Program Update

Nerissa Wu, MPH, PhD
California Department of Public Health

Presentation to the Scientific Guidance Panel Meeting
March 6, 2019 - Sacramento, California
California Regional Exposure (CARE) Study

- Eight regions, based on geography and population
- Conduct sampling in approximately one region/year, with 300-500 participants per region
- Biomonitoring for metals and perfluoroalkyl and polyfluoroalkyl substances (PFASs) and collection of exposure data
- Potential to include additional panels, such as 1-nitropyrene or environmental phenols
California Regional Exposure (CARE) Study Updates

CARE Study – Los Angeles County
CARE Study 2 – Riverside, San Bernardino, Imperial, Mono, and Inyo counties
CARE LA: Results Return

• 430 participants
  • 428 provided a urine sample
  • 425 provided a blood sample

• 160 participants selected for 1-nitropyrene analysis

• 60 female participants selected for phenols analysis
CARE LA: Results Return

• Individual results return
  • 428 participants requested results
  • Results for metals, PFASs, and 1-nitropyrene returned to participants
  • Results for phenols will be returned in Spring 2019

• Public meeting planned for Spring 2019
CARE LA: Preliminary Results

• Metals
  • Measured 10 metals, including 3 metals measured in both urine and blood
  • Most metals detected in 100% of participants
  • 48 participants (11%) had a metal level above established Levels of Concern

• PFASs
  • Measured 12 PFASs
  • At least 1 PFAS detected in every participant who had blood tested

• 1-nitropyrene
  • Measured two metabolites of 1-nitropyrene
    • 6-OHNP (Detection Frequency = 91%)
    • 8-OHNP (Detection Frequency = 87%)
  • Neither metabolite detected in 2 participants
  • Seasonal trends in air pollutant levels may impact analysis
## Region 2: Zones and Sampling Goals

<table>
<thead>
<tr>
<th>Zone</th>
<th>Zone Description</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>San Bernardino County urban</td>
<td>104</td>
</tr>
<tr>
<td>B</td>
<td>Riverside County urban</td>
<td>118</td>
</tr>
<tr>
<td>C</td>
<td>Riverside and San Bernardino counties suburban and rural areas</td>
<td>78</td>
</tr>
<tr>
<td>D</td>
<td>Imperial County</td>
<td>30</td>
</tr>
<tr>
<td>E</td>
<td>Inyo and Mono counties</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td><strong>Total Sampling Goal in Region 2:</strong></td>
<td><strong>350</strong></td>
</tr>
</tbody>
</table>
CARE Study: Improved!

• Shorter field presence
  • More efficient recruitment
  • Higher utilization of internet tools

• Field office/mobile team

• Improvements to Participant Management System

• Increased participant incentive

• Automation of the results return process
  • Lower risk of human error
  • More efficient assembly
CARE 2: Field office and staff
CARE 2: Participant Recruitment

- January 2019 - Postcards mailed to 79,000 households in randomly selected mail codes
- Continued outreach via Craigslist and community organizations
CARE 2: Prescreening pool

- 692 people have filled out the prescreening form
  - Prescreening pool skewed female and older
  - Participation across race and sampling zones

- Selection takes race/ethnicity, gender, and sampling zone into account

- Prescreening closed on March 3
CARE 2 – Enrollment status*

<table>
<thead>
<tr>
<th>Tracking Status</th>
<th>Internet Participants</th>
<th>Paper Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invited to enroll</td>
<td>336</td>
<td>78</td>
</tr>
<tr>
<td>Invitation sent</td>
<td>34</td>
<td>45</td>
</tr>
<tr>
<td>Activated account</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Completed informed consent</td>
<td>9</td>
<td>------</td>
</tr>
<tr>
<td>Completed exposure survey</td>
<td>16</td>
<td>------</td>
</tr>
<tr>
<td>Scheduled for sample collection</td>
<td>173</td>
<td>17</td>
</tr>
<tr>
<td>Missed/cancelled appointment</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Completed study</td>
<td>86</td>
<td>8</td>
</tr>
</tbody>
</table>

* Current as of March 3
## Projected Timeline – 2019

<table>
<thead>
<tr>
<th>CARE Activities</th>
<th>CARE LA</th>
<th>CARE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results return</td>
<td>February</td>
<td></td>
</tr>
<tr>
<td>Field work</td>
<td></td>
<td>February – May</td>
</tr>
<tr>
<td>Results return for phenols</td>
<td>March</td>
<td></td>
</tr>
<tr>
<td>Public meeting</td>
<td>May/June</td>
<td></td>
</tr>
<tr>
<td>Laboratory analysis</td>
<td></td>
<td>April – August</td>
</tr>
<tr>
<td>Early notifications</td>
<td></td>
<td>April – August</td>
</tr>
<tr>
<td>Results return</td>
<td></td>
<td>December</td>
</tr>
</tbody>
</table>
CARE 3: San Diego/Orange County
East Bay Diesel Exposure Project (EBDEP) Major Goals

• Directly assess exposures to diesel exhaust in child-parent pairs living in the San Francisco East Bay

• Compare levels of diesel biomarkers:
  • Within households, across age groups
  • In repeated samples over a four-day period
  • Across communities
  • During different seasons
EBDEP updates and status

• Field work completed on February 1, 2019

  • 40 child-parent pairs enrolled, including 15 “daily samplers” (urine samples collected over 4 days)

• Samples currently being analyzed at the University of Washington

• Individual results return and community meetings planned for spring/summer 2019
Asian/Pacific Islander Community Exposures (ACE) Project

• Follow-up to Scientific Guidance Panel presentation in August 2018

• Reported results to San Francisco Department of Public Health (SFDPH)

• Met with APA Family Services and SFDPH to discuss follow-up

• Potential for future projects and community outreach
Additional studies in progress

• Foam Replacement Environmental Exposure Study (FREES)
  Intervention study to look at changes in flame retardant levels after replacing home furnishings

• Measuring Analytes in Maternal Archived Samples (MAMAS)
  Using Biobank samples from the California Prenatal Screening Program to look at trends in POPs and PFASs over time

• Northern California Firefighter Study (NCFF)
  Biomonitoring of 180 firefighters deployed to fight the Tubbs Fire in Sonoma County
Program Priorities/Timeline

- CDC cooperative agreement ending August 2019
- Proposals in response to the new Notice of Funding Opportunity (NOFO) due April 26
  - Approximately six proposals will be awarded funding
  - Up to $1 million annually
- Proposals can focus on:
  - Statewide surveillance
  - Targeted biomonitoring/rapid response
California-specific issues

• Vulnerable communities specific to California
  • Immigrant populations
  • Occupational cohorts

• Issues that are particular to California
  • Agriculture and other industries
  • Population diversity
  • Air pollution
  • Wildfires

• Which lab panels are priorities to maintain/expand?
Questions/Discussion
# Biomonitoring California Staff

<table>
<thead>
<tr>
<th>Kathleen Attfield</th>
<th>Sabrina Crispo Smith</th>
<th>Lissah Johnson</th>
<th>Dan Sultana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judy Balmin</td>
<td>Adam D’Amico</td>
<td>Duyen Kauffman</td>
<td>Juan VillaRomero</td>
</tr>
<tr>
<td>Lauren Baehner</td>
<td>Josephine DeGuzman</td>
<td>Juliet Kinyua</td>
<td>Jed Waldman</td>
</tr>
<tr>
<td>Hyoung Gee Baek</td>
<td>Joginder Dhaliwal</td>
<td>Weixin Kuang</td>
<td>Miaomiao Wang</td>
</tr>
<tr>
<td>Russ Bartlett</td>
<td>Jeff Fowles</td>
<td>Jennifer Mann</td>
<td>Shizhong Wang</td>
</tr>
<tr>
<td>Paramjit Behniwal</td>
<td>Ryszard Gajek</td>
<td>June-Soo Park</td>
<td>Yunzhu Wang</td>
</tr>
<tr>
<td>Reber Brown</td>
<td>Qi Gavin</td>
<td>Julian Perez</td>
<td>Suzanne Wittwer</td>
</tr>
<tr>
<td>Tiffany Chan</td>
<td>Songmei Gao</td>
<td>Myrto Petreas</td>
<td>Nerissa Wu</td>
</tr>
<tr>
<td>Key-Young Choe</td>
<td>Sara Hoover</td>
<td>Martha Sandy</td>
<td>Greg Yeh</td>
</tr>
<tr>
<td>Robin Christensen</td>
<td>Shoba Iyer</td>
<td>Jianwen She</td>
<td></td>
</tr>
</tbody>
</table>