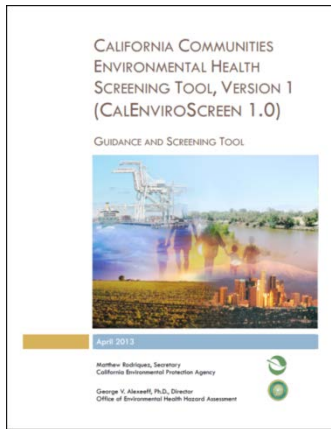


Potential Role for Biomonitoring in Assessing Pollutant Burden in Communities

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Deputy Secretary for Science and Health





- CalEnviroScreen
 - Community-level data
 - Geographically-based
 - Statewide coverage
 - Screening tool
 - EJ focus



- Biomonitoring California
 - Individual-level data
 - Not geographically-based
 - Regional project-based
 - Assessment tool
 - Public health focus

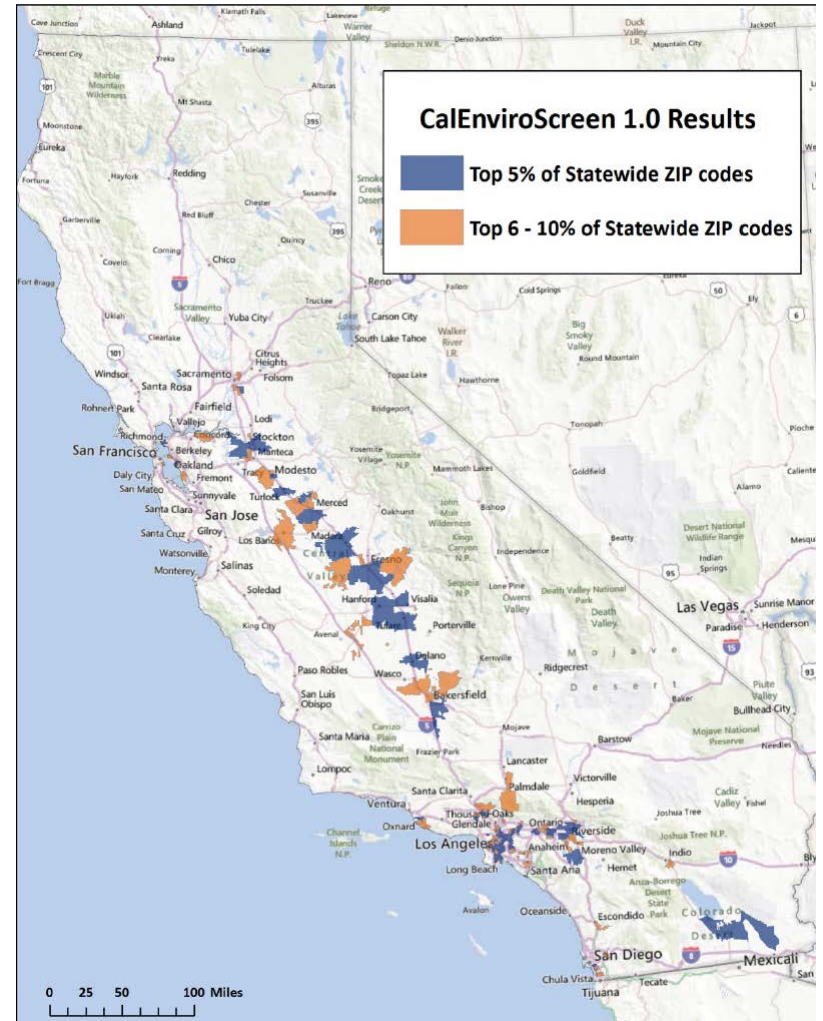
How might CalEnviroScreen inform Biomonitoring California?

- Geography
- Age & Race/ethnicity
- Indicators included in Biomonitoring California
- Are there other opportunities for biomonitoring?



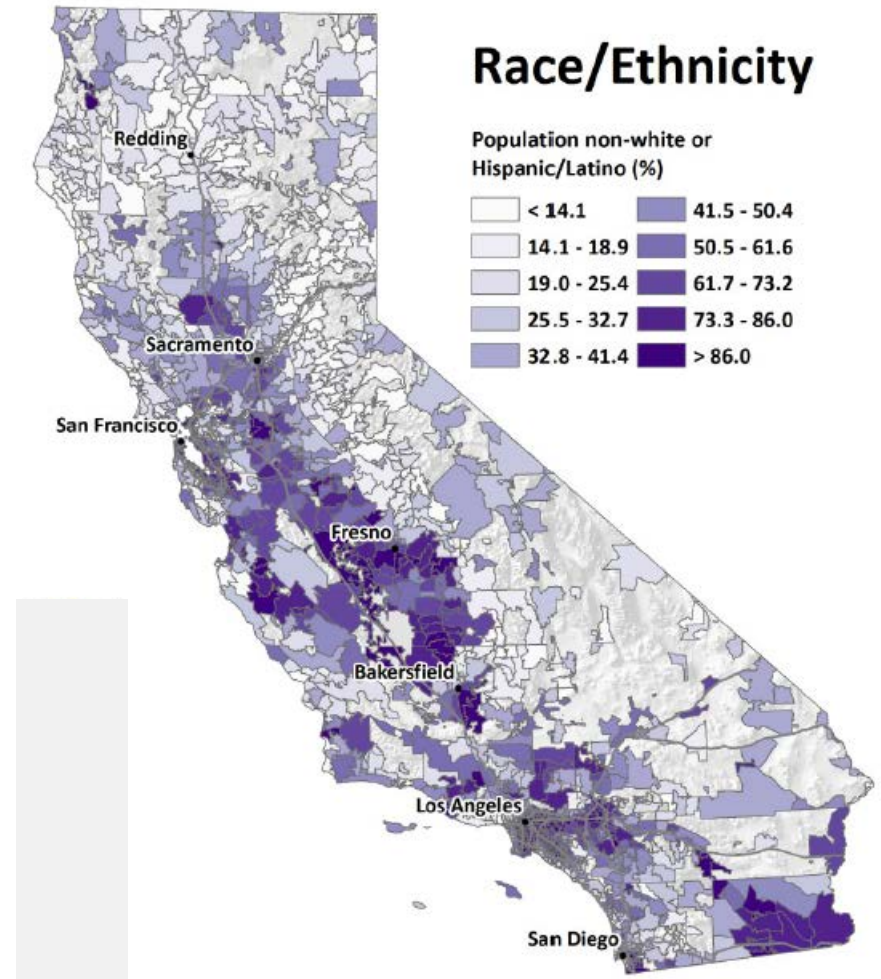
Geography

- MIEPP study includes Bayview-Hunters Point
- BEST study includes many high-scoring communities
- Could be a factor in prioritizing future studies?
- Could be interesting for correlation analysis?



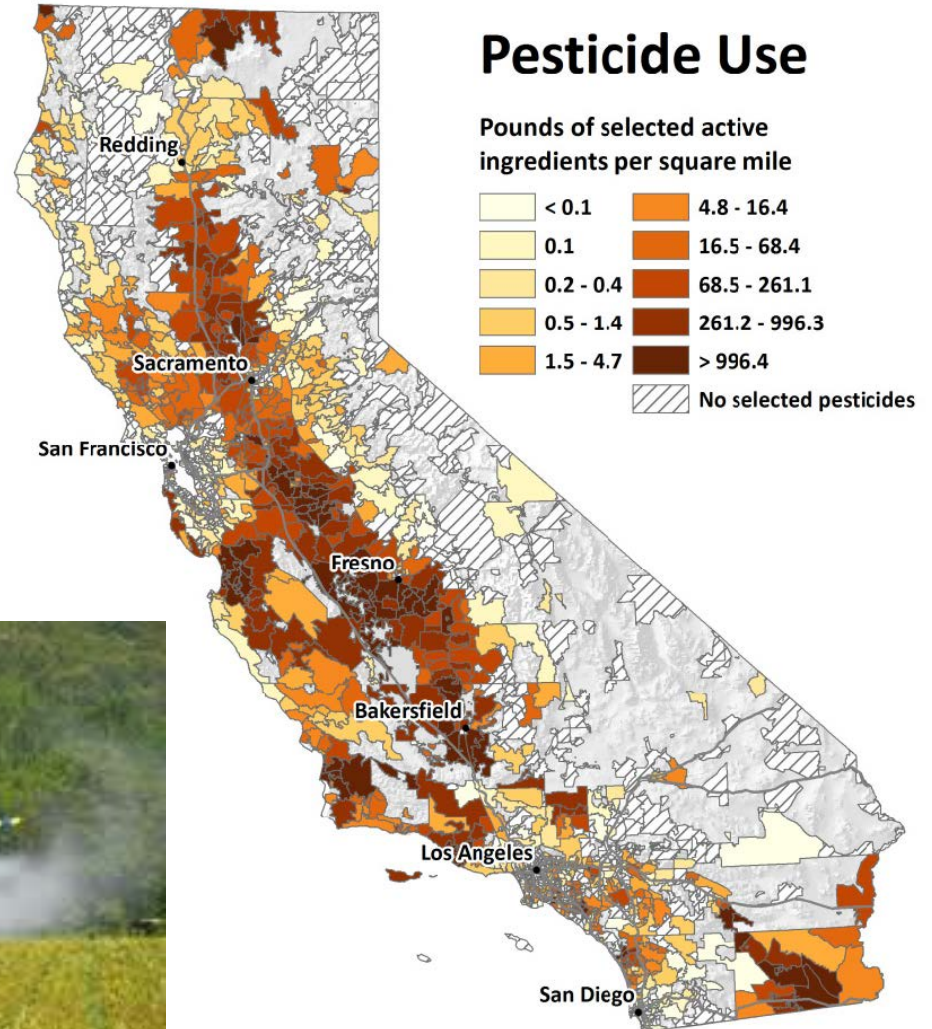
Age & Race/Ethnicity

- Biomonitoring California is looking at a wide range of ages and populations in CA & collecting this data
- Is there more we could be doing?



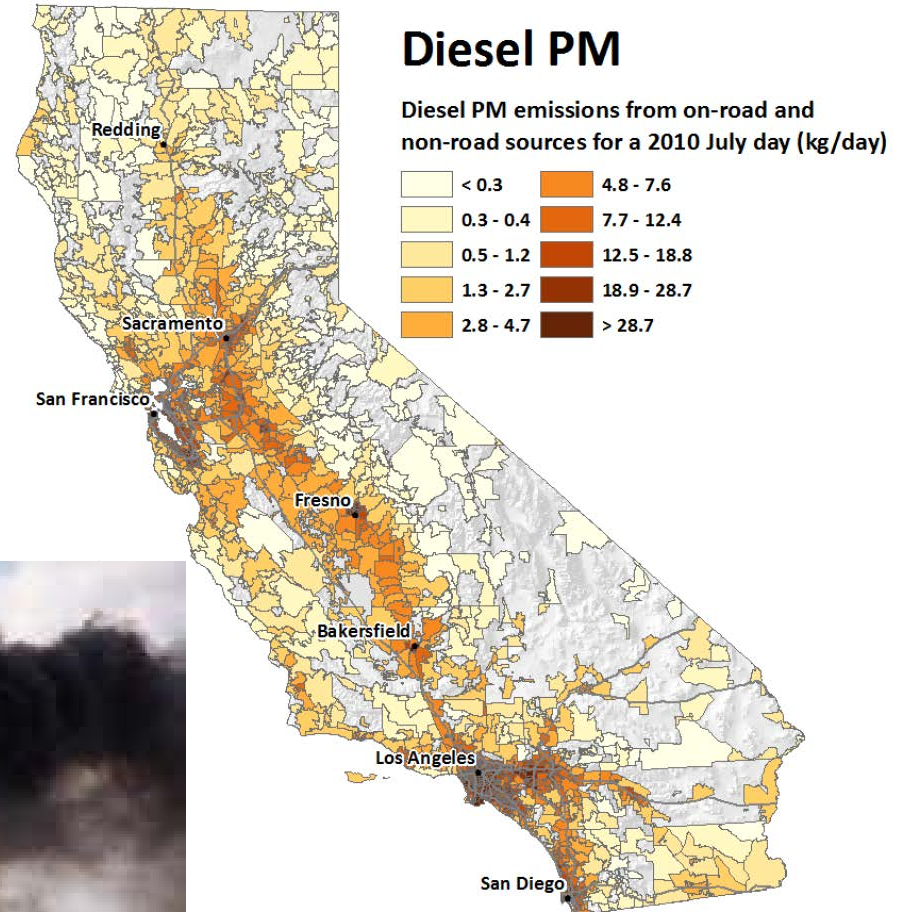
Indicators included in Biomonitoring California

- Pesticides
 - 26/66 pesticides in CES
 - ...but not the fumigants
- TRI
 - Some metals, dioxins, etc.
 - Limited overlap



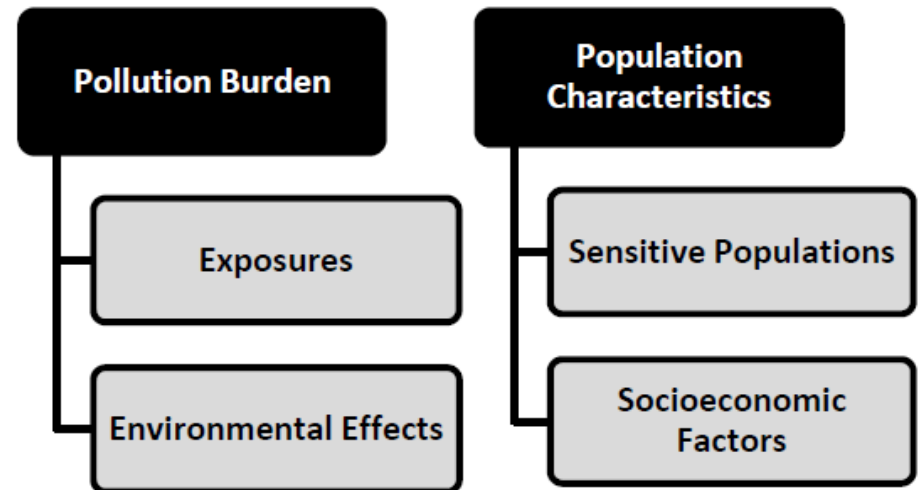
Indicators potentially included in Biomonitoring California

- Diesel exhaust
 - Priority chemical
 - Still need a biomarker
- Drinking water
 - As, Pb, Cr(VI), perchlorate, pesticides
 - CES indicator still under development



Other possible opportunities for biomonitoring?

- Population characteristics
 - Poverty
 - Educational attainment
 - Neighborhood characteristics
 - Markers of sensitivity
- Potential biomarkers of stress
 - Nutritional/Metabolic
 - Cholesterol, albumin, HbA1C....
 - Immunologic
 - IL-6, TNF- α , CRP, IGF-1...
 - Neuroendocrine
 - Cortisol, DHEA, epinephrine, norepinephrine, dopamine, aldosterone...
 - “Allostatic load”
 - Metabolomic approaches



Ways Biomonitoring California may help inform CalEnviroScreen?

- “Validation” of CES?
- Other indicators to consider?
- Personal environment?



“Validation”

Do people in the top 10% of CES communities have different chemical profiles than those in less impacted communities?



Associations between socioeconomic status and environmental toxicant concentrations in adults in the USA: NHANES 2001–2010[☆]



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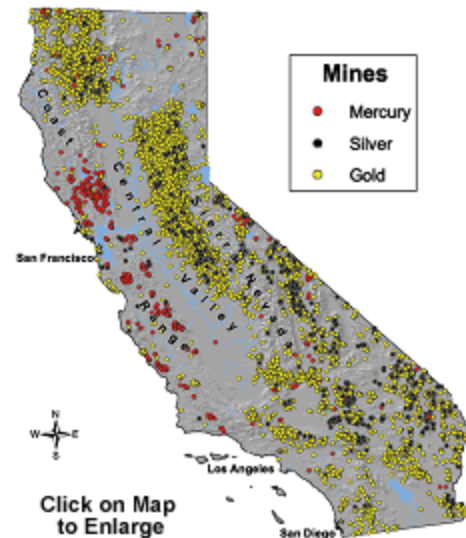
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- High SES
 - Mercury, arsenic, cesium, thallium, perfluorooctanoic acid, perfluorononanoic acid, mono(carboxyoctyl) phthalate, benzophenone-3
- Low SES
 - Lead, cadmium, antimony, bisphenol A and three phthalates (mono-benzyl, mono-isobutyl, mono-n-butyl).

Other indicators to consider?

- Design of the drinking water indicator
- Mercury
 - Local fish advisories?
 - Abandoned mines?
- Lead in housing?
- Other environmental exposures that may have geographic drivers?



Personal exposures

- People create their own microenvironments that may not vary much by geography.
 - Consumer products
 - Personal care products
 - Housing
 - Workplaces
 - Food choices



Conclusion

- Some potential areas of connection between Biomonitoring California and CalEnviroScreen, but be aware of caveats;
- Some intriguing potential – such as exploring diesel? Stress?
- Don't expect very close correlations because of community vs. individual scales.

Your thoughts?