Community Biomonitoring Studies to Support AB 617 and the Community Air Protection Program (CAPP)

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PRESENTATION AT THE SCIENTIFIC GUIDANCE PANEL MEETING

NOVEMBER 6, 2023

Overview of presentation

Update on current studies

- Biomonitoring component of the San Joaquin Valley Pollution and Health Environmental Research Study (BiomSPHERE)
- Farmworker women & Respiratory Exposure to Smoke from Swamp Cooler Air (FRESSCA–Mujeres)
- Stockton Air Pollution Exposure Project (SAPEP)

Future activities

BiomSPHERE: Biomonitoring component of the **S**an Joaquin Valley **P**ollution and **H**ealth **E**nvironmental **Re**search Study (SPHERE)

SPHERE

- Assess families' exposures to air pollutants and noise in Fresno and Stockton
- Includes household and personal air monitoring, measurement of noise levels, and collection of exposure survey data

BiomSPHERE

- Collect urine samples from the SPHERE participants, including repeat samples in a subset of households
- Analyze samples for:
  - Metabolites of polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs)
  - Biomarkers of oxidative stress, inflammation, and lung injury
  - Cotinine
- Provide additional air sampling to measure PAHs

BiomSPHERE update

Completed majority of fieldwork in Fresno and Stockton

- Collected urine samples
- Administered exposure questionnaires
- Collected home air samples
- Conducted personal air sampling for $PM_{2.5}$

Sample collection to continue through November 2023

- New study target is 176 total urine samples
- 64 parent-child pairs
- Repeat sampling from 8 families on 4 consecutive days

Farmworker women & **R**espiratory **E**xposure to **S**moke from **S**wamp **C**ooler **A**ir (**FRESSCA–Mujeres**)

FRESSCA:

- Reduce wildfire smoke exposures by designing, testing, and deploying an affordable and effective filtration system for residential evaporative (“swamp”) coolers

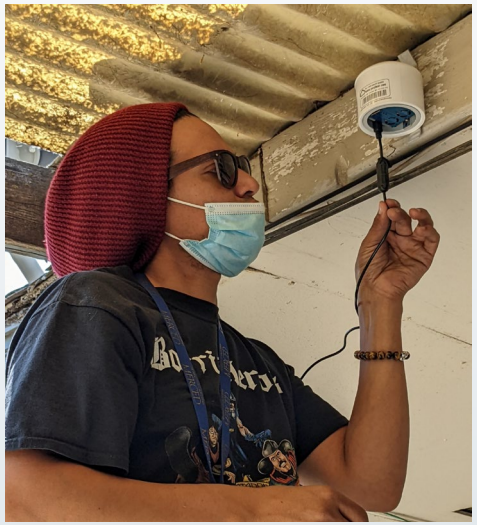
FRESSCA – Mujeres:

- Focus on farmworker women living in Fresno, Kern, and Kings counties
- Deploy swamp cooler filters and portable air cleaners at participants’ homes
- Look at biomarkers of exposure to air pollutants (metabolites of PAHs, VOCs and heavy metals) and of oxidative stress and inflammation before and during the wildfire season
- Measure air pollutant levels inside and outside of participants’ homes
- Administer exposure questionnaires and household surveys

FRESSCA MUJERES AIRE LIMPIO EN CASA

Spring/Early Summer 2023

- Finished recruitment (n=51)
- Collected first morning voids from participants to establish baseline exposure
- Conducted pilot testing of air monitoring equipment
- Installed PurpleAir PM monitors
- Administered household surveys
- Collected wristbands from a subset of participants
- Performed maintenance on swamp coolers



Study participants

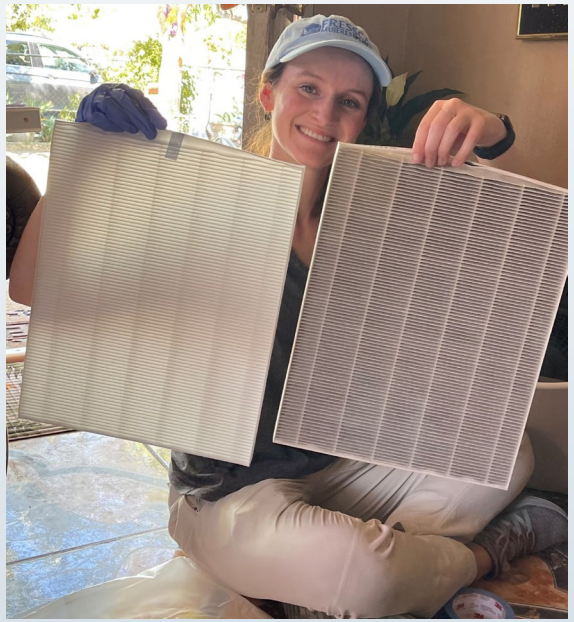
- 100% Hispanic/Latina
- 76% farmworkers, 13% food packing
- 84% rate air quality as somewhat or extremely bad
- 59% report health impact from heat in last year
- 67% are very or somewhat dissatisfied with swamp cooler

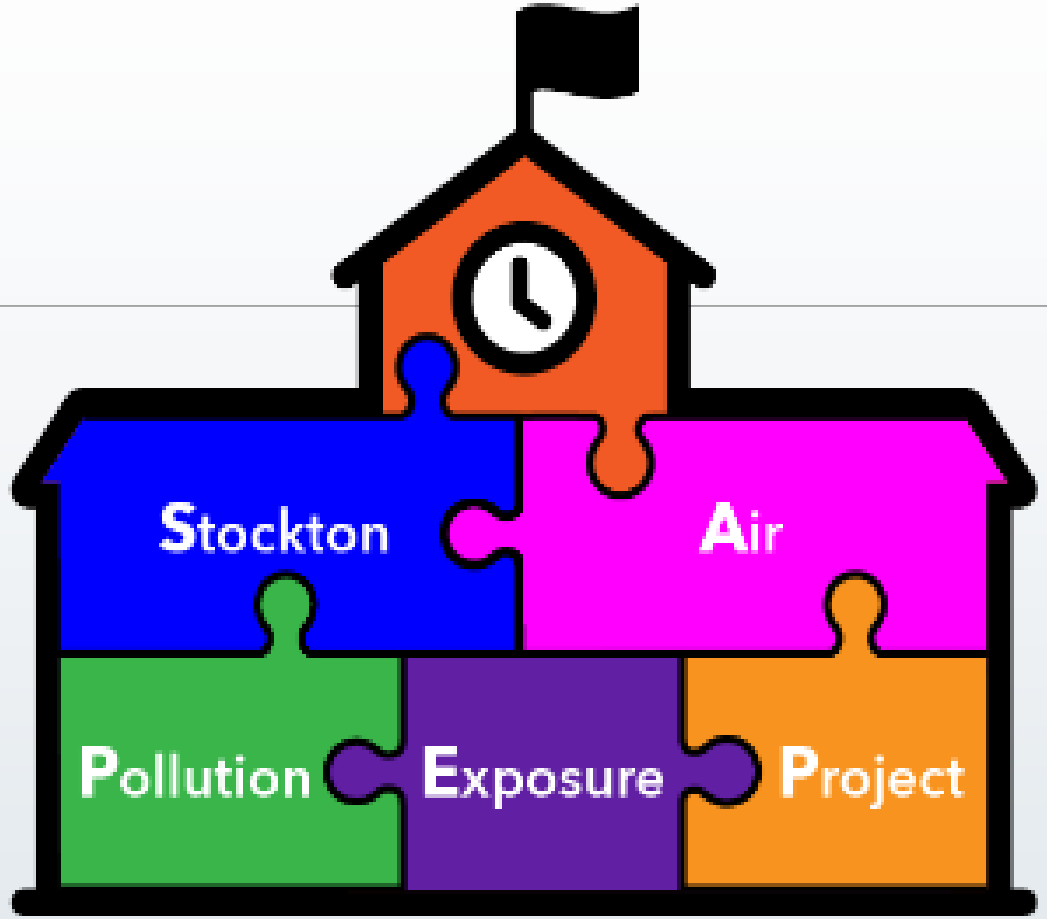
FRESSCA MUJERES AIRE LIMPIO EN CASA

Late Summer/Fall 2023

- Deployed swamp cooler filters and portable air cleaners at participants' homes
- Collected evening and first morning void urine samples (before and after exposure to "filtered" air)
- Administered exposure surveys
- Monitored indoor and outdoor air for PAHs, VOCs, heavy metals, and PM
- Collected saliva to measure telomere length

FRESSCA-Mujeres team in the field




Stockton
Air
Pollution
Exposure
Project

Stockton Air Pollution Exposure Project (SAPEP)

Learn more about air pollution exposures to schoolchildren in Stockton

Evaluate effectiveness of school air filtration at reducing children's air pollution exposures

SAPEP update

- Developed a new fact sheet for biomarkers of response and returned results in October 2023
- Completed initial data analyses for biomonitoring and air sampling data
- Currently planning a community meeting for late fall 2023/early winter 2024 in Stockton

Future activities

Short-term

- Laboratory and data analyses for FRESSCA (including wristbands) and BiomSPHERE
- Results return for FRESSCA and BiomSPHERE
- Solicit feedback on results return materials
- Exploring options for a pilot study on oil and gas exposures in California
- Identification of novel biomarkers for air pollutants of concern or validation of laboratory methods for biomarkers of air pollution exposures

Long-term

- Development of a Request for Information (RFI) to identify opportunities for future community biomonitoring studies
  - Provide a systematic and transparent mechanism for gathering information to help design community biomonitoring studies
  - Likely be issued in 2024 to develop studies that would be supported by contract funds from FY 2025-26 (and beyond)

Questions?