The struggle to make water and health for rural America a priority; the case of PR

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NON-PRASA MEETING (SCIENCE CONSORTIUM)
Small and medium potable water systems: challenges and sustainability

- **88%** of the population (close to 281 million) are served by medium and large systems (those serving >3,300 persons)

- **12%** of the population (40 million) are served by small systems (those serving ≤3,301)

- About 300,000 people in PR

- **159,539** Drinking Water Systems in the United States

- **7.9%** drink water with TCR violations

- **147,046** (92%) of all drinking water systems are small (those serving ≤3,300)

- **14.3%** drink water with TCR violations
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✓ It is estimated that roughly 250 to 500 small communities throughout the island are non-AAA, community operated systems, with 180,000 to 250,000 persons consuming water of variable quality

✓ Many have PRASA and NON-PRASA in the same house plumbing.

PR Today
The struggle to make water and health for rural America a priority

✓ In the United States, **92%** of small community water systems, serving 3,300 or fewer individuals were not in compliance with SDWA standards in 2004 (EPA 2004).

✓ PR included in the data
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- Are the reasons why people lack safe drinking water in developed countries different from those in developing regions?

- The factors seen in developing countries may or may not be contributing to the drinking water situations in small community systems that have been found to be in violation of the SDWA.
CONVERSATIONS WITH VOLUNTEERS AND ADMINISTRATORS OF SPWS; PRE PILOT SOCIAL ANTHROPOLOGY INTERVIEWS - GRACIELA RAMIREZ-TORO & EVA VILLALON (2003)

POLITICAL ECOLOGY OF SAFE DRINKING WATER IN THE UNITED STATES WITH A CASE STUDY FOCUS IN PUERTO RICO – SARAH OPITZ-STAPLETON & GRACIELA RAMIREZ-TORO (2009)

- Perceptions study
- Formal studies
- Information collected through forums, committees and interactions
What to do? Pre pilot for:

A community educational intervention to Improve Public Health

• Is the perception that residents and owners of small systems in PR are not interested or cannot be interested in the development of capacity among their members to improve their water system operation and management true?

• Can the health of users in small, non-PRASA potable water system be improved, provided the capacity of operators and administrators is improved?

• Can the quality of the water served be improved by better management of assets?
Can we guarantee safe drinking water with just regulations?

✓ In many countries regulations are goals.
  ➢ In small systems in the US regulations could become goals or the community
  ➢ Water is a secondary activity
  ➢ Government have to understand how to make safe water a goal for these rural communities
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✔ Political ecology is about examining the power-knowledge relationships between human groups:
  - how these relationships influence and determine human interaction with the environment and, conversely,
  - how environmental change shapes power-knowledge relationships.
    - Capacity development activities versus strategies
    - 2003 EJ Demonstration Project (Small System Intervention)
Case control study
(Impact of diarrhoeal illness of a community educational intervention to improve drinking water quality in rural communities in PR. Hunter, Ramirez & Minnigh, BMC Public Health 2010, 10:219)

• 43% of illness in non-intervention communities is due to contaminated drinking water as compared to systems in the intervention

• Communities can be engaged to participate in strategies to improve health and make their water supply sustainable but education needs to be pertinent and take into consideration community goals
Demonstration project outcomes:

- More than $500,000 leveraged as in-kind contributions.
- Two community associations built:
  - Cooperativa de Acueductos de Patillas (8 communities – approximately 7,000 people affected)
  - AsocAguas (17 communities – approximately 15,000 affected)
- 28 community members acquired college education; displaced and unemployed community members now all employed in high-paid, technical jobs.
- Two short career educational programs developed
• Demonstration project outcomes [continued]
  – 9 members of the communities certified as Water Treatment Plant Operators at the highest level
  – First two women operators on the Island; first woman administrator and operator
  – First known scientific study in small systems in that links educational intervention with system improvement, water quality improvement and improvement in community health
  – Characterization of causes of illness in 17 communities
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- Traditional approaches to water resource management have involved linear, top-down models in which the state regulates and dictates operation standards.

- Water users are given little say in the operations and their preferences or capabilities in contributing to management of the water supply are often not considered.

  ✓ **Top to bottom approach:**
    - Regulatory review process
    - Data and information
    - Political system
    - Interaction between programs
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✓ Water supply problems are rarely caused only by technological inability to supply water.

➢ expectations are challenging the ability of traditional management approaches in meeting actual need and situational reality.

➢ Administrative orders for small system in PR and the problem of cost of energy
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Power is enacted by decision making:

✓ Knowledge is a product of social relationships in constant change

✓ Power knowledge relationships are dictated by spatial, temporal and social scales of the different actors.
The struggle to make water and health for rural America a priority; research

- Significant resources and research are dedicated to addressing the complex conditions in developing countries.

- There is a disproportionate lack of research and public attention on the fact that there are still numerous small communities in developed countries that do not consistently have safe drinking water.
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- Is there a disparity between the knowledge and science produced by academia and the national research agenda of agencies for systems that serve more than 10,000 people as compared to those systems that serve fewer or many fewer persons?

- If so, can this produce disparity in health protection since regulations are based on science and knowledge?

- Can this produce a disparity in the resources available to improve small systems as compare to their counterparts?
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Facts

✓ Most people, including scientists, have never seen their own water supply system

➢ There is little knowledge in the population and academia about the research needs in small rural communities and small systems.
The struggle to make water and health for rural America a priority; the need to rethink our perceptions

- Small colleges that serve rural America may not have the capacity to design or carry out high quality research.

- OR...a small percentage of universities have the capacity to perform full scale research.

- Communities should not participate in the design of research.

- Compliance research cannot be done in small systems because the sample is too small

- The value of performing similar studies in several sizes of systems with several classes of treatment is underestimated
Most curricula is not multidisciplinary enough to teach science in the social contexts that apply.

Most curricula target advanced and complicated technology developments that are neither applicable or feasible for rural America.
The development of appropriate technology and methods for environmental protection and remediation for rural communities is too difficult and we do not have enough money or resources; we should concentrate in larger populations.

Is the perception that residents and owners of small systems in PR are not interested or cannot be interested in the development of capacity among their members to improve their water system operation and management true?

Are the perceptions of the residents of the community about their government intervention in community affairs related to water issues based on true experiences?
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☑ How should our agenda integrate these perceptions or facts to the process?
The struggle to make water and health for rural America a priority: what struggle?

We still need to do a lot of work:

- to recognize that we have a problem.
- to understand the social and economic context of the problem
- to educate the public: regulators, community users and administrators, legislatures, teachers and others

But the answer cannot come just top to bottom…
The struggle to make water and health for rural America a priority: what struggle?

Why I am here?
- I believe that this group could champion understanding about the small system problem in PR and serve as a conduit towards solving the problem nationally.
- I believe this group could help our respective Institution to understand the power of collaboration.
- and, I want that all in PR drink safe drinking water.

Next for CECIA?
- Three year epidemiological study pair with 3 interventions and a surveillance study.