

# Point of Use Drinking Water Treatment to Improve Water Quality in Colonias Surrounding Dona Ana, NM and El Paso, TX

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# Point of Use Drinking Water Treatment

- Sponsor: Environmental Protection Agency (EPA)
- Goals:
  - Study the feasibility and sustainability of using POU water treatment technologies in colonias in west TX and southern NM
    - Needs Assessment /Focus Groups to assess preferences
  - Demonstrate implementation & acceptance of POU water treatment systems in these rural households
    - Testing POU Filtration Systems
    - Evaluation

# Interdisciplinary Team:

## **Behavioral Science/Public Health (NMSU):**

Rebecca Palacios, PhD

Joe Tomaka, PhD

## **Civil Engineering (UTEP):**

Shane Walker, PhD, PI

Ivonne Santiago, PhD

John Walton, PhD

Team General Manager: Bill Hargrove, Ph.D.

# Water Issues Vary by region

## West Texas

- Reliance on Hauled Water stored in Large Tanks
  - Substandard housing does not meet county building codes
    - Do not qualify for hook up to water lines
    - Colonia residents cannot afford repairs/improvements necessary to meet county building codes
  - Hauled water may arrive contaminated
  - Hauled water may become contaminated
    - Development of algae
    - Concentration of chlorine from bleach over-treatment

## Southern New Mexico

- Reliance on Well Water
  - Many individuals with shallow and shared wells
  - Natural contaminants
    - Arsenic
    - Salts (Lime/Calcium)
  - Industrial and Self-Contamination
    - Dairies, Agriculture, Fertilizer Plants
    - Septic Systems
      - Nitrates, E coli and other pathogens

# The End Result is The Same:

- Resource-poor people are being exposed to contamination that affects overall health
  - Diarrhea, asthma, skin conditions...
- Resource-poor people are spending too much money on:
  - Safe drinking water usually in bottles
  - Replacement of appliances, pipes, etc. damaged by poor water quality

# Interdisciplinary Process

- Identify areas for study
- Assess needs for clean water and preferences for filtration in two regions
- Lab assessment of water contamination and quality
- Identification of potential POU solutions that would be acceptable to the community
- Development of educational tools
- Install POU Devices and Evaluate their acceptance/use
- Develop recommendations for sustainability



Legend:

RED → Led by Behavioral Team Members

GREEN → Led by Engineering Team Members

Yellow → Equal involvement

# Sample

- West Texas
  - PAHO data identified several communities:
    - Hueco Mountain Estates:
      - Population of 223+; reliance on hauled water
    - Hillcrest Estates:
      - Population of 193+; reliance on hauled water and wells
- Southern New Mexico
  - Office of State Engineer-data on all wells in colonias
  - Martin Lopez & Karen Nichols from LRGPWWA
    - Targeted areas of households with shallow wells (greater risk for environmental contamination)
      - La Mesa, Vado, Mesquite, Berino, Joy Drive, Chamberino, San Miguel, Anthony
        - Exclusive reliance on well water

# Interdisciplinary Partners:

