Water Quality and Environmental Justice in California’s Central Valley

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Switzer Webinar
November 11, 2014
Key Questions & Goal of Presentation

• What are the key drinking water issues in the Central Valley?
• What is the role of regional planning?
• What is the relationship with environmental justice?

• Why do social disparities in access to safe drinking water exist in California?
• How can regional planning help?
Outline of Presentation

• What are the key drinking water issues? **Problems & Drivers**
  – Social disparities in exposure and compliance
  – Water and Environmental Justice: The Drinking Water Disparities Framework

• What is the role of Regional Planning? **Solutions**
  – Case of the Kings Basin Disadvantaged Community Water Study

• Conclusions
In California, “the most prosperous state of the richest nation in the globe, there are towns with Third World problems.”

--Ortiz, 2004 (Porterville Recorder)
The Story of Tooleville, CA

Photo Credit: David Bacon
Common Questions Encountered

• “Isn’t the issue of contaminated water just an issue of economies of scale, where small systems face the biggest problems?”

• “In talking about environmental injustices and contaminated drinking water, are you implying that someone is deliberately polluting people’s water?”

• “Why don’t people just move?”
Beyond localized cases? Regional perspectives...

- **Distributional justice:**
  - How is an environmental harm distributed?

- **Procedural justice:**
  - Are policies, programs implemented equitably, and with the opportunity for meaningful involvement of stakeholders?
Part 1: The Contamination Problem
Water Quality Across the State

- Largest fraction of MCL violations across the state, including:
  - nitrate violations
  - arsenic
  - dibromochloropropane
- High number of schools with contaminated drinking water
- Scores highest in terms of cumulative “hazard ratios”
The San Joaquin Valley

- One of most agriculturally productive regions in the world

- 2 of most contaminated aquifers in the country (Dubrovsky et al 1998 and 2010)

- 95% of population relies on groundwater as primary source
San Joaquin Valley’s demographics

- ~10% of CA’s population
- 20% below poverty level (14% in CA)
- Cumulative exposure to multiple contaminants
- Drinking water contaminants exacerbate existing exposures and health effects

Data: U.S. Census 2000
Nitrate is a key contaminant in the SJV

- Agriculture uses large amounts of nitrate fertilizers
- SJV represents largest share of nitrate drinking water violations in CA
  - 75% of Maximum Contaminant Level (MCL) violations (source: PICME 2008)
- Acute health contaminant
- High mitigation costs
Social Disparities in Exposure in the San Joaquin Valley

- Small Communities with higher percentages of Latinos had higher nitrate levels
  - Evidence of disproportionate exposure to nitrate


Social Disparities in Exposure in the San Joaquin Valley

• Small Communities with Higher Percentages of Latinos had higher nitrate levels\(^1\)
  • Evidence of disproportionate exposure to nitrate
• Lower-income communities had higher arsenic levels\(^2\)
  – Communities of color more likely to be in non-compliance with standards

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Part 2: But what explains these findings?

Drinking Water Disparities Framework
Natural & built environmental factors shape exposure
But is it just economies of scale?
Drinking Water Disparities Framework: Exposure

Factors

Natual Environment
- Regional
- Community
- Household

Built Environment
- Regional
- Community
- Household

Sociopolitical Environment
- Regional
- Community
- Household

Actors

State

County

Community

HH
Drinking Water Disparities Framework: Exposure

Factors
- Natural Environment
  - Regional
  - Community
  - Household
- Built Environment
  - Regional
  - Community
  - Household
- Sociopolitical Environment
  - Regional
  - Community
  - Household

Actors
- State
- County
  - Community
  - HH

Impacts
- Source of Pollution
- Environmental Concentrations
- Exposure
- Dose
- Health Effects
The County:

• “Public commitments to communities with little or no authentic future should be carefully examined...These non-viable communities, would, as a consequence of withholding major public facilities such as sewer and water systems, enter a process of long term, natural decline as residents depart for improved opportunities in nearby communities”

• “Unincorporated communities which are expected to lose population because of factors mentioned above include: Allensworth, Alpaugh, Delft Colony, East Orosi, Lindcove, Monson, Plainview, Poplar-Cotton Center, Seville, Sultana, Teviston, Tooleville, Tonyville, Tract No 51 and Waukena
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Source: Tulare County General Plan, 1973
County planning policies elucidates continued marginalization of the marginal

• County decisions:
  • Define non-viability
  • Project growth
• Whether “economically rational” or “redlining” → problem not addressed → perpetuate poor infrastructure, and persistence of problem

Legend

- **Resources:** money, infrastr., services
- **Power:** decisions, consolidate
- **Poor infrastructure**
- **Persistent contamination**
Drinking Water Disparities Framework: Exposure

Factors
- Natural Environment
  - Regional: Climate, Hydrogeology, Soil
  - Community: Climate, Hydrogeology, Soil
- Built Environment
  - Regional: Agriculture (e.g. citrus), Land use, Groundwater reliance
  - Community: Size of system
- Sociopolitical Environment
  - Regional: Planning policies
  - Community: Incorporation status

Actors
- State
- County
- Community
  - HH

Impacts
- Source of Pollution
  - Environmental Concentrations
  - Exposure
  - Dose
  - Health Effects
Disparities Framework: Coping
Multi-level factors and actors inhibit coping
The Drinking Water Disparities Framework

Factors

- Natural Environment
  - Regional
  - Community
  - Household

- Built Environment
  - Regional
  - Community
  - Household

- Sociopolitical Environment
  - Regional
  - Community
  - Household

Actors

- State
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Impacts

- Source of Pollution → Environmental Concentrations
- Exposure → Dose → Health Effects
- Coping Mechanisms
The Case of Alpaugh

Alpaugh

- 2000s: >50 ppb arsenic and wells break-down
- $4.2 million: system, pumps and storage tank
- Upgrades did not plan for revised standard

“The new system is expected to help with most of those problems...Once construction is completed, the Alpaugh water will come from a well with an arsenic level that will still be too high to meet federal standards expected to take effect in 2006” —Fresno Bee (2005)

“We’ve gone through all these trials and tribulations, and starting in January what are we going to do?”
—Alpaugh leader, The Bakersfield Californian (2005)

“...officials were just focusing on getting water flowing. Once that was accomplished...they would worry about the arsenic issue.”
Fresno Bee, (2005)
The Community:
Baseline conditions of poor Technical, Managerial and Financial (TMF) capacity impede successful mitigation
Poor TMF is also shaped by social vulnerability of community

- **Volunteer boards:**
  
  “They live there, they’re residents. They don’t really understand our regulatory requirements.”

  -- regulator interview, 2009

Office of Alpaugh Joint Powers Authority (Alpaugh’s water system)
Funding eligibility based on core weaknesses of resource-poor communities

- TMF requirements
  - CA State Revolving Fund requires TMF for funding eligibility
- 2009 American Recovery and Reinvestment Bill
  - $160 million for drinking water infrastructure through CA SRF
  - But earmarked stimulus $ for “high priority”, “shovel ready” projects ([http://www.swrcb.ca.gov/](http://www.swrcb.ca.gov/))
  - No O&M funding
When systems are unable to cope...

- Households assume the burden of mitigation
- But...
Important Information About Your Drinking Water

Cutler Public Utility District Has Levels of DBCP
Above Drinking Water Standards

Our water system recently failed a drinking water standard. Although this is not an emergency, as our customers, you have a right to know what you should do, what happened, and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Water sample results collected Aug. 2008 thru Dec. 2009 showed dibromochloropropane (DBCP) levels of .25 ug/L. This is above the standard or maximum contaminant level (MCL) of 0.20 ug/L. This Well runs periodically.

What should I do?

- **You do not** need to use an alternative (e.g., bottled) water supply.
- This is not an immediate risk. If it had been, you would have been notified immediately. However, **some people who use water containing DBCP in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.**
- If you have other health issues concerning the consumption of this water, you may wish to consult your doctor.
Regulatory failures create barriers to household mitigation: persistent exposure unaddressed

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**Persistent exposures**

“I’ve been receiving this notice for several years now. Does that mean I should keep drinking the water? Is that not a problem?”

--Cutler resident to UN Special Rapporteur, 2011
Regulatory failure: Failure to address cumulative impacts means “right to know” ≠ “right to act”

- Lack of clarity on co-occurring contaminants and cumulative exposures

“As long as the customers know that the water meets or doesn’t meet the standards, they then can act on that....”
--Regulator, 2009

“I boil the water because they told me it has bacteria.”
--Seville resident, regarding nitrate contamination (2011)
Drinking Water & Environmental Justice

- Development of a **composite burden** -- comprised of exposure and coping costs
  - Multiple levels of vulnerability: household, community, region
Part 3: Water Challenges ...and Solutions...

Problems
- Water contamination
- Dilapidated infrastructure
- Unaffordable water
- Poor technical, managerial and financial capacity
- Lack of access to funding and political processes to address problems

Solutions?
- State:
  - Human Right to Water, Changing funding Requirements, Groundwater legislation
- Regional solutions:
  - Integrated Reg. Water Mgmt.
  - Increase economies of scale
  - Interim solutions
- Community:
  - Increase participation of marginalized groups in water planning

Source: The Community Water Center
Integrated Regional Water Management Efforts Can Play a Key Role

- key planning and funding approach in CA
- Integrated Regional Water Management=
  - Multi-benefit solutions among multiple stakeholders
- setting the stage in the Valley:
  Tulare Lake Basin DAC Study
  Kings Basin DAC Study
Kings Basin Disadvantaged Community (DAC) Water Study

- 2012-2013
- 5 sub-regions
- Stakeholder groups:
  - Project participants: DACs, Gov’t, Advocates
  - Project consulting team
  - The Kings Basin Authority

Goals of Pilot Project:
- Identify water needs and DAC locations
- Engage and integrate DACs into IRWM planning
- Develop conceptual technical projects
- Facilitate partnerships between DACs and other IRWMP members
Northern Tulare: Shared Services Study
Regional Planning Provides...

• Models for more equitable engagement, collaboration and planning:
  – Engaging diverse groups of stakeholders to co-develop solutions:
    • Engineering & outreach & technical consultants
    • Community residents and leaders
    • Water board leaders; Municipalities; etc.

• Multi-level impacts:
  – Learning about water needs & regional solutions
  – Changing governance structures in the Valley to better represent socioeconomically disadvantaged communities
Conclusions

• Central Valley has some of the worst water in California
• Poor water quality and social disparities the result of multi-level actors and factors
  – Environmental justice and drinking water result in a composite burden which defines the nature of the injustice
• When additional vulnerabilities occur, the burden is further compounded:
  – Current California drought
  – Cumulative Health Impacts
• Multi-level solutions needed: state, regional and community-level
• Lots of momentum...for solutions
  – Organizing/Voices: Water Justice Movement
  – Research: CalEnviroScreen, UC Davis Nitrate Report, etc
Acknowledgments

**Co-Authors:** Isha Ray, UCB; Morello-Frosch, UCB

Community Water Center & residents

Robert & Patricia Switzer Foundation

**Funding support:** UC President’s Post Doctoral Fellowship, The NSF Graduate Research Fellowship, The California Endowment, EPA STAR, Robert & Patricia Switzer Foundation

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