

# Kaiser Permanente Collaboration: Biomonitoring Exposures Study (BEST)

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Scientific Guidance Panel

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**BIOMONITORING**  
CALIFORNIA



# BEST Collaborators and Support

## Collaborators

- Biomonitoring California (CECBP)
- Kaiser Permanente Northern California (KPNC),  
Division of Research, Research Program on  
Genes, Environment, and Health (RPGEH)
  - Stephen Van Den Eeden, PhD

## Funding ~\$75,000

- CDC Cooperative Agreement (Year 2)
- In-kind support from Biomonitoring California and  
KPNC RPGEH

# Kaiser Permanente Research Program on Genes, Environment and Health (RPGEH)

- Goal: Build one of the largest and most comprehensive resources in the US for research on genetic and environmental influences on health by linking:
  - Clinical data from electronic medical record
  - Participant survey data
  - Environmental exposure data (questionnaire)
- Biobank
  - 160,000 biological (genetic) samples
  - 400,000 completed questionnaires

# Overview of BEST

- **Pilot biomonitoring study in California's Central Valley**
- **Recruit 100 male and female adults**
- **Joint recruitment into RPGEH Biobank**
- **Develop and test protocols/procedures applicable to a larger regional study**

# Why Collaborate With Kaiser?

**SB 1379 requires biomonitoring of a representative population of Californians**

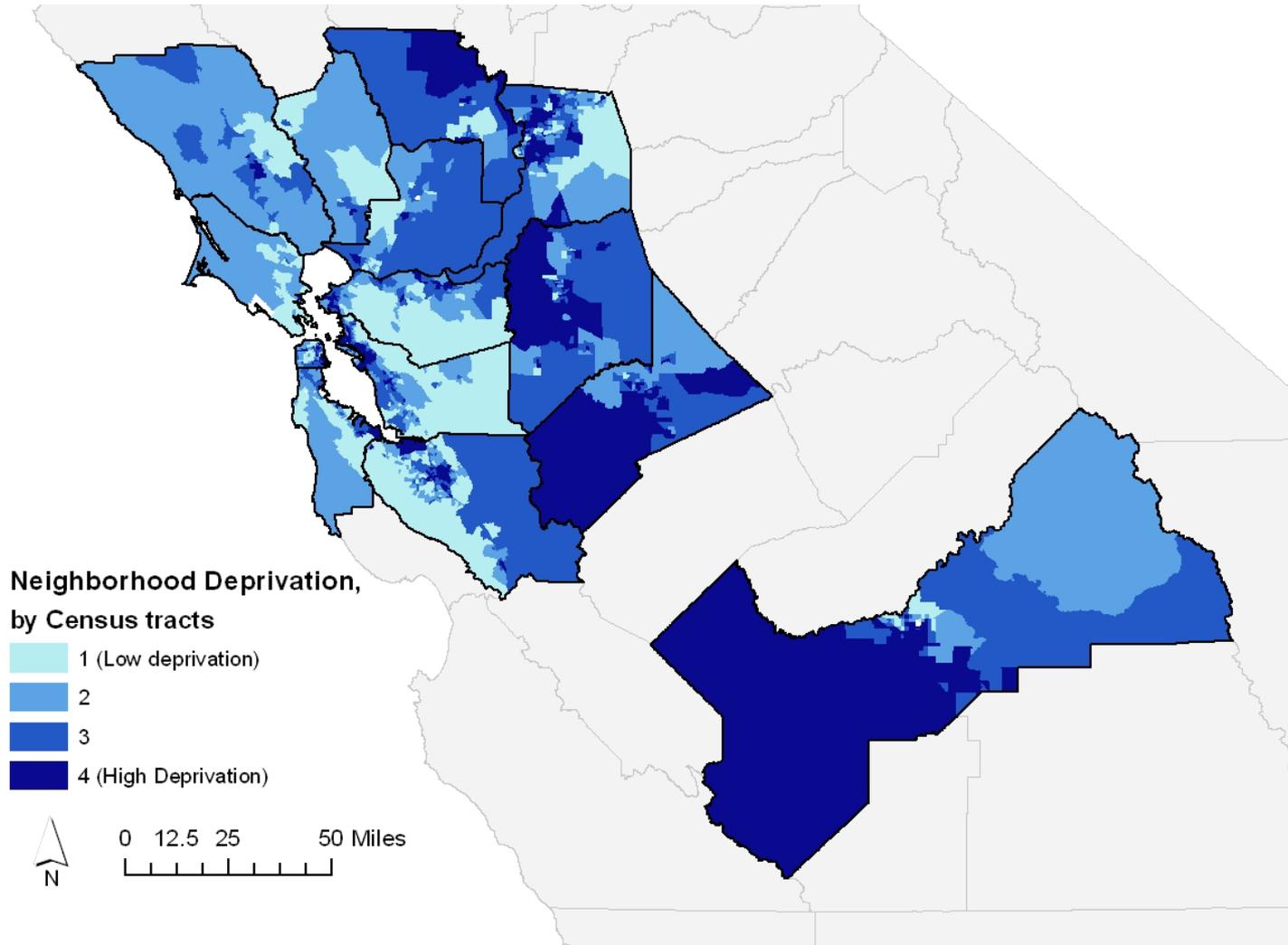
**Kaiser Permanente membership:**

- Statewide
- Broadly representative & diverse

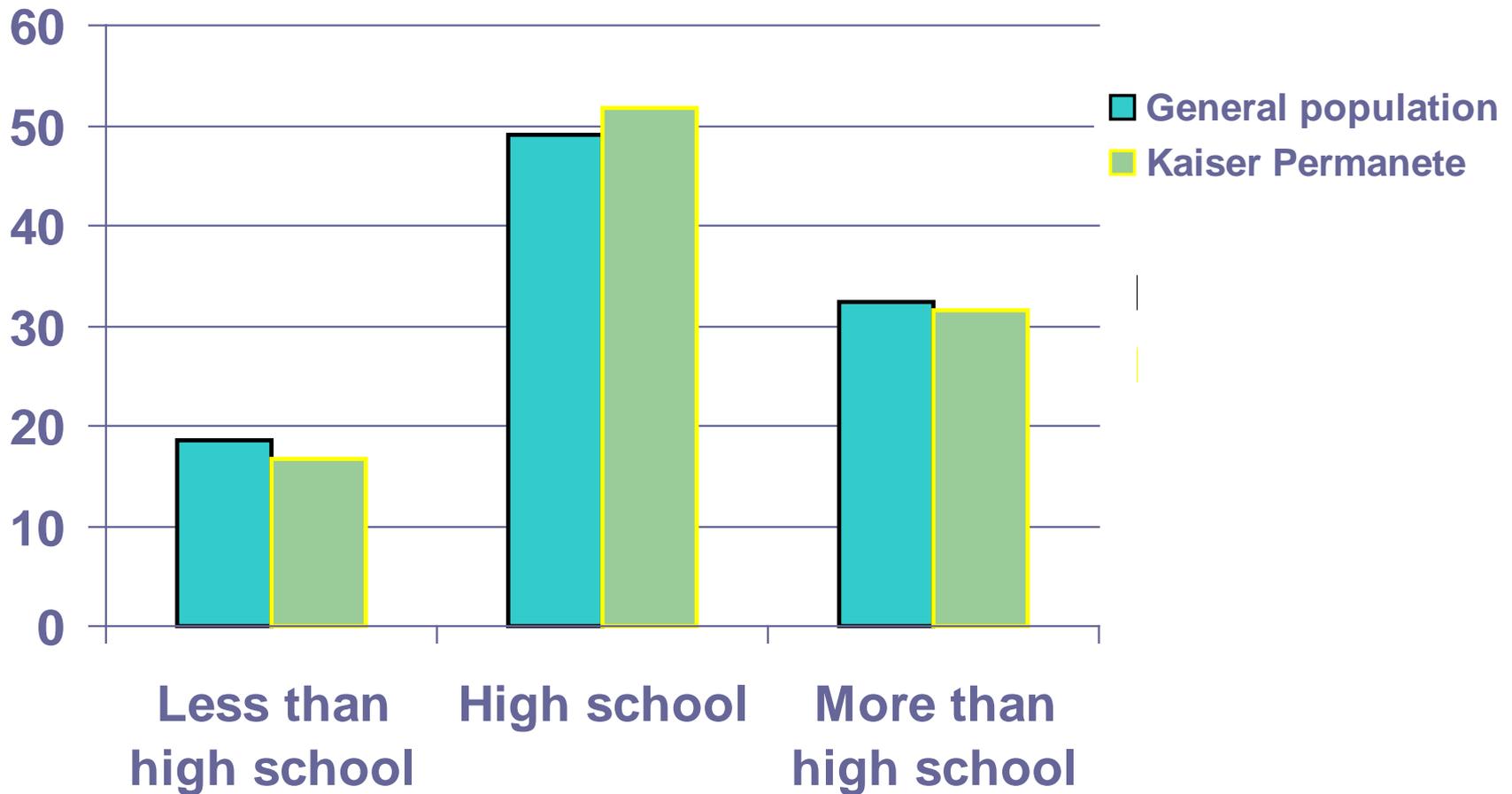
**Expands geographic area of Biomonitoring California participant recruitment**



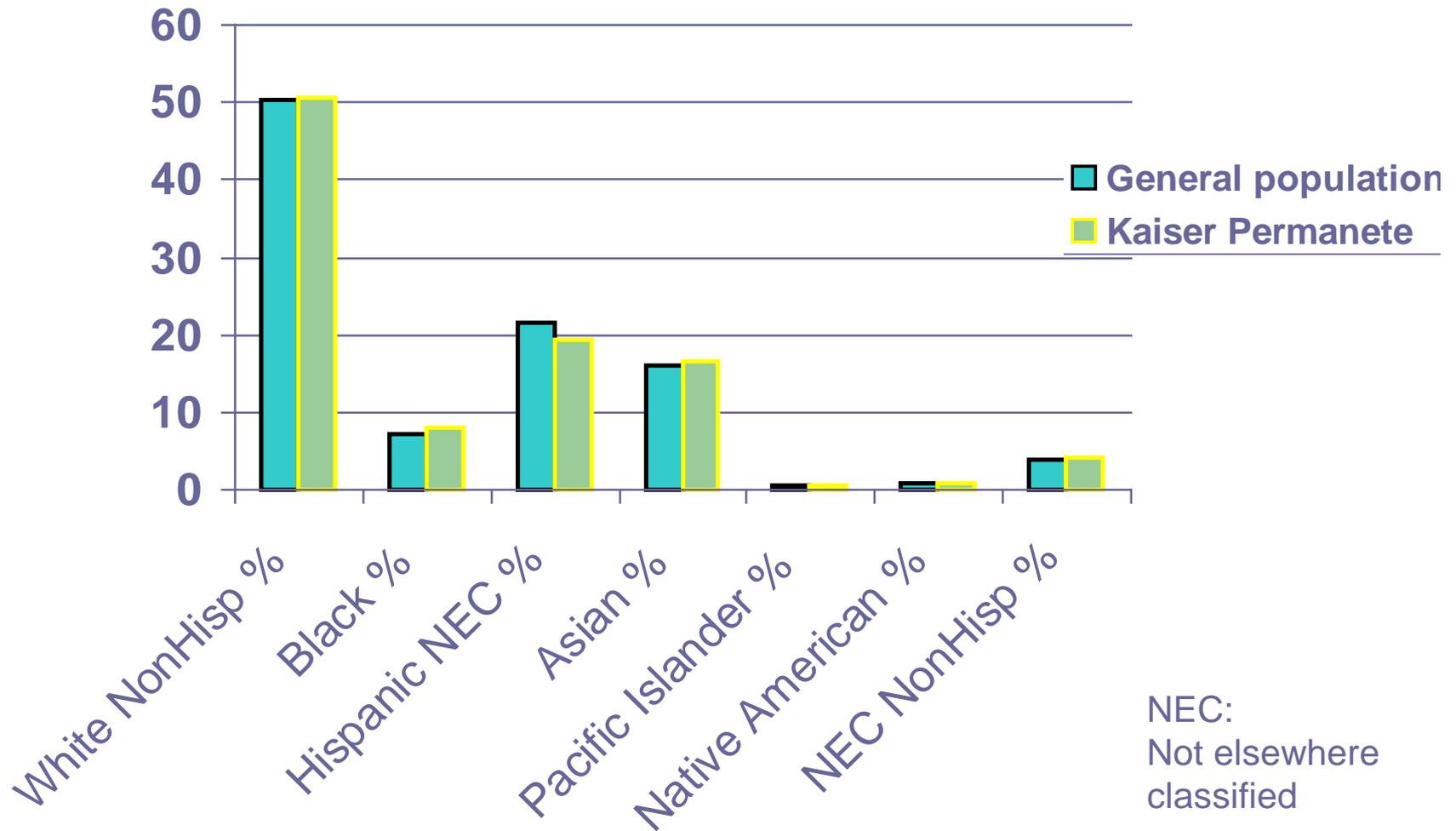
# KPNC Members Have Wide Variation in Socioeconomic Status



# Education Level of KPNC Members Compared to General Population in Northern California



# Race/Ethnicity of KPNC Members Compared to General Population in Northern California



# **Additional Advantages of Collaboration With KPNC RPGEH**

**Electronic medical records provide rich, comprehensive, continuously updated clinical data**

**Internal research infrastructure— staff are experienced in working with KPNC members and data**

**Strong positive (& longitudinal) relationship between KPNC and members**

# BEST Chemicals of Interest

**Brominated flame retardants (BFRs)\***  
(e.g., PBDEs)

**Newer BFRs\*** (e.g., DBDPE)

**Environmental phenols** (e.g., BPA\*)

**Metals\*** (Pb, Hg, Cd, Mn)

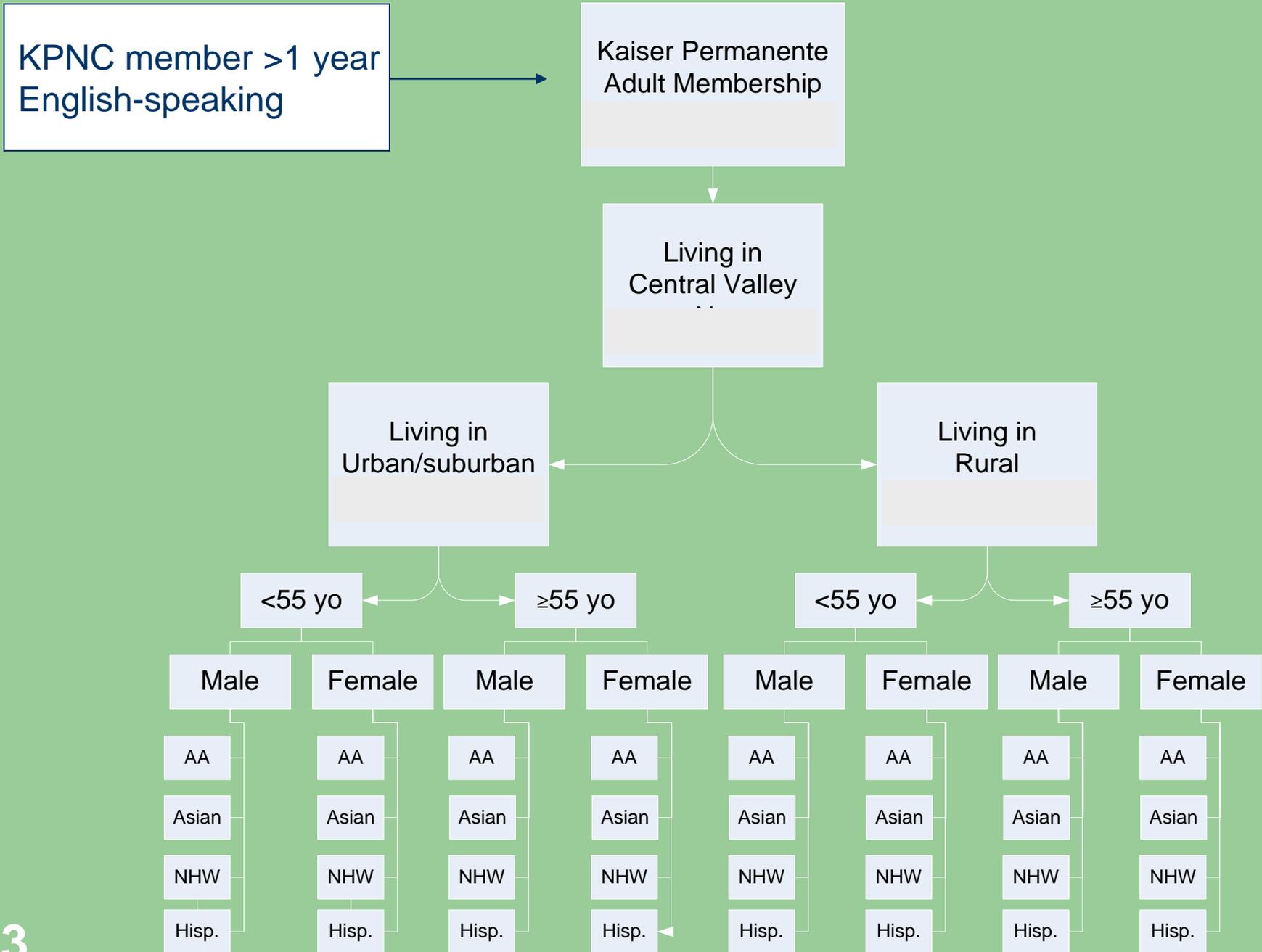
**Pesticide metabolites** (e.g., TCPy, 3-PBA)\*

**Polycyclic aromatic hydrocarbon (PAH)  
metabolites** (e.g., 3-Phen)

\*Focus of the exposure assessment questionnaire

# Sampling and Recruitment





# Sample Size

- **Enroll 100 KPNC members**
  - Based on resources
  - First 10 participants: obtain feedback on BEST process and data collection instruments (questionnaires, other forms)

# Recruitment

## **Invite KPNC members to participate**

- Mail an introductory letter, postcard, and biomonitoring brochure

## **Members who do not decline participation**

- Follow-up phone call to explain study and arrange field visit

# Field Visit

**At participant's home or a Kaiser facility**

## **Consent participants**

- Receive individual results
- Donate de-identified blood and urine samples for Biomonitoring California archive

**Collect biological samples and questionnaire**

## **Participants receive compensation**

- \$20 cash card

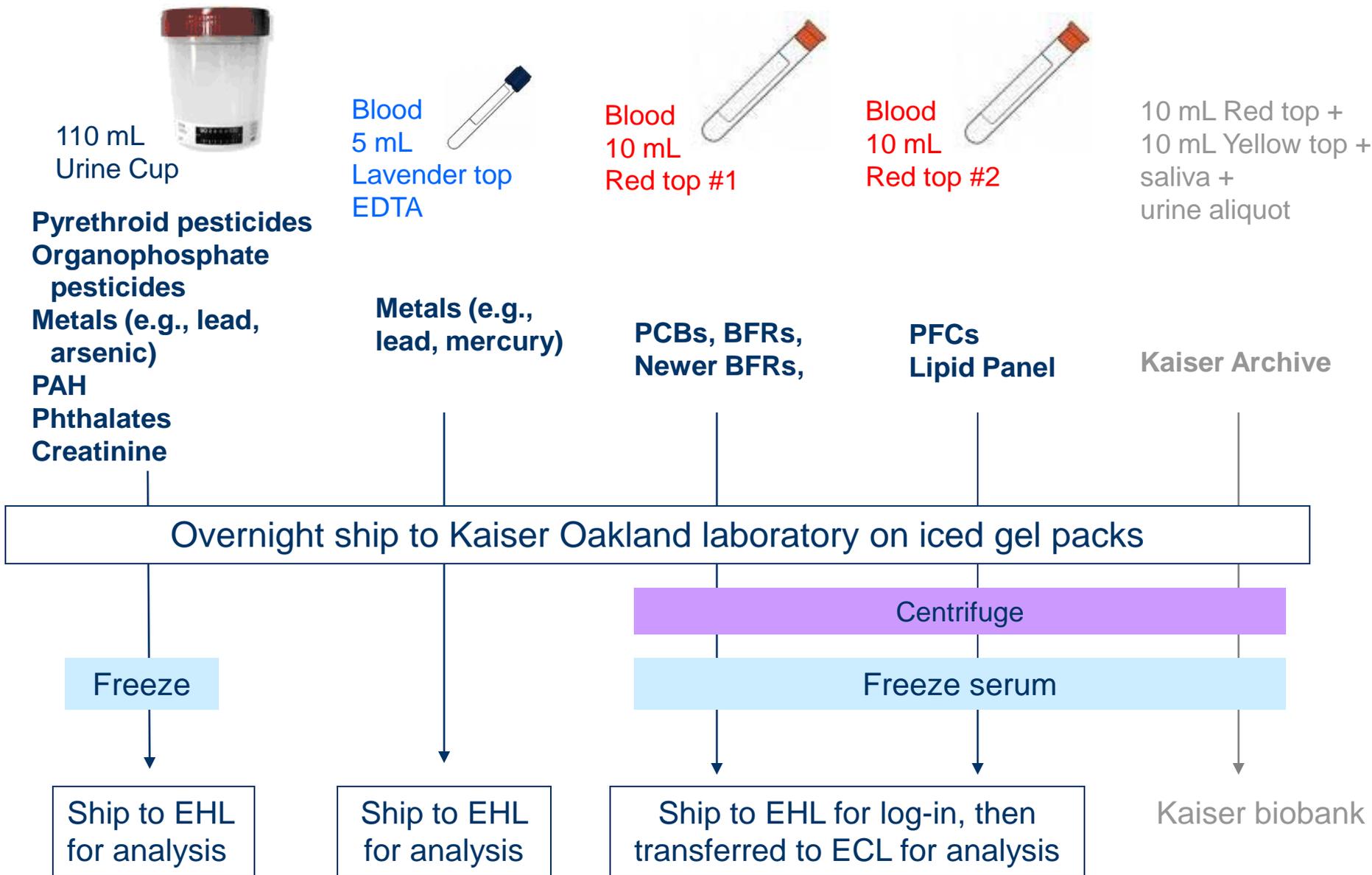
# Exposure Questionnaire

## Self-administered

### Identify potential home and work exposures

- Occupational exposures
- Diet
- Home furnishings
- Personal care products

# BEST Specimen Collection and Analysis



# Returning Results

## **Participants receive all results**

- In two phases
- Survey participants to evaluate understanding and reactions to results

## **Select elevated results returned early**

- For example: lead, mercury

**Feb–March  
2011**

**April–June  
2011**

**July–Jan  
2012**

**2012-2013**

**Planning**

**Initial  
Recruitment**

**Complete  
Recruitment**

**Results Return,  
Participant Feedback**

**CDPH and  
KPNC  
Institutional  
Review Board  
(IRB)  
submissions**

**Randomly  
select a  
sample  
KPNC  
members**

**Mail letter  
& postcard**

**Follow-up  
phone call  
& arrange  
field visit**

**Consent &  
enrollment**

**Biological  
sample &  
questionnaire  
collection**

**Obtain  
feedback**

**Mail letter  
& postcard**

**Follow-up  
phone call  
& arrange  
field visit**

**Consent &  
enrollment**

**Biological  
sample &  
questionnaire  
collection**

**Medical record  
abstraction**

**Return first and  
second set of  
results**

**Survey  
participants to  
evaluate  
understanding  
& reactions to  
results**

# Acknowledgements

Biomonitoring California staff

RPGEH staff

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**Questions?**

