children's health effects.

By serving on the CHAMACOS Youth Council, local high school students helped guide research priorities, design and implement studies, and return scientific results to their community. The COSECHA Study empowers Latinx high school aged youth in environmental health research and action. Through the study, local high school students became paid youth researchers, learning about and acting upon pesticide exposures associated with hormone disrupting and/or carcinogenic effects amongst teens in the Salinas Valley, CA. COSECHA activities began with team building and environmental health literacy, during which youth gained foundational knowledge, created team guidelines, modified study protocols and informed study design. Accompanied by adult staff, youth researchers visited participant's homes in the summer of 2016, collecting a complex and innovative array of data from their peers using: GPS devices, a passive environment sampling bracelet (a novel technology from Dr. Kim Anderson at Oregon State University capable of detecting 1,500+ chemicals), two types of indoor dust samples, online questionnaires, daily text reminders, urine samples and cataloging crops grown on nearby fields.

Many sample results are still being analyzed, or have been stored for future analysis pending additional funding. Our first scientific paper on bracelet results was published in October, 2018. Several youth researchers were included as co-authors. Bracelet evidence suggests an association between the use of certain pesticides in nearby fields (especially those within 100 meters of homes) and pesticide levels on bracelets that teen participants wore. We found higher levels of some pesticides in homes treated by a professional exterminator within the last 6 months. An association between living in a home where doormats were used and decreased levels of several key pesticides on the bracelets was noted.

Youth researchers implemented a public health communication strategy, drawing upon their experiential expertise to determine messaging and venues that would efficiently and effectively communicate key findings to members of their community. Materials included a forum to return results to participants, television interviews, video segments on pesticide related health topics, a short Radio Novella "edu-tainment" series, social media, tabling at local events and community presentations. The Radio Novella series has now aired on 10 radio stations across several states and is freely available online. The youth partnered with Hijos del Sol to create a 28' x 5' mural to educate the local community about environmental health challenges and simple solutions. As our research indicated that they have a protective effect, 800 doormats that were custom printed with tips for reducing pesticides in people's homes have been distributed in the local community.

An additional focus of the study is community involvement and capacity building, including leading the youth researchers in building professional skills and college preparedness while significantly including them in study design, data collection, analysis, translation and dissemination of results. All but one member of the COSECHA youth cohort went on to college. Based on youth and community input, we have now begun a new three-year youth participatory action research study that focuses on potentially carcinogenic or hormone disrupting chemicals that Latina women may inhale while using household cleaning products. We will then replace these products with "green" products to see if there are improvements on women's exposure levels.

The COSECHA study has been featured in the following:

- **The Californian**, 9/4/18: Salinas mural on pesticides' impact on farmworkers opens for viewing Friday
- **KION News** (eng)- "Pesticide study looks at impact on Latina teens"
- **KION News** (spn)- "Uso de Pesticidas" (starts at 6:20)
- **Radio Bilingue:** "COSECHA, a study on how pesticide impacts on Latina Teens"

- **KION News** (eng)- "Study: Pesticide exposure in Latina teens" (starts at 0:23).
- **KION News** (spn)- "Pesticide exposure in Latina teens" (starts at 7:36).
- **Youth Participatory Action Hub-** "Latino Youth Investigating Environmental Chemical Exposures in the Salinas Valley"
- Youth have presented to multiple college classes at CSUMB as well as their own high school classes, at the CHAMACOS Forum and to key stakeholders

Additional Information:

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- **COSECHA Study Website:** https://cerch.berkeley.edu/research-programs/cosecha-study
- **Newsletter Sign-up form:** http://oi.vresp.com/?fid=cee399448a%20