Communities, Academic Scientists, and Environmental Decision Makers: Making the Connections

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Overview

- Part I: Tar Creek Superfund Site
- Part II: Grand Lake Watershed Mercury Study
- Part III: General conclusions

Part I.
Tar Creek Superfund Site

- Former Tri-State Mining District
- Abandoned in 1970s
- 33 major mine waste (“chat”) piles
- Located on Tribal lands
- Ecological degradation
  - Mine drainage
  - Runoff piles
- Human health concerns
  - Elevated childhood blood Pb
  - Potential effects of Zn, Pb, Cd

Research objectives

- Conduct fate and transport studies
  - In-stream metal transport
  - Metal speciation in mine waste
  - Metal transport to floodplain
  - Accumulation by plants
- Develop interdisciplinary research projects as part of EPA- and NIEHS-funded Children's Center
- Address community concerns regarding metal exposure

Community's experience

- Added to NPL in 1983
- Slow progress in site remediation
- Distrust of regional EPA and state agencies
- Distrust of outside academic researchers

Our experience with community

- Initial expectations of the community
  - We would fix the problem
  - We would be an ally against government agencies
- Building trust and understanding takes time and being present
  - Community advisory board, tribal advisory council
  - Community conferences
  - Sharing what we know

Relevance and access

- Post-flood sampling
- Plant sampling with Tribal members

Our experience with EPA, state agencies

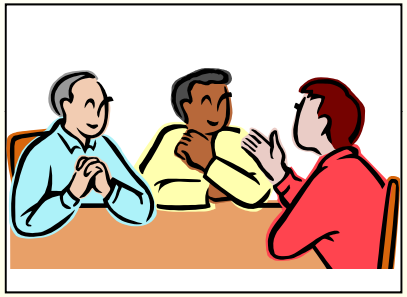
- Their concerns
  - What were we were doing?
  - Would we alarm community?
  - Would we make them look bad?
- Developed openness, occurred on many levels
  - Some direct data sharing (e.g., sending files, although didn't want to be seen as taking sides)
  - Some data sharing in conjunction with public community presentations in very timely fashion
  - We agreed to notify government agencies when we were going to present results

Part II. Grand Lake Watershed Mercury Study

- Grand Lake, NE Oklahoma
- Community concerns about mercury exposure
  - Subsistence fishers (including Indians, Micronesians and Hispanics) and recreational fishers
  - 6 coal-fired power plants in 60-mile radius
- Funded by NIEHS Partnerships for Environmental Public Health program

http://www.industcards.com/st-coal-usa-ne-ok.htm

3 components of study

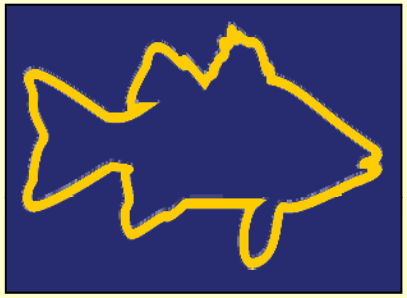


1. Community

   Involve community members in all aspects of study design and implementation

2. Participants

   Measure mercury exposure in people who eat fish from the watershed



3. Fish

   Measure mercury accumulation in fish throughout the watershed

Community involvement in study design

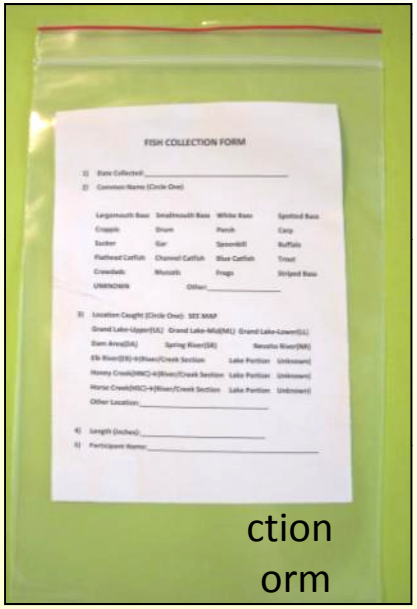
- Approaches for getting input
  - Community advisory board
  - Council of fishing experts
  - Focus groups
- Study design and implementation
  - Designing food frequency questionnaires
  - Recruiting participants
  - Outreach and education

Challenges with recruitment

- Identifying high-end fish consumers
- Building connections with Micronesian community
  - Language and cultural barriers
  - Engaging Micronesian high school students has helped build bridge into community

Community participation in fish study

- Why involve community in fish study?
  - Reduce sampling requirements
  - Greater buy-in from community
  - Opportunity for report-back
  - Increased awareness about our study and fish consumption advisories
  - Builds trust with potential participants
- How to involve community?
  - Current and potential participants
  - Fishing tournaments and boating docks
  - Personal connections



How to involve government agencies?

- Oklahoma Department of Wildlife Conservation
  - Paddlefish processing station
  - Analyze by-catch from population surveys
  - We provide updates on results throughout project
  - Our results complement theirs and enhance their mission
- Grand River Dam Authority
  - Access to their lab, boat facilities, staff time
  - We offered to share our results
- Oklahoma Air Quality Advisory Council
  - Authority to regulate mercury in the state
  - Study team member is council member

Overall approach and contributions

- No agenda (although we had opinions)
  - Community distrust of EPA (slow site remediation)
  - Community distrust of GRDA (owns dams, power plants)
  - Agency concern about our approach
- Avoided taking sides
- Academics can be a resource to bridge community and government agencies
- We have provided additional data
  - Good for community
  - Good for environmental decision makers

Developing community partnerships

Requires

- Time
- Patience
- Presence
- Openness

Benefits

- Better study design
- Access to some sites
- Greater relevance
- Bridges between communities and agencies

Acknowledgements

Funding agencies

- EPA
- NIEHS

Community members

- Members of our Community Advisory Boards, Council of Fishing Experts, and focus groups
- Study participants
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