

Environmental Justice Environmental Professionals of Arizona

May 12, 2022

Brian Burdorf, Director
Xandrian McMacken, Associate Consultant



Environmental Professionals
of Arizona



trinityconsultants.com



Brian Burdorf

- ▶ Director based in Trinity's Dallas office
- ▶ 30+ years Air Permitting, Compliance, Facility Siting
- ▶ Environmental Justice Practice Lead
- ▶ BS Mech Engineering, Texas A&M University
- ▶ MBA, Kellogg School of Mgt (Northwestern University)
- ▶ bburdorf@trinityconsultants.com



Xandrian McMacken

- ▶ Associate Consultant in Trinity's Central West Region
- ▶ EJ & BCS Initiative Lead in Phoenix Office
- ▶ BS Environmental Engineering, Arizona State
- ▶ xandrian.mcmacken@trinityconsultants.com

Trinity Consultants International Presence

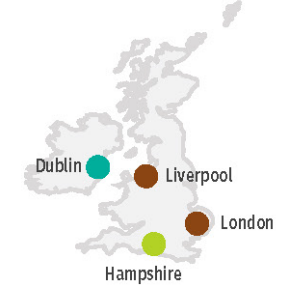
North America



- EHS Consulting
- SafeBridge Regulatory & Life Sciences Group
- Minnow Aquatic Environmental Services
- Ecological Assessment Services
- Advent Engineering Life Science Solutions
- Provenance Process Safety Management Services
- Vision Environmental
- WorkingBuildings
- AWN Consulting
- Sespe Consulting

Europe

England, UK / Dublin, IE



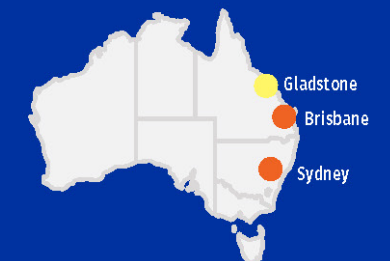
Asia

China / Singapore



Australia

Queensland / New South Wales





Topics

1. How can EJ impact me?
2. EJ Basics
3. EJ Identification & Assessment
4. State EJ Implementation
5. EJ Recommendations & Takeaways

How can EJ impact me?

How can EJ impact me?

(Regulated Community)

- ▶ **CapEx Projects (potential delays, add'l cost, design changes):**
 - ◆ Public participation
 - ▶ Public notice, comment, meetings, hearings
 - ◆ Impact assessment
 - ▶ Dispersion modeling, cumulative impact / health risk assessment, traffic...
 - ◆ Emission controls, operating procedures
 - ◆ Monitoring
 - ◆ Applicability for permitting, controls, offsets
 - ▶ e.g., Houston ozone redesignation
- ▶ **Agency visits & inspections**
- ▶ **Emission events**
 - ◆ Enforcement, fines, agency negotiation
- ▶ **Litigation**
- ▶ **M&A**
- ▶ Shareholder **ESG** considerations

Examples of EJ impacting projects

- ▶ Pause all operations
 - ◆ **Limetree Bay Refinery** - due to excess emission events (EPA emergency power)
- ▶ Permit denial
 - ◆ **Metals recycling plant** (RMG) in Chicago:
 - ▶ EPA influence on local agency (health impact assessment / EJ analysis)
 - ◆ **Mountain Valley Pipeline** Compressor Station - Virginia DEQ
- ▶ Air permit vacated
 - **Atlantic Coast Pipeline** - US Court of Appeals (1/2020)
- ▶ Permit review revisit
 - **Kinder Morgan** terminal - Civil Rights Act
- ▶ Title V permit delay
 - **Oxbow Calcining** - Title VI Civil Rights Act - EPA External Civil Rights Compliance Office (ECRCO)
 - Miami-Dade County **Municipal Waste Combustor** (Covanta Incinerator) – EarthJustice challenge
- ▶ NEPA delay (potentially 1+ yr)
 - **Formosa Plastics St. James** - US Corps required full EIS with EJ implications
- ▶ FERC delay
 - **Texas & Rio Grande LNG Terminal** - D.C. Circuit requirement for EJ & Climate Analyses

How can EJ impact me?

(Agency Professionals & Elected Officials)

► Legislation, Rule Development, & Policies

► Agency Procedures

- ◆ Tools & methodologies for identifying EJ communities
- ◆ Public participation, community engagement
- ◆ Impact assessment
- ◆ Monitoring
- ◆ Inspections & enforcement

► Funding & Direction of Resources

► Litigation

- ◆ Title VI Civil Rights Act compliants and suits

How can EJ impact me?

(Public)

- ▶ Publicly available Resources, Tools, Insight
- ▶ Voice / Seat at the Table
- ▶ Funding
- ▶ Avenue for Litigation
- ▶ EJ Education

EJ Basics

What is Environmental Justice?

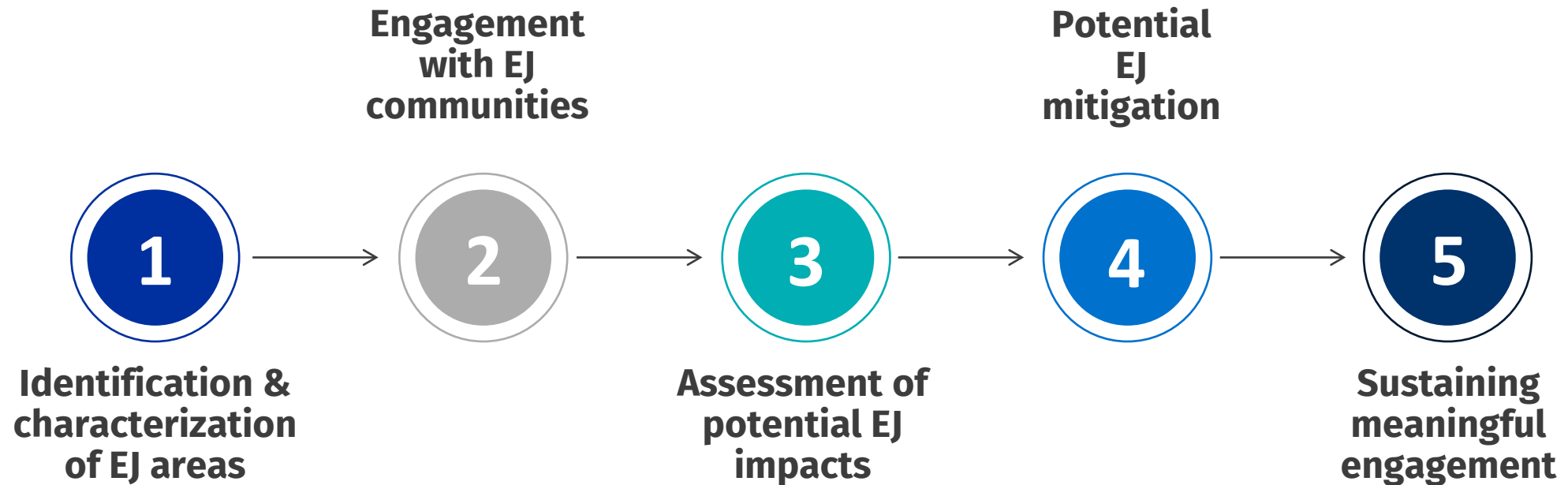
Goal:

Environmental Justice - Assure new laws, rules, policies, public investments, and industrial, commercial, and municipal operations **do not cause disparate adverse environmental, health, or safety impact on disadvantaged, vulnerable communities**

- **minority, low-income**, indigenous, linguistically isolated, limited education, young, elderly
- overburdened, distressed communities
- climate exposed
- limited access to open spaces, water resources, playgrounds, outdoor recreational facilities

Two key components of EJ initiatives: fair treatment and meaningful involvement of EJ communities.

Common Steps for Addressing EJ



These steps can be required for agency rulemaking, site M&A, permitting, compliance resolution, litigation response. For industrial sources, **Step 1 is most critical** (dictates applicability and potential level of detail required for the other steps)

Range of EJ Screening Tools & Metrics

Variables & Metrics

- Demographic, Vulnerability Indicators
- Environmental Indicators
- EJ Indexes, EJ Scores

EJ Indexes and Common Data Presentation

- EJ Mapping
- Tabular Summaries
- % Comparisons
- EJ Reports

Analysis Tools / Data

- EJScreen
- Climate & Economic Justice Screening Tool (CEJST)
- CalEnviroScreen
- TRI Search Plus
- Risk Screening Environmental Indicators (RSEI)
 - EasyRSEI Dashboard
- AirToxScreen
- National Air Toxics Assessment (NATA)
- National Emissions Inventory (NEI)

Analysis Tools / Data (cont.)

- Enforcement and Compliance History Online (ECHO)
 - ECHO Notify
 - Census / American Community Survey (ACS) Data
 - EPA Power Plants & Neighboring Communities Mapping Tool
 - RAND Environmental Racism Tool
 - EnviroFacts
 - ArcGIS
 - Talkwalker (social analytics, media monitoring)
 - Ambient Monitoring, Next Gen monitoring, FLIR cameras
 - OLD MACT, Gasoline Distribution regs
 - Cumulative / Health Risk Assessments
 - Dispersion Models
 - EPA Cumulative Risk Guide
 - EPA Human Health Risk Assessment Protocol (HHRAP)
 - EPA Hazardous Air Pollutant Exposure Model (HAPEM)
 - EPA 2003 Framework for Cumulative Risk Assessment (CRA)
 - California Hot Spots Analysis & Reporting Program (HARP)
 - BREEZE Risk Analyst
-

Step 1 - EJ Characterization / EJ Identification Basics

**Community /
Neighborhood
Characteristics**

(Socioeconomic,
Vulnerability
Indicators,
Population)

+

**Environmental
Exposure /
Pollution
Burden**



**EJ Indices
or
EJ Scores**

Intended use of EJ Indices – identify vulnerable communities most affected by pollution.
Typically compared to reference community (e.g., state or national average) or a standard.

Example EJ Variables and Metrics

EJ Indexes or Scores = f (neighborhood characteristics & environmental exposure)

Community / Neighborhood Characteristics

- ▶ People of color
- ▶ Low income
- ▶ Linguistically isolated
- ▶ Level of high school education
- ▶ < 5 yrs old
- ▶ > 64 yrs
- ▶ Climate exposed
- ▶ Asthma, cardiovascular disease, low birth weight
- ▶ Food insecurity
- ▶ Unemployment rate
- ▶ Energy shut-offs, energy efficiency program access, % income paying for energy

Environmental Exposure / Pollution Burden

- PM_{2.5}
- Ozone
- Diesel PM
- Cancer Risk
- Respiratory Hazard
- Traffic Proximity and Volume
- Proximities:
 - Superfund
 - RMP
 - Hazardous Waste
- ▶ Lead Paint Indicator
- ▶ Wastewater Discharge
- ▶ Pesticide Use
- ▶ Groundwater Threats
- ▶ Data on chrome metal plating
- ▶ Noise, Dust, Odor
- ▶ Subsidence
- ▶ Vibration

EJ Identification & Assessment

EJScreen Example

EJScreen Analyses

- ▶ EJScreen DOES NOT predict impacts from a single facility
 - ◆ It estimates impacts from multiple facilities in a community through ambient monitoring, modeling, and publicly available reports
- ▶ Data used by the screening tools are dated
- ▶ For **demographic** or **vulnerability** indicators:
 - higher the value = higher % representation
 - demographic indicator >50 results in ↑ EJ Indexes
- ▶ For **Environmental Indicators** and **EJ Indexes**:
 - lower the value = better
 - e.g., US Env Indicator $PM_{2.5}$ of 80 means only 20% of US population is exposed to higher values of $PM_{2.5}$



EJScreen Mapping Examples



[CONTACT US](#)

EJSCREEN: Environmental Justice Screening and Mapping Tool



In order to better meet the Agency's responsibilities related to the protection of public health and the environment, EPA has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and an approach that combines environmental and demographic indicators in maps and reports.

What is EJSCREEN?



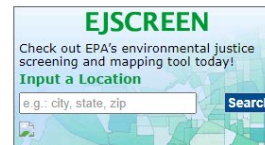
- [What is EJSCREEN?](#)
 - [How was It Developed?](#)
 - [How Does EPA Use It?](#)
 - [Purposes and Uses](#)

Learn to Use EJSCREEN



- [Learn to Use EJSCREEN](#)
- [EJSCREEN Office Hours](#)

Launch the Tool



- [Launch the EJSCREEN Tool](#)

Understanding Results



Technical Information



Additional Resources



**Review of communities
surrounding the PERA Club**

EJ Analysis & Data Presentation

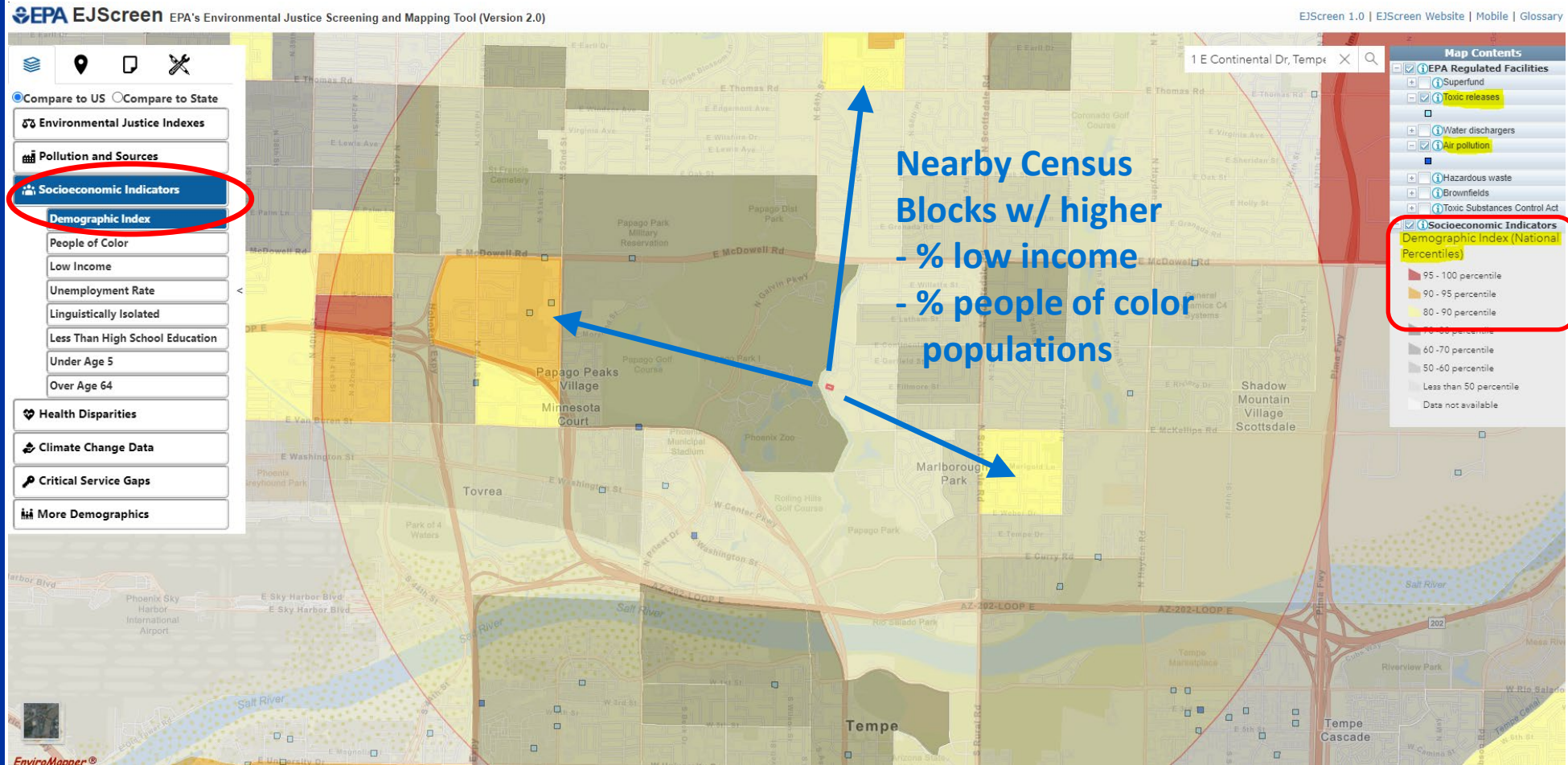
EJSscreen intro – Drawing an area around a Location & adding 3-mile Buffer

EPA EJSscreen EPA's Environmental Justice Screening and Mapping Tool (Version 2.0) EJSscreen 1.0 | EJSscreen Website | Mobile | Glossary

The screenshot displays the EPA EJSscreen tool interface. On the left, a sidebar contains several buttons: 'Drop a Pin', 'Draw an Area' (highlighted with a red circle), 'Add a Path', 'BG Select Block Group', 'TR Select Tract', 'Select City', 'Select County', and 'Select Multiple'. The main map area shows a map of the Phoenix region with a red 3-mile buffer circle centered on a location near Papago Peaks Village. A 'Chart or Report' dialog box is open, showing a 'Name' field, a 'Buffer' dropdown set to '3 mi', and an 'Add to Map' button (highlighted with a red circle). Below these are links for 'Explore Reports...', 'Get Printable Standard Report...', 'Get 2015-2019 ACS report...', 'Get 2010 Census report...', 'Get CDC report...', and 'Delete this site'. The map also shows various landmarks like the Salt River, Phoenix Zoo, and Papago Park.

EJScreen Mapping – Neighborhood Demographic Index

$$\text{Demographic index} = (\% \text{ minority} + \% \text{ low-income}) / 2$$

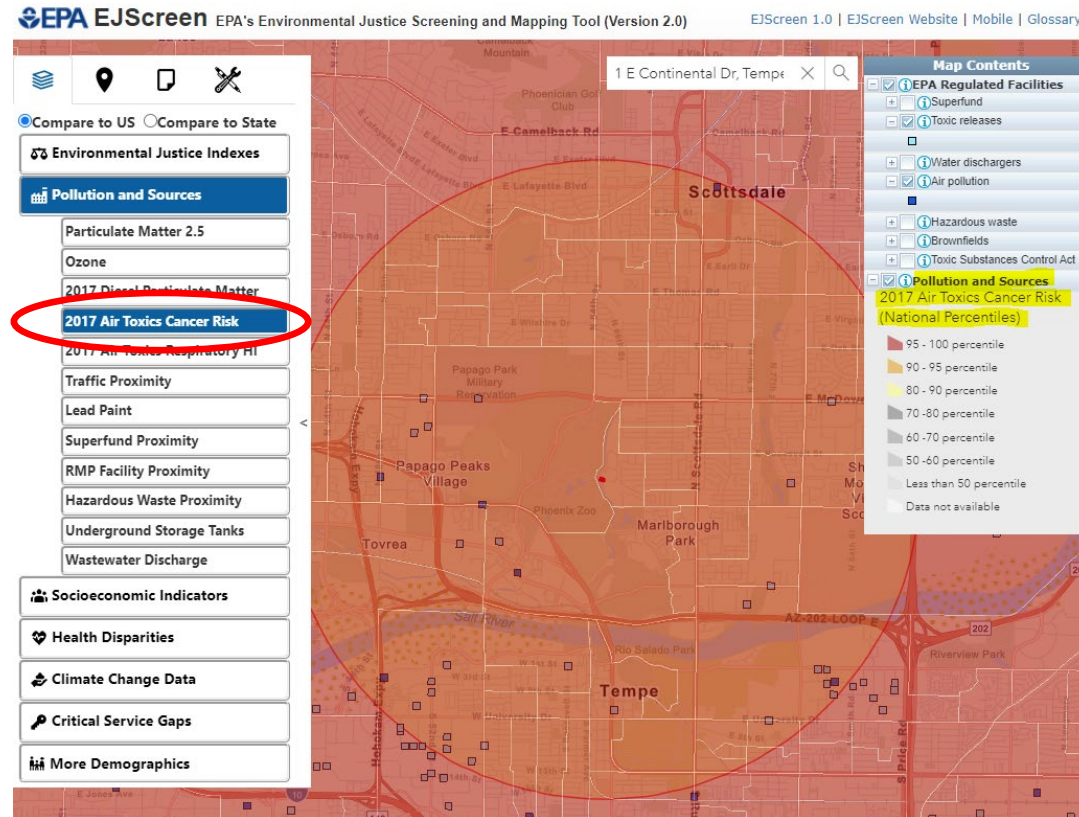


Red census blocks w/in 2 to 3 miles of the site have equal to or higher % low-income populations compared to where 80% of the US population lives.

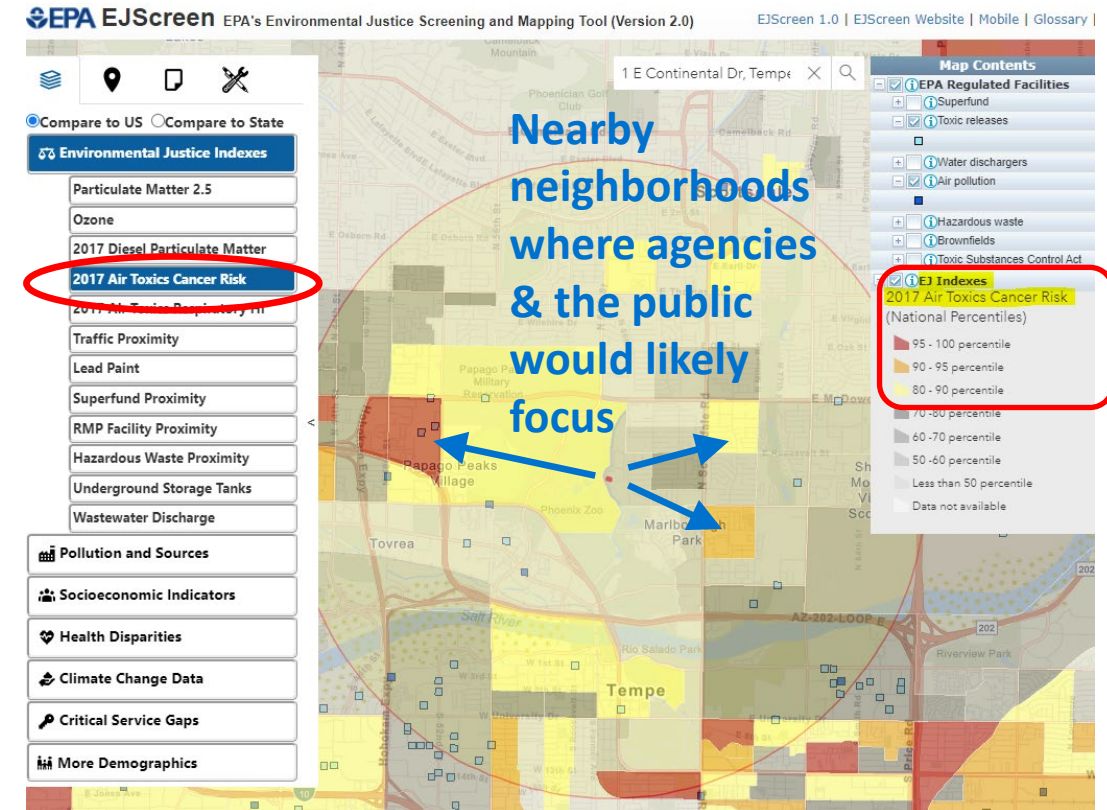
EJScreen – Disparate Impact (Cancer Risk)

EJScreen intro – Comparing “Environmental Indicators” with “EJ Index” results

Pollution & Sources – Cancer Risk



EJ Index – Cancer Risk

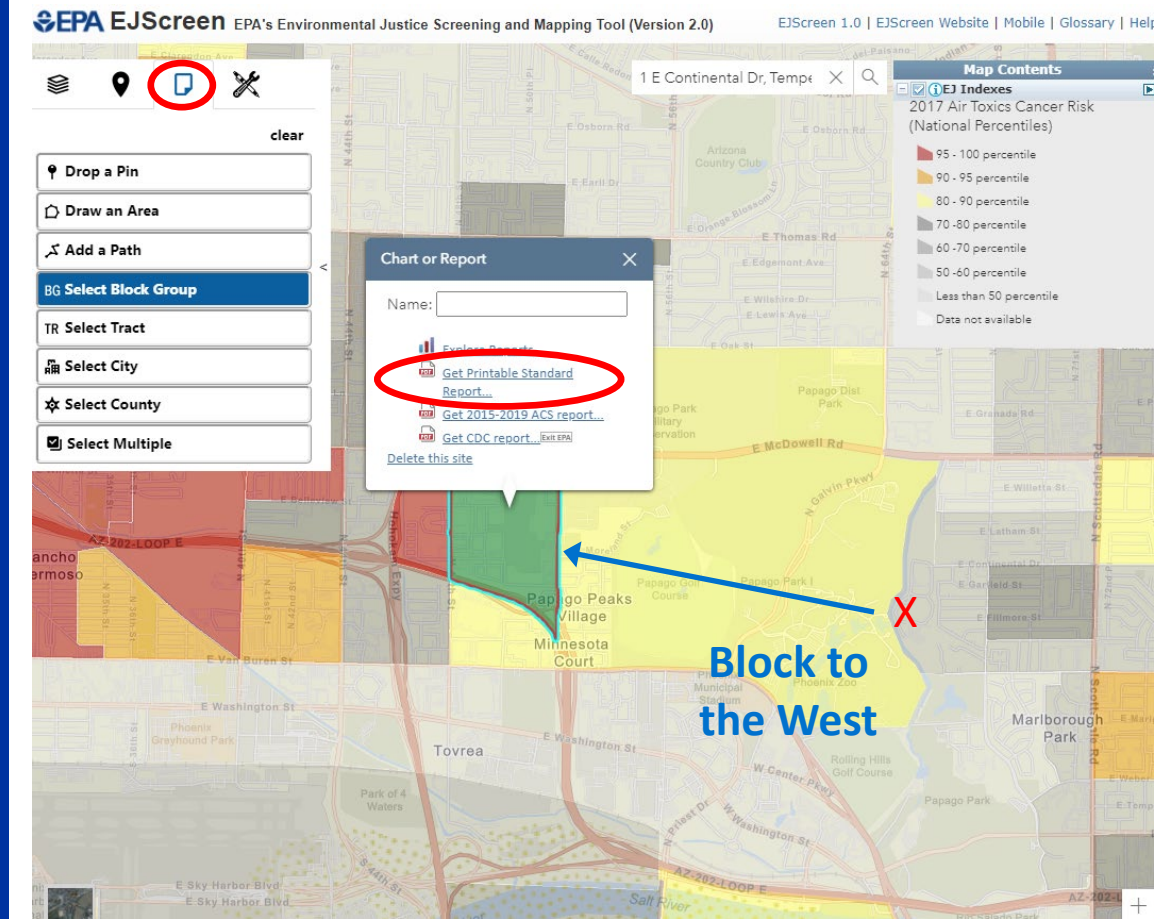


EJScreen is intended to **focus agency attention** on neighborhoods with EJ Indexes of 80% and above.

- Why do certain areas with high cancer risk for **Pollution & Sources** (left side) NOT show up with high **EJ Indexes** (right side) and vice-versa?

EJ Screen Report Summaries

EJSCREEN report summary for census block WEST of the Club



EJScreen Report (Version 2.0)

Blockgroup: 040131112021

ARIZONA, EPA Region 9

Approximate Population: 2,418

Input Area (sq. miles): 0.35

Selected Variables	Value	State		EPA Region		USA	
		Avg.	%tile	Avg.	%tile	Avg.	%tile
Socioeconomic Indicators							
Demographic Index	71%	40%	87	46%	86	36%	90
People of Color	74%	45%	80	60%	62	40%	79
Low Income	68%	35%	91	31%	94	31%	93
Unemployment Rate	5%	6%	48	6%	45	5%	54
Linguistically Isolated	9%	4%	84	8%	66	5%	82
Less Than High School Education	30%	13%	87	16%	81	12%	91
Under Age 5	8%	6%	66	6%	68	6%	70
Over Age 64	4%	17%	7	15%	6	16%	5

Census block to the WEST of the club has a higher **Demographic Index** (71%) compared to state, region, and USA averages (40%, 46%, 36%) resulting in a high Demographic Index %ile in USA (90%ile)

EJ Screen Report Summaries

*EJSCREEN report summary for **census block WEST of the Club***

EJScreen Report (Version 2.0)

Blockgroup: 040131112021

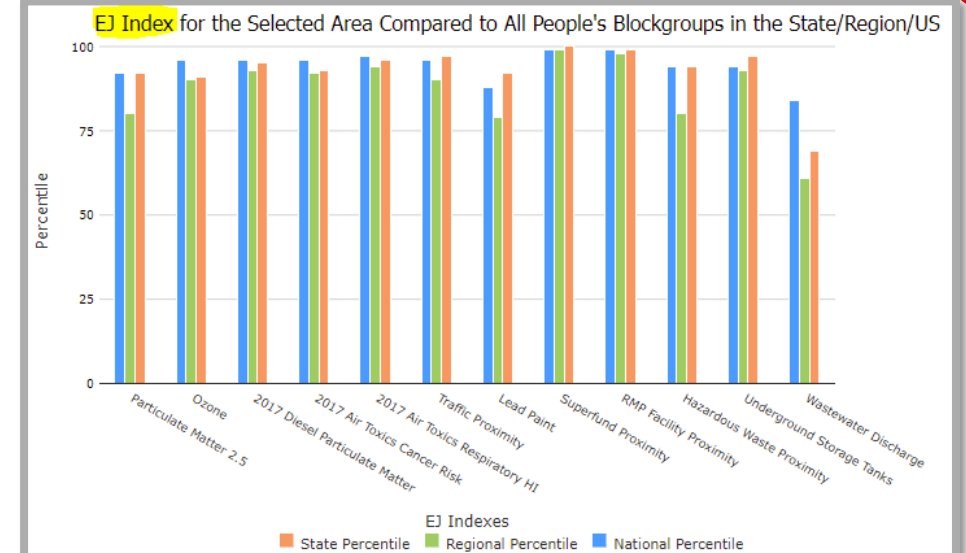
ARIZONA, EPA Region 9

Approximate Population: 2,418

Input Area (sq. miles): 0.35

Selected Variables	Value	State		EPA Region		USA	
		Avg.	%tile	Avg.	%tile	Avg.	%tile
Pollution and Sources							
Particulate Matter 2.5 (µg/m³)	8.46	7.35	74	10.8	22	8.74	45
Ozone (ppb)	55.9	54.3	70	49.6	70	42.6	93
2017 Diesel Particulate Matter* (µg/m³)	0.576	0.327	92	0.33	90-95th	0.295	90-95th
2017 Air Toxics Cancer Risk* (lifetime risk per million)	.40	32	96	30	95-100th	.29	95-100th
2017 Air Toxics Respiratory HI*	0.6	0.37	99	0.41	95-100th	0.36	95-100th
Traffic Proximity (daily traffic count/distance to road)	1400	550	92	1300	78	710	88
Lead Paint (% Pre-1960 Housing)	0.18	0.084	84	0.23	56	0.28	51
Superfund Proximity (site count/km distance)	2.3	0.08	99	0.15	99	0.13	99
RMP Facility Proximity (facility count/km distance)	6.7	0.65	99	1	98	0.75	99
Hazardous Waste Proximity (facility count/km distance)	3.3	1.5	88	4.4	54	2.2	81
Underground Storage Tanks (count/km²)	6.3	1.7	94	3.3	83	3.9	82
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0022	6.1	28	59	36	12	56

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
Environmental Justice Indexes			
EJ Index for Particulate Matter 2.5	92	80	92
EJ Index for Ozone	91	90	96
EJ Index for 2017 Diesel Particulate Matter*	95	93	96
EJ Index for 2017 Air Toxics Cancer Risk*	93	92	96
EJ Index for 2017 Air Toxics Respiratory HI*	96	94	97
EJ Index for Traffic Proximity	97	90	96
EJ Index for Lead Paint	92	79	88
EJ Index for Superfund Proximity	100	99	99
EJ Index for RMP Facility Proximity	99	98	99
EJ Index for Hazardous Waste Proximity	94	80	94
EJ Index for Underground Storage Tanks	97	93	94
EJ Index for Wastewater Discharge	69	61	84



Due to the high Demographic Index, the **EJ Indexes** are higher than their respective **Pollution and Sources** %ile's for this census block

Interpreting the EJScreen Data

- ▶ Independent of the PERA Club's environmental releases:
 - ◆ EJScreen identifies in the surrounding community elevated :
 - Pollution & Sources / Environmental Indicators
 - EJ Indexes
- ▶ EJ Community Proximity?
 - ◆ **Potentially** – due to low income and people of color
- ▶ Elevated Demographic Indicators amplify Pollution & Sources / Environmental Indicators resulting in heightened Environmental Indexes
- ▶ EJScreen does not identify source contribution to elevated Environmental Indicators or Indexes
- ▶ State and Federal definitions, thresholds, distances, references are critical for:
 - ◆ Identification of nearby “EJ Communities” or vulnerable populations
 - ◆ Environmental, health, safety indicators of interest

State EJ Implementation

Environmental Justice at the State Level

- ▶ The current EJ focus in Arizona includes:
 - ◆ Increasing community involvement
 - ◆ Developing technology tools
 - ◆ Developing legislation



Agency Involvement

Arizona agencies have existing policy/procedures and are at various stages of implementing EJ:

- ▶ ADEQ:
 - Increasing public EJ knowledge through its [MyCommunity website page](#).
- ▶ Maricopa County:
 - Currently [investigates air pollution-related complaints](#) by county residents.
 - Has enforcement components.



Agency Involvement

- ▶ Pima County:
 - Runs **extended EJSCREEN** for new sources and major modification sources; **3-mile radius with 90-day contact time**.
 - Currently using **mostly zoning laws** to enforce source emissions.
- ▶ Pinal County:
 - No current implementation
- ▶ Native Communities
 - All other native communities fall under federal jurisdiction of **EPA Region 9**.

EJ Recommendations & Takeaways

EJ Recommendations (1 of 2)

1. Characterize your EJ Risk (existing operations and for M&A):

- ◆ **Map and tabulate demographic indexes** (potentially vulnerable communities) surrounding your facility based on local, state, regional, and national designations
- ◆ **Identify how your facility is publicly represented by EPA** (as well as neighboring facilities):
 - ▶ Annual EI reports, TRI releases, discharge monitoring reports, annual compliance certifications, semiannual reports
 - ▶ EPA's RSEI releases, hazard rating, and scores
 - ▶ EPA's AirToxScreen and ECHO representations
- ◆ **Map, chart, and compare Environmental Indicators and EJ Indexes** surrounding your facility
- ◆ **Compare results to thresholds** for further agency investigation and/or potential permitting prohibitions

EJ Recommendations (2 of 2)

For sites with higher EJ scores (nearby EJ communities, elevated EJ scores)

2. EJ Mitigation

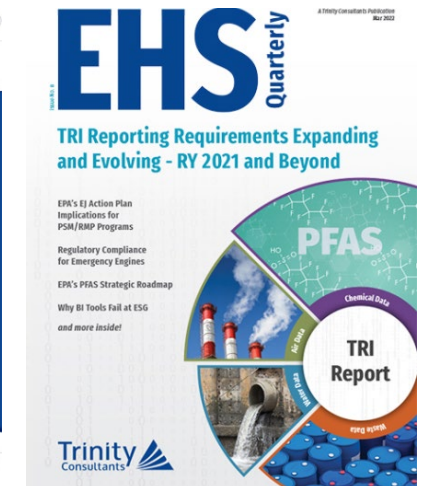
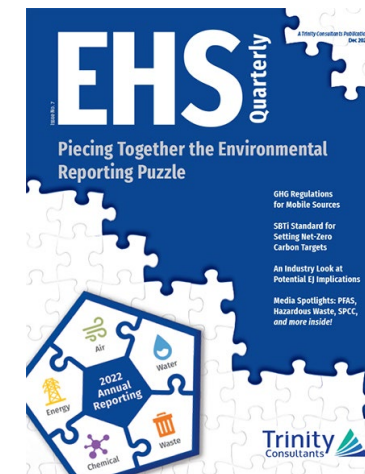
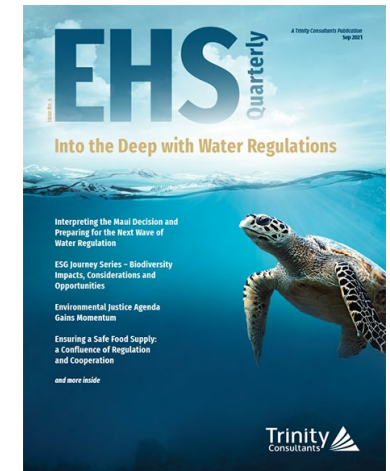
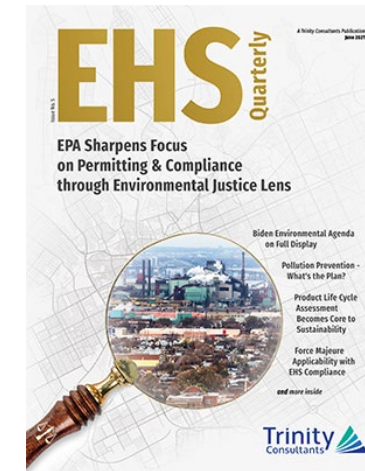
- ◆ Review, update, improve historical TRI and Annual Emission Inventory (EI) conservative, inconsistent, or inaccurate release estimates
- ◆ Minimize (improve) modeled impacts of PM2.5, air toxics, etc.
- ◆ Evaluate P2 opportunities to reduce future RSEI & AirToxScreen scores
- ◆ Conduct compliance audits and improve compliance programs to minimize enforcement risk from increased agency inspections

3. Stakeholder Engagement (internal & external)

- ◆ Provide instructional training on EJ applicability, assessments, and risk reduction
- ◆ Develop materials to improve communications with your community, regulators, management, and shareholders

EJ Materials/Resources

1. EPA Sharpens Focus on Permitting & Compliance through Environmental Justice Lens
<https://media.trinityconsultants.com/view/133247343/6/>
2. Environmental Justice Agenda Gains Momentum
<https://media.trinityconsultants.com/view/217028215/14/>
3. Environmental Justice at the State Level
<https://media.trinityconsultants.com/view/217028215/19/>
4. The Tangled Web of EHS, ESG Reporting, and Potential EJ Implications
<https://media.trinityconsultants.com/view/781562585/4/>
5. Industry Impacts of Environmental Justice
<https://media.trinityconsultants.com/view/781562585/25/>
6. EPA's EJ Action Plan: Implications for PSM/RMP Programs
<https://media.trinityconsultants.com/view/504958718/10/>



Questions?



Contact Us

Sign up to receive information on upcoming EJ training events and updates by:

1. Opening your phone's camera
2. Hold it up to screen over the QR code
3. This should open a form to fill out in your phone's browser



If you have questions about this presentation, please do not hesitate to contact us:

bburdorf@trinityconsultants.com

xandrian.mcmacken@trinityconsultants.com

