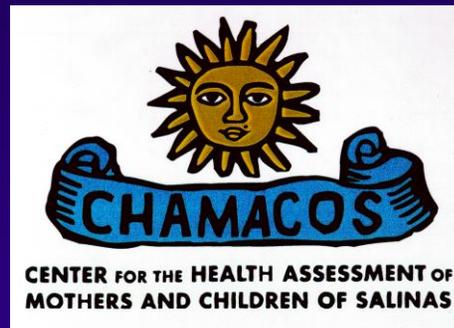


Healthy Homes in California Views Through a Research Lens



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Center for Children's Environmental Health

Research

May 20, 2009

Today's Talk

- Overview of CHAMACOS Studies and Findings
- Research Needs
- Ideas on how to get from here to there.

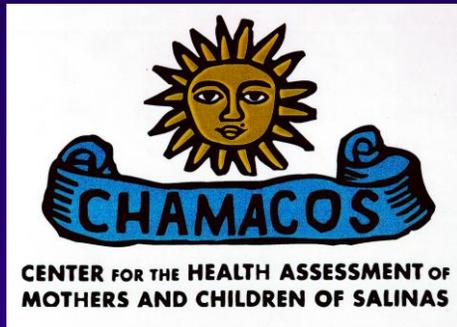


Project photo courtesy of CHISPA



Berkeley
University of California

Health Services
California
Department of



**Battelle
Laboratories**

**A Community-University
Partnership**

**Community Rural Legal
Assistance**

Grower Shipper Assoc.



South County Outreach Effort

Clinica de Salud del Valle de Salinas





Objectives

- To estimate sources, pathways and levels of ***in utero* and postnatal exposures** of children living in an agricultural community.
- To determine the relationship of exposures to:
 - **neurodevelopment**
 - **growth**
 - **respiratory disease**
- To **reduce exposures** to children with interventions and community outreach.



Home and housing quality is another primary focus.



Highlights of what we have found.





← **Cockroach feces.**

Deltamethrin
→
“Chinese Chalk”





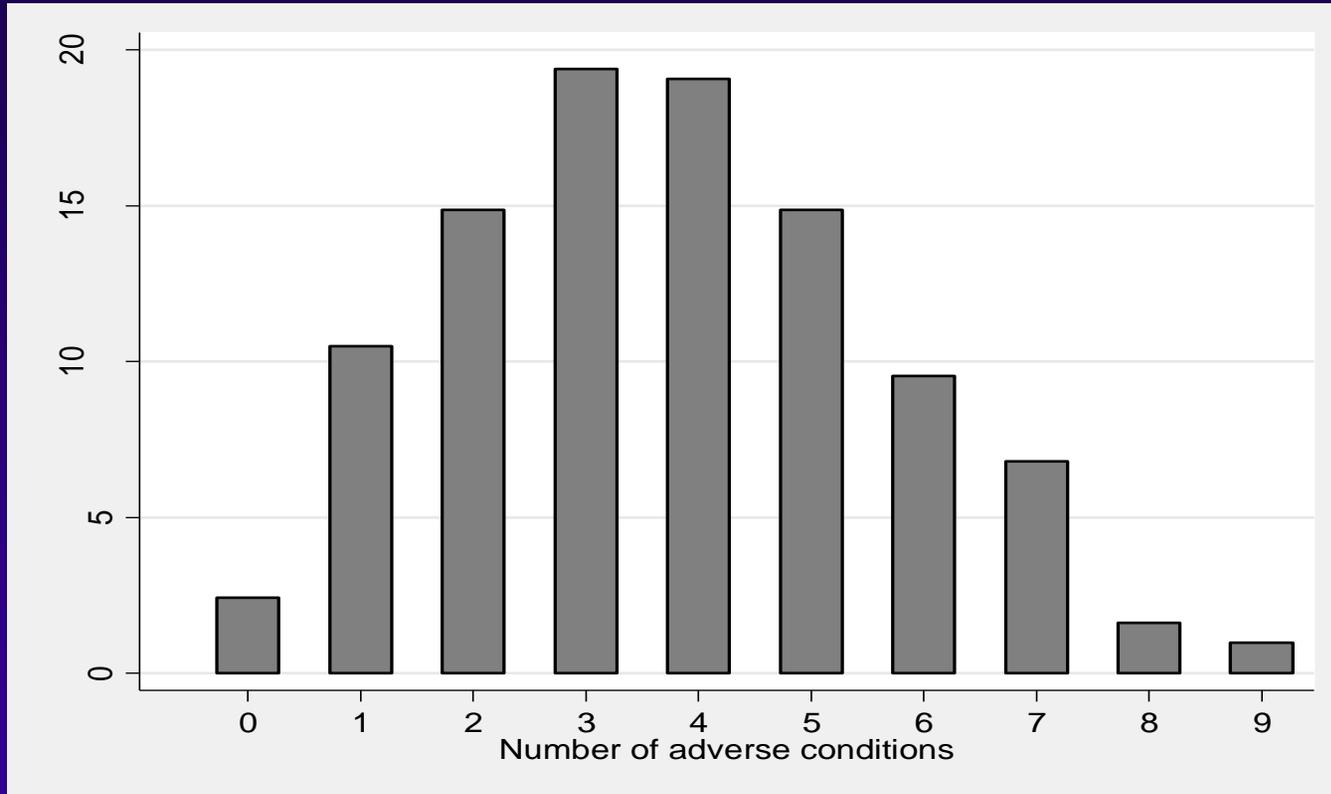




Housing Quality for All Homes Inspected at Prenatal and 6 Month Visits

	All homes n = 645
	%
Evidence or report of rodents	32
Evidence or report of roaches	60
Pesticide stored in the home	46
Gas stove without working vent	14
Wall moisture (any wall > 17%)*	28
Water damage	25
Rotting wood	14
Peeling paint	58
Moderate or extensive mold anywhere in house	42
Moderate or extensive mold in mother's or child's bedroom	23

Number of adverse conditions in homes



Adverse housing conditions include the presence of rodents, cockroaches, peeling paint, water damage, moderate or extensive mold or mildew, rotting wood, leaks under sinks, gas stoves without functional vents, or housing density greater or equal to one person per room.



Critters in House

Consistently, worse housing quality means:

More Cockroaches ↑

More rodents ↑

More home pesticide use ↑



Bad Stuff in Dust

- 50%+ with dust mite allergen associated with sensitization.
- 25+% with cockroach levels associated with sensitization.
- Pesticides in dust in all homes:
 - Agricultural pesticides
 - Some ag pesticides only present in Monterey County
 - Home use pesticides at highest levels

- **Everything is related.**

Table 3. OR matrix showing the interrelationships of housing disrepair indicators and pest infestations^a ($n = 619\text{--}644^b$).

	Rodents	Cockroaches	Peeling paint	Water damage	Rotting wood	Mold	Leak under sink
Cockroaches	3.4**						
Peeling paint	2.4**	4.2**					
Water damage	2.5**	2.2**	2.1**				
Rotting wood	2.2**	2.2**	6.0**	8.4**			
Mold	2.0**	1.7**	1.9**	6.4**	4.3**		
Leak under sink	1.4	2.1**	2.2**	4.0**	7.5**	2.2**	
High density	1.1	2.7**	2.1**	2.5*	1.2	1.9*	1.1

^aAll variables are binary, with high density defined as > 1 person per room. ORs provide a measure of the association between the variables. We used this measure in lieu of Pearson or Spearman correlation coefficients, which are not applicable to binary variables. ^bNumber ranges from 619 to 644 depending on the number of missing values. * $p < 0.05$. ** $p < 0.01$.



Hazards in Child's (6 months) Home Environment

Home Observation N = 356

	<u>% yes</u>
Medicine, cleansers, other toxics in reach	89
Electrical cords within reach of child	78
Curtains/blinds with string that could strangle child	47
Pot handles sticking over stove	42
House with play area too close to street	41
Garbage/debris in yard	32
Unprotected stairs	23
Smoke alarm absent/not functioning	55



Comparison of 1999 HUD Home Survey¹ to CHAMACOS Home Inspection Data

	HUD ¹		CHAMACOS
	All %	Hispanic %	%
Signs of rodents	8.2	12.7	22.8
Broken plaster or peeling paint	2.8	4.8	57.8
Water leak inside home	9.4	11.2	16*
Density (people/room)			
0.5 or less	69.0	40.9	1.5
0.51 - 1.00	28.5	46.1	19.1
1.01 - 1.50	2.1	10.2	30.7
1.51 or more	0.4	2.8	48.7

¹ HUD Survey are national estimates based on US Census

* Only for leaks under the kitchen sink



Table 2. Adverse housing conditions (%) in the CHAMACOS cohort and other populations.

Home characteristic	CHAMACOS (n = 644)	Local Farmworker Survey ^a (n = 780)	NYC Cohort ^b (n = 316)	HAC Survey ^c (n = 4,625)	Hispanic U.S. ^d (n = 9,814)	All U.S. ^d (n = 106,261)
Rodents	32	18	53	19 ^c	11	8
Cockroaches	60	48	66	19 ^c	—	—
Pesticides stored in home	49	—	85	—	—	—
Peeling paint	58	33	42	29	4 ^e	3 ^e
Leak under sink	16	34 ^a	22	—	5 ^f	4 ^f
Gas stove without functional vent ^g	35	—	—	—	—	—
Water damage	25	—	21	29	—	—
Rotting wood	11	—	—	—	—	—
Moderate or extensive mold anywhere in home	43	—	17	—	—	—
Moderate or extensive mold in child's sleeping area ^h	28	—	—	—	—	—
Wall moisture > 17% ⁱ	26	—	—	—	—	—
Density (persons/room)						
≤ 0.5	2	—	—	—	42	70
0.51–1.00	22	—	—	—	45	28
1.01–1.50	37	—	—	74.2 (> 1.0) ^j	10	2
≥ 1.51	39	—	—	— ^j	3	0.5

—, data not available.

^aData from Applied Survey Research (2001): questionnaire-based; data for leaks include faucets. ^bData from Whyatt et al. (2002): questionnaire-based; pregnant African-American and Dominican women. ^cData from HAC (2001): 19% is the proportion of homes with unsanitary conditions, including rodent and insects. ^dDepartment of Housing and Urban Development (HUD 2001) survey of occupied U.S. homes: questionnaire-based. ^eHUD data are for peeling paint and broken plaster. ^fHUD data are for plumbing leaks anywhere in house. ^gIncludes gas stoves without vents and or with nonfunctioning vents. ^hOnly applicable at 6-month visit (n = 133); ⁱMeasured in 130 homes at 6-month visit; the Monterey County Health Department suggests sheetrock replacement if moisture > 17%. ^jProportion of units with children where density exceeded 1 person per room.



Research is important!

The impact of home environments on health is a crucial field that needs more work and new tools.



CENTER FOR THE HEALTH ASSESSMENT OF
MOTHERS AND CHILDREN OF SALINAS

Statewide Survey of Housing Advocates

- **Research is not a primary focus of communities.**
- **Primary need is more and affordable housing.**
- **Basic needs are so great, these should be the priority.**

So what can research accomplish?

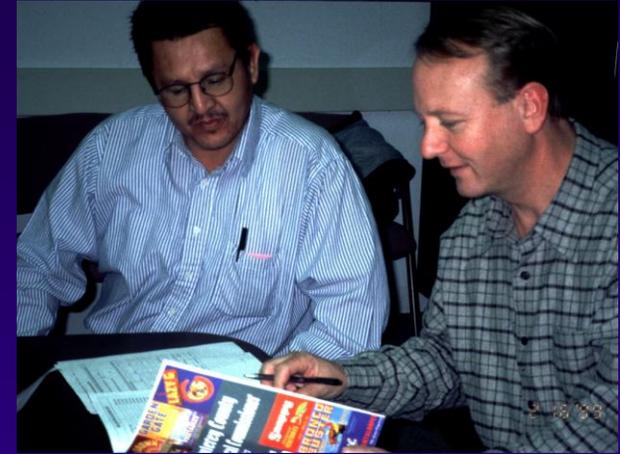
- Documenting the extent of housing quality problems and impacts on exposures and health is crucial to build support.
- Opportunity to develop messages that integrate disparate research findings on exposures (chemical, biological, stress, etc) and health (asthma, neurodevelopment, school success).

So what can research accomplish?

- **Include specific focus on children;**
- **Identify how research will support future public health policy (e.g., quantifying costs);**
- **Include home-based childcare as a healthy homes issue;**
- **Conduct economic analysis of income and affordability – important for employers;**
- **Build alliances across interests – e.g., Farm Bureau.**



Community Advisors



*“We want to be partners in research,
not recipients of research”*