

ASSESSING COMMUNITY VULNERABILITY TO POLLUTANT RELEASES DUE TO EXTREME EVENTS

Problem

Communities continue to be hit, often unexpectedly, by the effects of prolonged droughts, excessive heat, floods, and wildfires. In places where contaminated sites and hazardous waste facilities are present, communities are vulnerable to potential exposure to pollutant releases following extreme events.

The City of Phoenix needed to assess the current and future effects of rising temperatures and drier conditions on their communities and nearby contaminated sites.

Action

The City of Phoenix, in partnership with EPA and RTI International, assessed which areas of the city might be vulnerable to pollutant releases due to extreme events. Mapping sites and facilities, extreme weather conditions, and community characteristics support local decisions and planning for adaptation, mitigation, and response. This factsheet outlines the steps taken for the assessment, which can be customized for specific needs and interests.

Steps

1. Identify the target community stakeholders for scoping project (Box 1).
2. Determine the area, extreme events, and vulnerabilities (e.g., physical, environmental, social) to be assessed (Box 2).
3. Work with local practitioners and community members to identify indicators (e.g., climate, environmental, social) to map and explore.
4. Select and validate appropriate datasets.

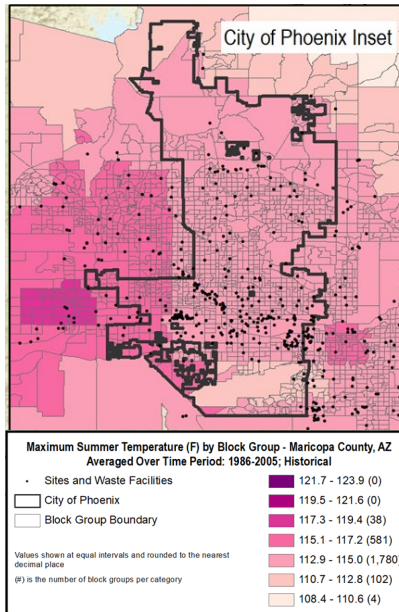


Figure 1. Extreme Heat: Maximum Summer Temperature (Source: www.phoenix.gov/oep/cap)

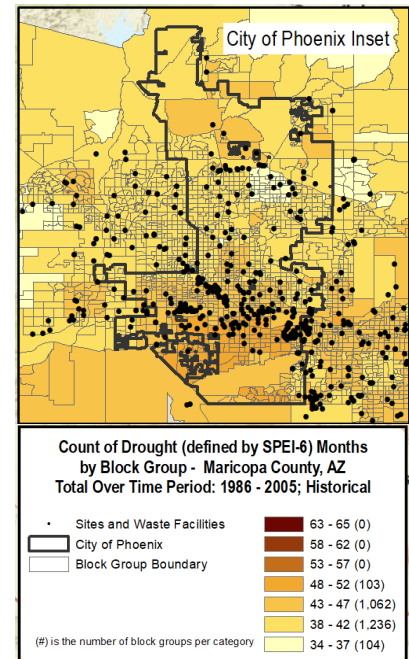


Figure 2. Drought: Count of Drought Months (Source: www.phoenix.gov/oep/cap)

5. Analyze data and create maps for selected indicators based on input from Step 3 (Fig. 1, 2).
6. Re-evaluate indicators with community members. Did we pick the right indicators? Do they need to be adjusted? Revise maps as needed.
7. Communicate results.

Box 1. Coordination with Local Stakeholders Throughout the Process Is Crucial

- Determine scope and area to study
- Collaborate with stakeholders to identify key areas of vulnerability and indicators
- Review methods and data needs with the community so the selected indicators are community relevant
- Seek feedback on terminology and visuals for clearly communicating key results to the community

Box 2. Potential Sources of Pollutant Releases

- Hazardous waste operations
- Contaminated sites: Resource Conservation and Recovery Act (RCRA) Corrective Action sites; Brownfields; Superfund sites; Removal/emergency response sites
- Other sites and waste facilities

Benefits

The results have benefitted the City of Phoenix by:

1. Providing a greater understanding of the type and magnitude of potentially hazardous sites in the local area.
2. Mapping sites that could be used for emergency preparedness and response.
3. Providing scenarios and maps of extreme heat, drought, wildfire, and flooding.

4. Providing characteristics of the population, particularly those most vulnerable.

Results

The community vulnerability indicators and hazards maps developed by the EPA Office of Research and Development and RTI International for the City of Phoenix, and in collaboration with EPA Region 9, Maricopa County, and Arizona Department of Environmental Quality have been used to communicate, plan, and take action to address community vulnerabilities in the Phoenix Climate Action Plan (www.phoenix.gov/oep/cap).

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