The tool, data, applications, and ideas

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Walker Wieland, Research Scientist
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency
CalEnviroScreen 3.0
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- Spatial analysis of relative burdens in California communities from pollution and population vulnerability.
- 20 indicators combined into a single ranked score.
- Census tract scale (~8,000).
CalEnviroScreen Components

- **Exposures**: Contact with pollution
- **Environmental Effects**: Adverse environmental conditions caused by pollutants
- **Sensitive Populations**: Populations with biological traits (including health status) that may magnify the effects of pollutant exposures
- **Socioeconomic Factors**: Community characteristics that result in increased vulnerability to pollutants
CalEnviroScreen Model

- Compares pollution levels in communities
- Examines if communities are more vulnerable to pollution
- Identify communities that have high pollution and high vulnerability
## CalEnviroScreen 3.0 Indicators

### Pollution Burden

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<th>Exposures</th>
<th>Environmental Effects</th>
<th>Sensitive Populations</th>
<th>Socioeconomic Factors</th>
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<td>Hazardous Waste Generators and Facilities</td>
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CENSUS TRACTS USED TO REPRESENT COMMUNITIES

- 2010 Census Tracts used
- Represent relatively fine scale
- ~8,000 census tracts in California
- ~4,000 people per tract (range 1,200 - 8,000)
- Commonly used
**Indicator Scoring**

For each indicator, each census tract is assigned a percentile value based on where it falls in the statewide distribution.

- The percentile represents a relative score for all 19 indicators.
  - For example, a 75th percentile means that census tract is higher than 75% of other census tracts in California.
Indicator Spatial Analysis

IDW, Kriging

Buffered Density

Weighted Average
Indicator Spatial Analysis (cont.)

Multi-layer spatial merge

Weighted site proximity
Indicator Spatial Analysis (cont.)

ZIP to tract apportionment, population weighting

US Census tract data
CalEnviroScreen score is calculated by combining all indicator scores; allows for comparison of different areas.

Higher scores mean greater pollution burdens and population vulnerability.
3.0 Results

http://oehha.ca.gov/calenviroscreen
What are drinking water contaminants?

Most drinking water in California meets health standards. However, drinking water sometimes becomes contaminated with chemicals or bacteria above the standards. Both natural and human sources can contaminate drinking water. Natural sources include rocks, soil, wildlife and fires. Human sources include factories, sewage, and runoff from farms.

One common contaminant, arsenic, occurs naturally in some rocks and soil and is often found in groundwater in California. It can cause cancer. Nitrate from fertilizer or manure can leach into groundwater and contaminate wells. Nitrate can cause a blood disorder in infants called blue baby syndrome.

More information can be found in the Drinking Water chapter in the CalEnviroScreen 3.0 report.
What are pesticides?

Pesticides are chemicals used to control insects, weeds and plant diseases. Over 1,000 pesticides are registered for use in California. They are applied to fields by air, by farm machinery, or by workers on the ground.

Farmworker families and other people who live near fields can be exposed to pesticides, both outdoors and inside homes. Exposure to high levels of some pesticides can cause illness right away or conditions such as birth defects or cancer later in life.

More information can be found in the Pesticide chapter in the CalEnviroScreen 3.0 report.

https://calenviroscreen.org
What is Hazardous Waste?

Hazardous waste contains chemicals that may be harmful to health. Only certain facilities are allowed to treat, store or dispose of this type of waste. Hazardous waste can range from used automotive oil to highly toxic waste materials produced by factories and businesses. Hazardous waste is transported from businesses that generate waste to permitted facilities for recycling, treatment, storage or disposal.

Studies have found that hazardous waste facilities are often located near poor neighborhoods and communities of color. Hazardous waste facilities often are cause for concerns about effects on health and the environment in the communities where they operate.

More information can be found in the Hazardous Waste chapter in the CalEnviroScreen 3.0 report.
What is linguistic isolation?

Linguistic isolation is a term used by the U.S. Census Bureau for limited English-speaking households. More than 40 percent of Californians speak a language other than English at home. About half of those do not speak English well or at all.

Adults who are not able to speak English well often have trouble talking to the people who provide social services and medical care. Linguistically isolated households may also not hear or understand important information when there is an emergency like an accidental chemical release or spill.

More information can be found in the Linguistic Isolation chapter in the CalEnviroScreen 3.0 report.
Using CalEnviroScreen
SB 535 (de León, 2012), AB 1550 (Gomez, 2016)

“CalEPA shall identify ‘disadvantaged communities’ for investment opportunities based on geographic, socioeconomic, public health and environmental hazard criteria.”

- >25% Projects located in disadvantaged communities
- >5% Projects within ½ mile of a disadvantaged community
- >5% Projects within low-income areas
California Demographics

*From 2010 Census*
Most Burdened Areas (Top 10% CES)

Least Burdened Areas (Lowest 10% CES)
Race/ethnicity for each decile of CalEnviroScreen 3.0

Least Burdened Areas

Most Burdened Areas

State

CalEnviroScreen Decile
20% of kids in CA are non-white kids in poverty, most burdened census tracts are 42% non-white kids in poverty.
Regional Rankings

*Census tracts that score in the highest 20% of Pollution Burden but have unreliable population data and do not receive an overall CalEnviroScreen 3.0 score, are cross-hatched on the map.
What’s next for CalEnviroScreen?

- Evaluate datasets for possible inclusion
- Update existing datasets
- Evaluate changes over time
- Manuscripts and sub-analyses
- Outreach and training
Walker Wieland
Research Scientist
OEHHA
Walker.Wieland@oehha.ca.gov
327-7331