

TOXIC TIDES

Sea Level Rise, Hazardous Sites, and Environmental Justice in California

PROJECT BACKGROUND

Over three feet of sea level rise (SLR) are expected by the end of the century if little is done to slow climate change.

In California, the areas projected to experience flooding events by 2100 are home to **145,000 residents**, as well as at least **423 hazardous facilities** including power plants, refineries, industrial facilities, and hazardous waste sites. SLR poses risks for such facilities experiencing flooding events that can potentially **expose nearby residents to hazardous pollutants**.

Because many of these facilities are **disproportionately located in poor communities and communities of color**, climate resilience strategies must address the disproportionate impacts of SLR and associated flooding threats faced by environmental justice communities.

Although prior research in California has focused on the risks of SLR to property, little work has holistically examined its **environmental health and social equity implications statewide**. With an adequate understanding of the intersection of SLR, hazardous facilities, and environmental justice, **targeted action can prevent the most adverse impacts**.

KEY OUTCOMES & FINDINGS



Created by Fatemeh Maraj
from Nour Project

Disadvantaged communities¹ are **over 5 times more likely²** to live within 1km of one or more facilities at risk of flooding in 2050, and **over 6 times in 2100**.

1. Communities with [CalEnviroScreen 4.0](#) scores in the top 25th percentile as designated by the CalEPA

2. Compared to the general population

PROJECT GOALS



Characterize the threats posed by sea level rise and the flooding of hazardous sites to socially disadvantaged populations

Create an online mapping tool that visually depicts toxic facilities at risk of flooding due to SLR and associated socioeconomic conditions



Share findings with advocates and decision-makers in order to protect vulnerable communities through current and emerging climate resilience policies

The Toxic Tides [website](#) includes a series of maps showing hazardous facilities projected to be at risk of flooding in the years 2050 and 2100, as well as demographic information of the communities nearby.

[Case studies](#) of environmental justice communities are also highlighted.

Our analysis also found that:



Out of a total of 10,390 hazardous facilities in low lying coastal areas, at least **423 are projected to be at risk of one or more flood events per year by 2100.**¹



The majority of at-risk facilities are in 5 counties: **Orange, Alameda, San Mateo, Los Angeles, and Contra Costa.**

POLICY APPLICATIONS

This project seeks to promote resiliency of vulnerable communities that may be impacted by SLR through:

- Supporting **equitable implementation** of state agency climate resilience and adaptation programs already underway and coming down the pipeline;
- Shaping **local and regional coastal planning** efforts to address risks posed by SLR;
- Informing the state's approach to **defining "vulnerable communities"**, to guide emerging climate resilience legislation or executive orders;
- Advancing **community advocacy efforts** by depicting priority SLR risks and providing information about potential solutions and programs to address relevant risk.

COLLABORATIVE PARTNERSHIP MODEL

Toxic Tides is a collaborative effort among **community-based organizations** and **academic researchers**.

Community advocates participated in an advisory committee to provide **iterative guidance and feedback to researchers**, including overall study design, development of measures and indicators, data analysis, usability of the online mapping tool, and dissemination strategy.

Community-Based Partners:

- [Asian Pacific Environmental Network](#)
- [Central Coast Alliance for a Sustainable Economy](#)
- [Physicians for Social Responsibility - Los Angeles](#)
- [Public Health Institute](#)
- [WE ACT for Environmental Justice](#)

Research Team:

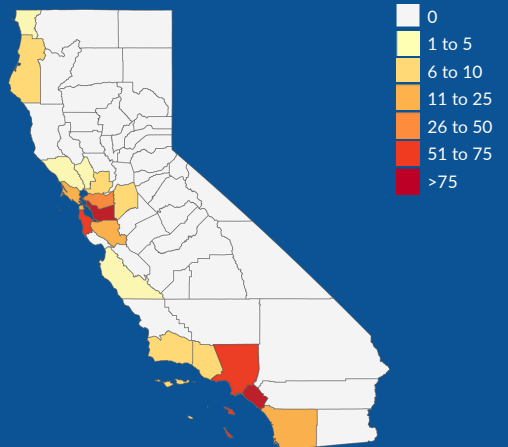
- [UC Berkeley Sustainability and Health Equity Lab](#)
- [UC Los Angeles, Fielding School of Public Health](#)
- [Climate Central](#)

To learn more and explore the interactive maps and case studies, visit sites.google.com/berkeley.edu/toxictides

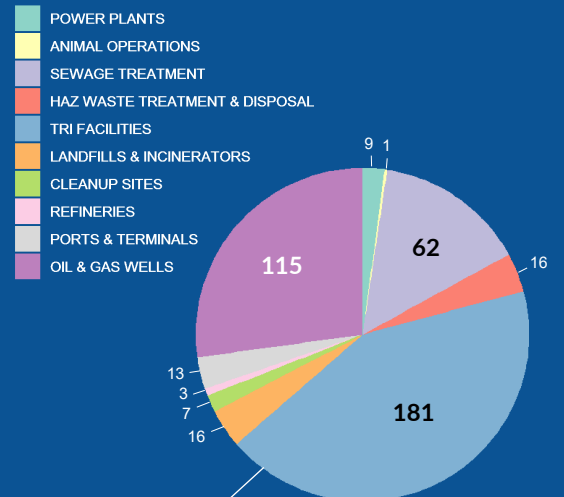
1. Under a high greenhouse gas emissions scenario (RCP 8.5)

PROJECTED NUMBER OF FACILITIES AT RISK OF FLOODING DUE TO SLR IN 2100 UNDER HIGH EMISSIONS SCENARIO (RCP 8.5)

By County:



By Facility Type:



TRI facilities are typically involved in manufacturing, metal mining, electric power generation, chemical manufacturing and hazardous waste treatment. They report emissions to US EPA, and make, process or use large quantities of toxic substances.

Iterative Feedback Process:

