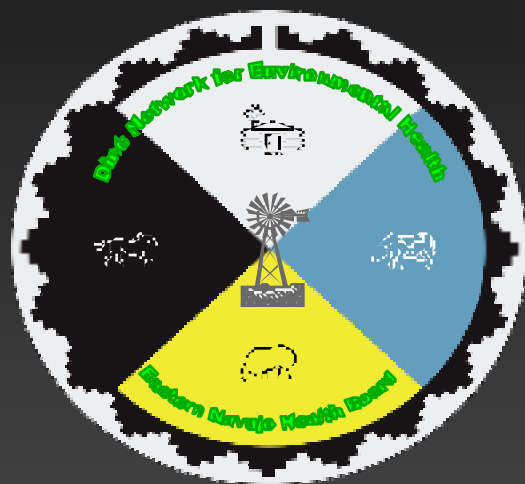


Diné Network for Environmental Health (DiNEH): Working Together to Understand Kidney Disease and Environmental Exposures

***American Public Health Association Annual Meeting
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(funded by NIEHS 5R25ES013208; R01ES014565; & P30 ES-012072)*

***Eastern Navajo Health Board: Thomas Manning, co-PI;
Bess Seschillie, Project Coordinator; Jeremy DeGroat, Sandy Ramone***

***Southwest Research and Information Center:
Chris Shuey, MPH, co-PI; Sarah Henio-Adeky, Teddy Nez; Harris Arthur (in memoriam)***

***UNM/CEHP:
Mallery Downs, RN; Miranda Cajero, BCH; Margaret Menache, Ph.D.; Bernadette Pacheco***

***Crownpoint Service Unit, Navajo Area Indian Health Service:
Fanessa Comer, CEO; Harry Goldenberg, CMO***

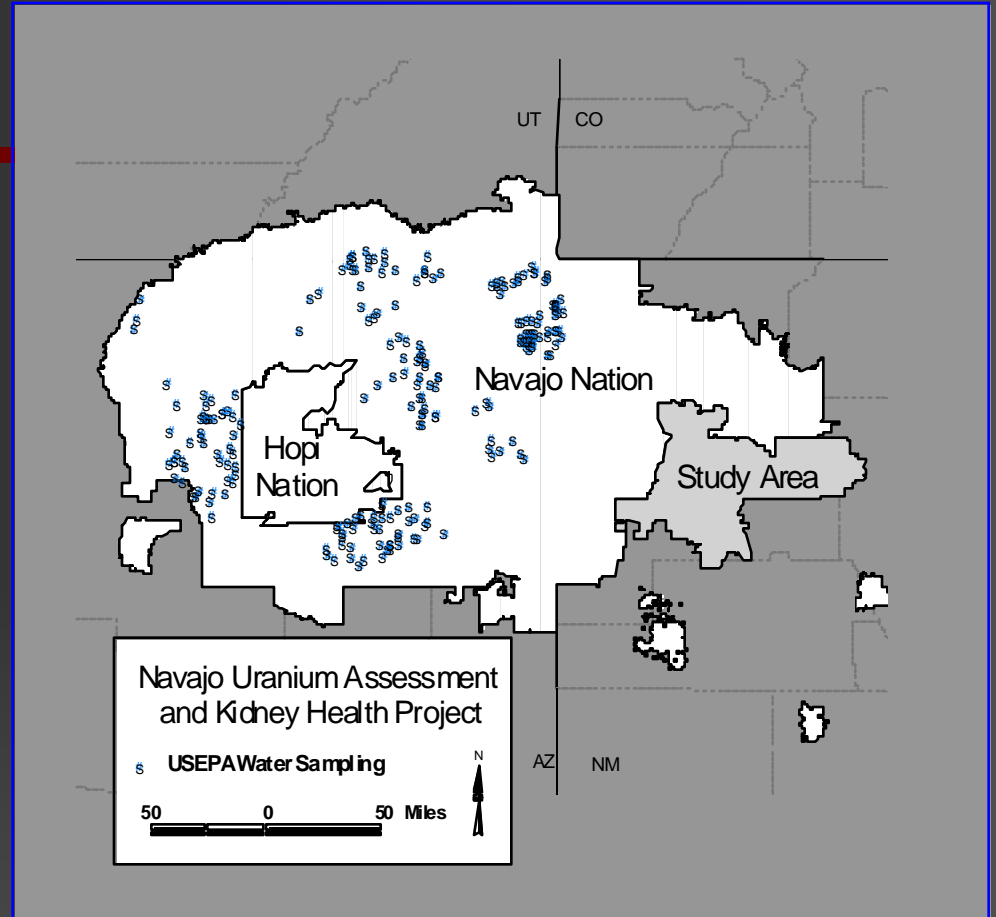
Disclaimer



- Dr. Lewis is President and CEO of Environmental Health Associates, Inc. (EHA)
- There is no financial or intellectual property conflict with EHA in any of the information presented here
- Dr. Lewis's work at UNM is routinely monitored by the Conflict of Interest Committee to manage any potential conflicts

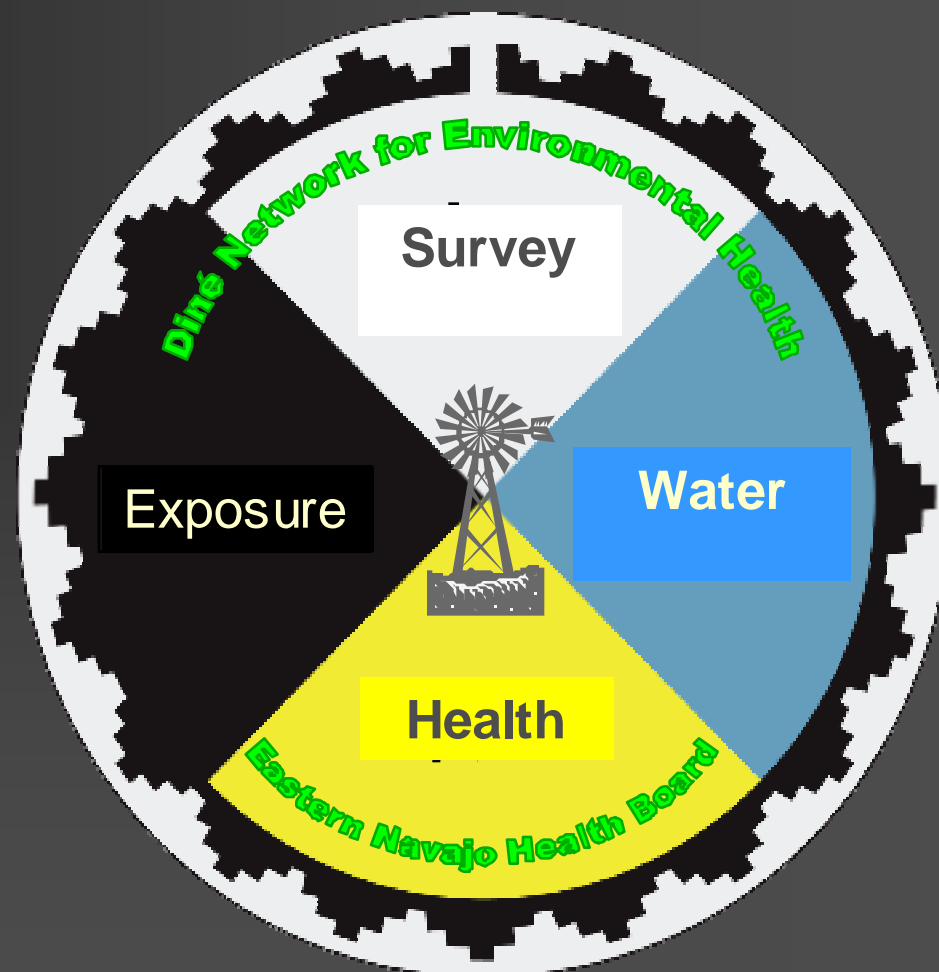
Overview

- Project goals
- Project partners and their roles
- History: Navajo uranium mining
- Elements of Success
- Role of NIEHS support



Goals of DiNEH Project

- Build environmental health research capacity
- Test water quality in 60 unregulated water sources
- Conduct 500 surveys on water use, land use and health
- Hire community environmental health workers
- Increase communication



Supporting Organizations/Agencies

➤ Funding:

- National Institute of Environmental Health Sciences

➤ Approvals:

- Navajo and UNM IRBs

➤ Supporting Resolutions:

- Baca-Prewitt-Haystack, Becenti, Casamero Lake, Church Rock, Coyote Canyon, Crownpoint, Iyanbito, Lake Valley, Littlewater, Mariano Lake, Nahodishgish, Ojo Encino, Pinedale, Pueblo Pintado, Smith Lake, Standing Rock, Thoreau, Torreon-Star Lake, Whitehorse Lake, White Rock

➤ Other Support

- Navajo Nation President Joe Shirley Jr.
- Eastern Navajo Agency Council
- Navajo Nation Department of Water Resources
- Former Navajo Nation President Kelsey Begay
- Former Navajo Nation Vice President Dr. Taylor McKenzie
- Navajo Tribal Utility Authority
- Navajo Area Indian Health Board
- Crownpoint Service Unit
- Floyd Thompson, CEO-Gallup Indian Medical Center
- Gallup Indian Medical Center Advisory Health Board
- USEPA Region IX
- New Mexico Environment Department

DiNEH Project Collaborators



- Southwest Research and Information Center
- Eastern Navajo Health Board
 - Environmental Health Committee
- University of New Mexico Community Environmental Health Program
 - Housed in UNM College of Pharmacy
 - Community Outreach and Education Core, NIEHS New Mexico Center for Environmental Health Sciences
- Crownpoint Service Unit, Navajo Area Indian Health Service

SRIC's Role

- Non-profit educational, scientific group founded in Albuquerque in 1971
- Training, capacity-building, policy analysis, targeted advocacy
- 30+ years of technical assistance on uranium impacts to Navajo and other communities
- Environmental assessments
 - Worker, community health
 - Technical review of reclamation plans
 - Puerco River Education Project
 - Environmental Health Training, ENHB
 - Church Rock Uranium Monitoring Project



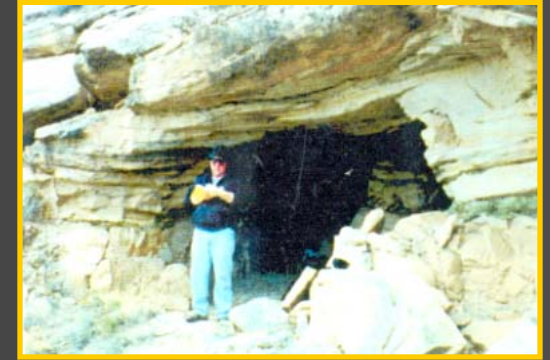
Diné Uranium History

➤ *Environmental Impacts —*

- >1,300 abandoned mines
- 5 abandoned mills
- Active mining, milling, 1950s thru mid-'80s
- Church Rock Dam Break, Tailings Spill, July '79
- Safety hazards addressed at mines
- Little or no environmental restoration
- New uranium mining proposed in Eastern Navajo Agency in NM

➤ *Health impacts —*

- Navajo miners: high risks for lung cancer, nonmalignant respiratory diseases
 - Radiation Exposure Compensation Act, 1990, amended in 2000; compensation process difficult for Native Americans
 - Birth defects study, Shiprock area, 1983-1992
- ***NO comprehensive evaluation of community health with respect to cumulative environmental and occupational exposures***



Eastern Navajo Health Board

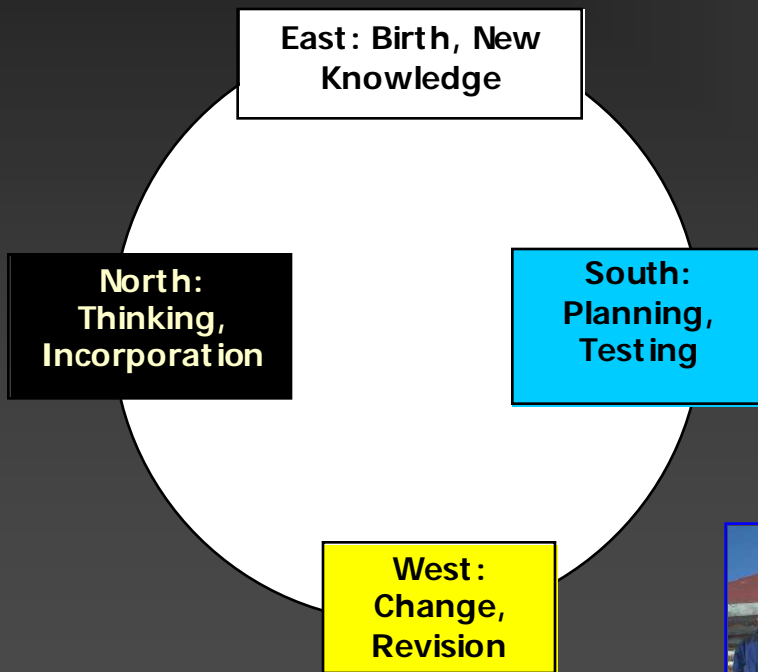
(Thomas Manning, Co-P.I., Crownpoint, NM)

- ENHB represents 16 Navajo communities, called “chapters”
- Advises I H S in Crownpoint, NM
- ENHB concerns:
 - high rate of kidney disease
 - community members hauling water from unregulated wells
 - many abandoned mines
- 2001 – Community meeting
 - DiNEH partnership formed
 - UNM-Dr. Lewis asked to write proposal
- 2002-2003 -- Trainings with SRIC, others
 - Navajo language
 - Survey methods
 - Tours of abandoned mines

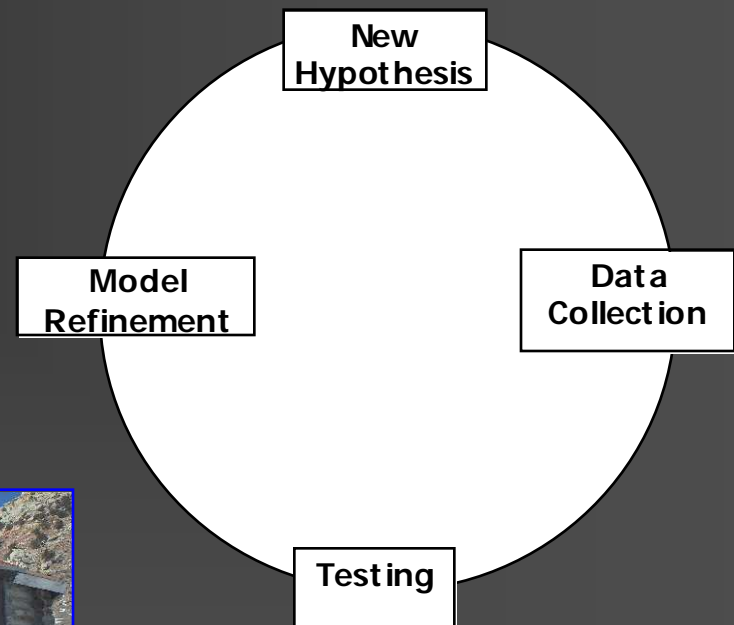


Common Models of Learning:

A. Navajo Model of Understanding

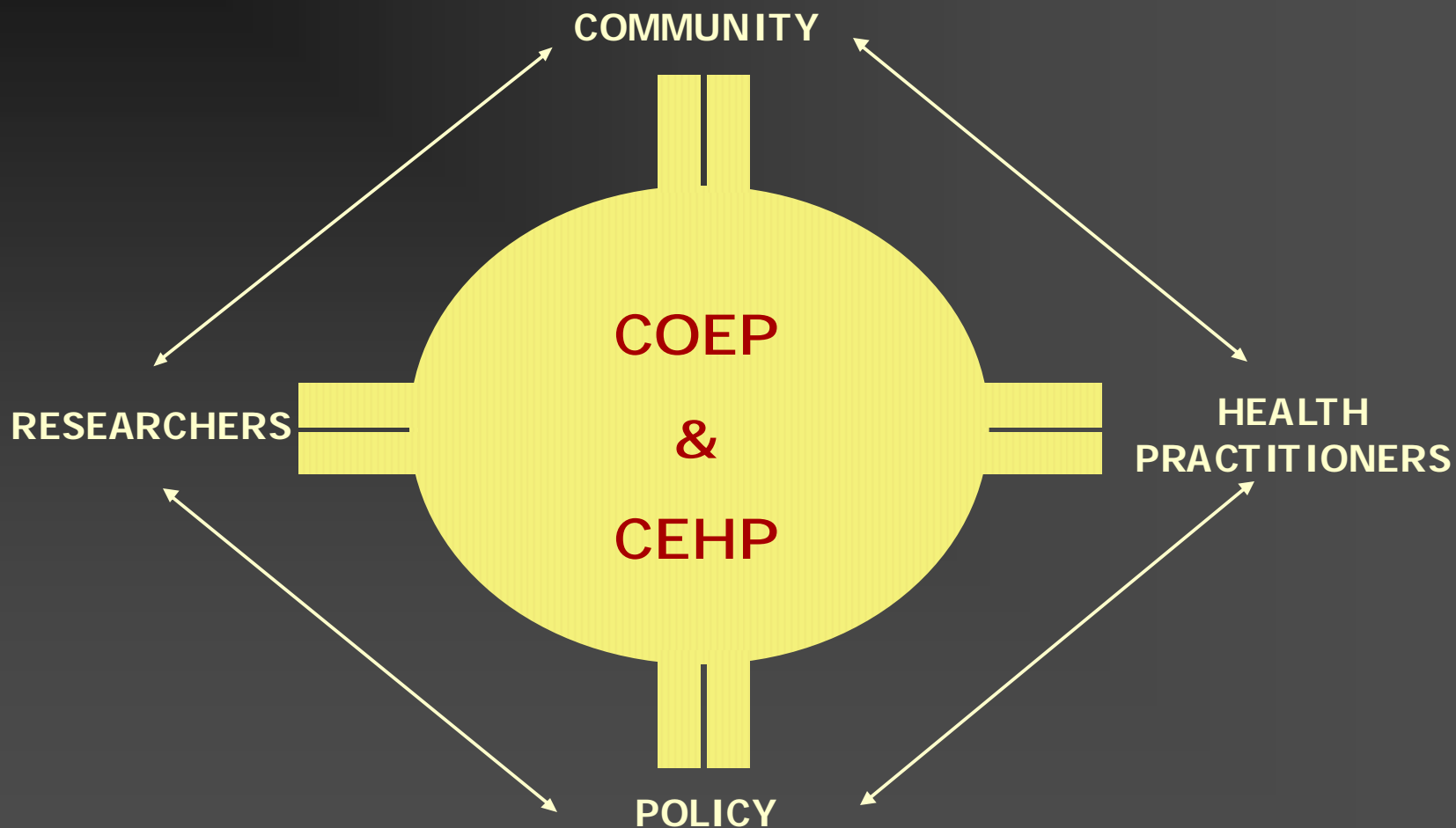


B. Iterative Empirical Model of Understanding



The front door of the traditional Navajo home, or *hooghan*, faces east and all activities are conducted clockwise around the center of the home

UNM's CEHP



CEHP History with Navajo Nation on Uranium

- 15 years, varied roles
- Assessing risk from mill tailings-contaminated groundwater (1990) – (J. Lewis as consultant to UMTRA/DOE)
- EJ grant: development of Uranium Education Center, Diné College, Navajo Tribal College (1997, Mark Bauer, PI)
- DiNEH collaboration (2001)
 - How much uranium is in the water hauled from livestock windmills, private or hand-dug wells, and springs?
 - What will it do to Navajos who drink it for a long time?
 - Does drinking uranium-contaminated water, living near uranium waste sites, or having worked in the uranium industry contribute to the high level of kidney disease?

Anticipated Benefits: Results since 2004

Anticipated benefits (2001)

- Provide the Eastern Navajo Health Board (ENHB) with expertise, experience and infrastructure to develop, plan, and implement health studies
- Train and hire community researchers
- Generate water resource and quality data
- Estimate cumulative environmental exposures

Results (2004-present)

- Trainings in surveying methods, Navajo language translation, water quality assessment
- All staffing since 2004: 11 Navajo, 9 non-Navajo
- Current staffing:
 - 6 Navajo field workers
 - 1 Navajo HS student, 1 Navajo grad student,
 - 7 non-Navajo researchers
 - 2 non-Navajo grad students
- 47 water sources newly tested, >100 water sources located
- 525 water-use/health surveys conducted
- Preliminary exposure model developed

Elements of Success

- Respond to problems already recognized
- Mutual respect, mutual learning
- Patience
- Recognition of sovereignty, culture, tradition
- Diversity of staff
- Leaving more than taking (skills, policy recommendations)
- Being there for the long-term (NIEHS Center)



Challenges



➤ Dine Community

- Not enough time -- need is immediate
- Lack of knowledge, expertise in Western science
- Difficulties working across cultures
- Lack of funding to develop technical expertise, & conduct health research

➤ Advocates

- Being clear on the hat you are wearing
- Fear that scientific expertise won't be viewed as "unbiased"

➤ University Scientists

- History of abuse of Native people by researchers
- Tribal legal requirements -- respect of culture
- Lack of data can be used as evidence of no effect
- University and scientific merit process
- Time and patience

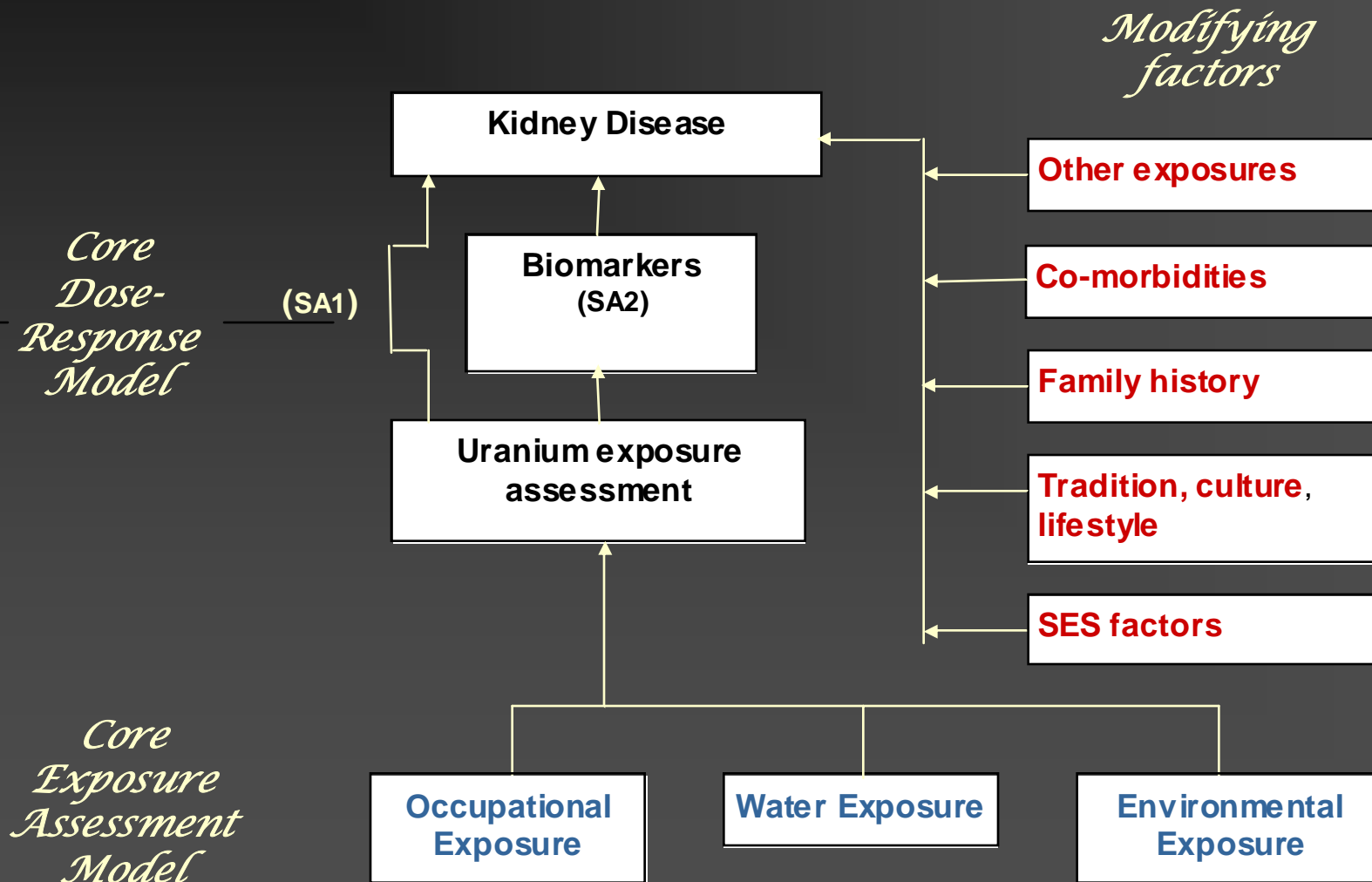
DiNEH Project Phase II:

Navajo Uranium Assessment and Kidney Health Project

- R01, funded by NIEHS
- Reason to build capacity
- Research to answer Health Board's original questions
- Involves researchers from Univ. of Texas + DiNEH Project team + NIEHS Center Epidemiologists and Biostatisticians
- More comprehensive surveys, biomarkers of kidney damage: glomerular vs. tubular
- Create kidney surveillance program at Crownpoint Service Unit, Navajo Area I H S

Multilevel kidney risk model

Replication, Convergent Validity, Field Validation, Exposure confirmation



DiNEH Response to Community Emergency

- May 2007: EPA decides to remove soil around 8 homes
- DiNEH Project: surveys, blood & urine, clinical lab, research biomarkers for kidney disease
 - Only health assessment

Uranium mine waste dump within 1,200' of existing Navajo homes (2002)



New home recently constructed within 1200' of existing waste pile (2005)



EPA Emergency Removal/Relocation of Residents: May 2007

