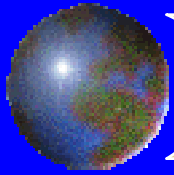




**Transnational Public Health -
Investigating and Responding to a
Lead Epidemic in Seaside, CA and
Oaxaca, Mexico**

Margaret Handley, PhD MPH

**University of California, San Francisco
Dept. of Family and Community Medicine**

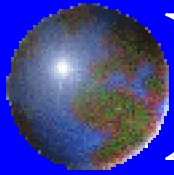


Project Team:

**US - Celeste Hall RN, Jim Grieshop PhD,
Eric Sanford MD**

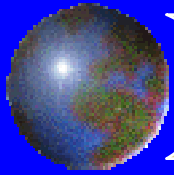
**Mexico - Mario Villalobos Peñalosa PhD,
Claudia Merino**

Funded by UCSF Global Health Sciences



US Targets for Decreasing Lead in Children

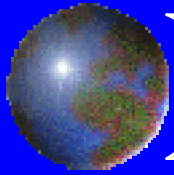
- **CDC Action Level for lead defined as ≥ 10 ug/dl (Elevated blood lead level = ELL)**
- **Healthy People 2010 - eliminate ELL for 1-5 yrs**
- **Neurological damage identified $<$ Action Level**



Outbreak Investigation –Monterey County

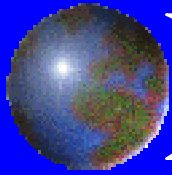
Clinical Question	Research Questions	Study Population
Why do so many patients have high lead levels at this clinic?	Seaside 'hot spot'? What are risk factors? Are risk factors concentrated in migrants from Oaxaca vs other migrants? Why?	Patients in Monterey County Health Dept Clinics Monterey County Clinic patients, community participants

Handley, Hall, Sanford, et al. American Journal of Public Health, May, 2007



Steps in Outbreak Investigation

Epidemiologic Strategy	Question Addressed
1. Prevalence estimation	Higher in Seaside?
2. Case control study	Cases non-cases?
3. Focus groups	Community views?
4. Prenatal lead screening	Prevalence/Risk factors?
5. Food testing Ca & Mexico	Confirm exposure?
6. Expansion to Oaxaca (case cluster investigation; environmental testing; CBPR)	Localize source- community-developed prevention strategy?



ENVIOS in Oaxaca and California

ENVIOS A CALIFORNIA

SEASIDE
MONTEREY
MARINA
PACIFIC GROVE
SALINAS
WATSONVILLE
SANTA CRUZ
SAN JOSE

SALIDA JUEVES 4 DE MARZO
SE RECIBEN ENVIOS MIÉRCOLES 3 DE MARZO

En la calle Jaime Nuno No.6.
Barrio de San Antonio.
San Pablo Huixtepec.
Con la señora **SILVIA ECHEVERRIA**. Tels. 52 1 00 50
Y con Tere y Biliulfo en Av. Juárez, frente a la caja popular de san Pablo Huixtepec.
"SOMOS EL SERVICIO MAS RAPIDO Y SEGURO DE EL ESTADO"

MENSAJERIA Y PAQUETERIA

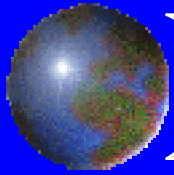
ENVIOS CALIFORNIA
TEL. 52 1 00 50

Arango
TEL. 57 1 53 46

LLEVAMOS CHOCOLATE, PAN, TORTILLAS, MOLE, MEZCAL, CHAPULINES, SEMILLAS, PESCADO SECO, TEJATE, CARNE DE RES, CARNE DE CHIVO, TAMALES, CARTAS, PAPELES, NOPALES, HIERVAS SECA, ARTESANIAS, Y MAS. PARA NUESTROS PAISANOS QUE TRABAJAN EN LOS ESTADOS UNIDOS...

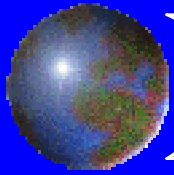
TELEFONO EN CALIFORNIA: 818-392-01-35
NOTA: NUESTRO SERVICIO ES CONTINUO Y RECIBIMOS SUS ENVIOS TODOS LOS MIERCOLES



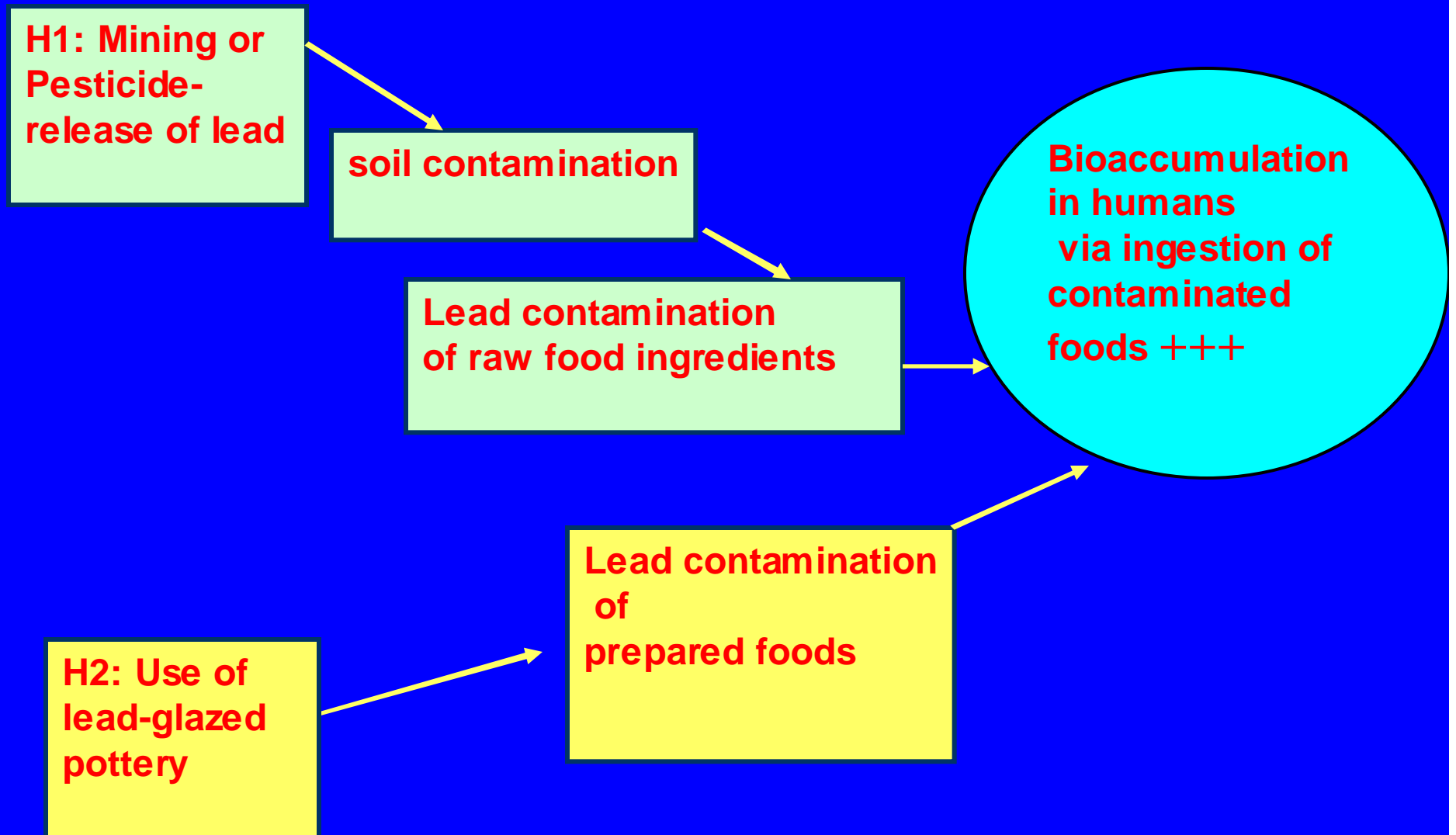


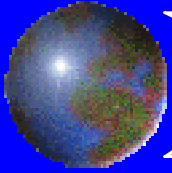
Outbreak Investigation – Zimatlan, Oaxaca

Public Health Questions	Research Questions	Study Sample/Population
<p>Is Zimatlan a lead Love Canal?</p> <p>Do people from this area have high risk food preparation practices?</p>	<p>Are the crop soils lead-tainted?</p> <p>Are many imported samples contaminated?</p> <p>How much lead in case family relatives' foods? How are they prepared?</p>	<p>Environmental samples near old mine</p> <p>Targeted sampling with envios collaborator help</p> <p>Case-cluster with sentinel case families in Seaside-Zimatlan</p>

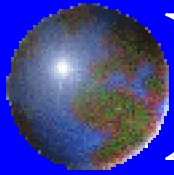


Lead Exposure Routes Under Study

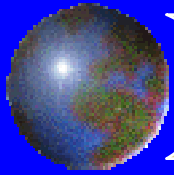




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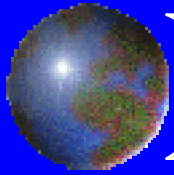


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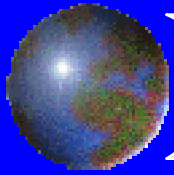
Pilot Case Cluster Investigation – 5 families

	Type of pot	Lead mg/kg (SD)	
1. Spices: oregano, garlic, cumin	Chirmolera all were glazed	1367*	(12)
		339*	(16)
		1528*	(171)
2. Chapulines	Comal non-glazed	1000	(42)
	glazed	216	(143)
3. Pumpkin Seeds	Cazuela glazed	584*	(26)
	unglazed	1009	(42)
	metal	ND	
4. Mole	Cazuela glazed	32	(5)



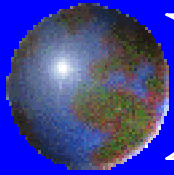
Environmental Testing – Zimatlan, San Pablo, Santa Inez

Type of Sample	Lead Result mg/kg
Mining debris - Sta. Inez Soil	3099 (32), 822 (12)- <40
Envios - San Pablo/Santa Inez Chapulines Pumpkin seeds	158-1547 592
Community markets Zimatlan (chapulines) Oaxaca City (chapulines) Ocotlon (chapulines)	53, 194, 1547, 2426 251 328



Community Collaboration – Oaxacan partners

GROUP	COLLABORATIVE GOAL
Centeotl	<ul style="list-style-type: none">- Identify source-Design prevention strategy
Envios	<ul style="list-style-type: none">- Identify source- Health promotion-Community engagement
School Groups	<ul style="list-style-type: none">Identify sourceEnvironmental education



Summary - Preliminary Findings, Oaxaca

- **Multiple sources of lead in Zimatlan community**
 - **Contaminated soil including crop land**
 - **Rapid release of lead from pottery into toasted foods**
 - **Local pottery role in such high levels in food?**
- **On-going envios shipments highlight need for transnational public health strategies**
- **Zimatlan community wants to 'oaxacанизar' the problem**

**Handley, Grieshop. Globalized Migration and Transnational Epidemiology
International Journal of Epidemiology, 2007 (in press)**