

Abstract # 190

Authors: Melissa A. Davis, Brian Smith, Romero Gonzalez, Jorge Elizondo, Ashley Dodds, Armando Cortinas, Albert Garcia, Allison Abell, Marta Fournier, Marthalicia Leal

Organization: Texas Department of State Health Services, Region 11

Presentation Title: Hurricane Rita Public Health Response

Abstract Content:**Background**

Hurricane Rita made landfall on Saturday, September 24, 2005 near Sabine Pass in Texas as a Category 3 storm. Seventeen Texas counties were declared disaster areas.

The Texas Department of State Health Services (DSHS), Region 11, which includes the border counties of Cameron, Hidalgo, Starr, Willacy, Webb and Zapata, mobilized staff to assist with rapid public health assessment and response in severely affected counties..

Purpose of Services

DSHS Region 11 rapidly mobilized a public health team to assist with Post-Hurricane Rita public health assessment. The public health team consisted of the following members: Regional Medical Director, 3 public health nurses, 2 office of border health sanitarians, and 2 general sanitarians. The team members combined had experience in post-hurricane assessment, National Incident Management System (NIMS) and incident command system (ICS), community assessment, food supply safety, environmental assessment, immunizations, nursing, medicine and integrated pest management.

The team, along with the Centers for Disease Control and Prevention (CDC), was mobilized to assist DSHS Houston office with Post-Hurricane Rita public Health Assessment.

Objectives

DSHS Region 11 Post-Hurricane Rita public Health assessment team had the following objectives:

1. Provide leadership and coordination. The Region 11 Medical Director was the incident commander and utilized NIMS to ensure that team members from different organizations and entities worked together most effectively (i.e., CDC, different state health department regions and disciplines).
2. Conduct rapid community health assessments of 5 counties that were declared disaster areas using a standardized tool.
3. Conduct shelter assessments using a standardized tool
4. Conduct retail food and environmental inspections as facilities start to reopen
5. Assess injury rate and rate of communicable diseases post-hurricane

6. Provide just-in-time public health safety information regarding carbon monoxide poisoning, chain saw injuries, etc.

Evaluations and Lessons Learned

The post-hurricane assessment team conducted rapid community assessments of Chambers, Liberty, Jefferson, Hardin and Orange County, as well as shelter assessments. Many of the Counties' assessed were without power, water, sewer, fuel, hospitals, medical care or pharmaceuticals.

The sanitarians inspected establishments as they resumed operations. Shelters, hospitals and ambulances were monitored for their rates of communicable diseases and injuries.

There were increases in chain saw, heat stroke, and carbon monoxide injuries. Without electricity, we publicized safety messages by billboard and posters.

Conclusions and Policy recommendations

NIMS/ICS ensured that the public health response was cohesive and coordinated..

Local health departments and county governments may be reluctant to ask for public health assistance, so it is important for public health to be pro-active in offering assistance.

It is important for public health to continually develop good working relationships with their local health departments, local governments and emergency managers. Disaster planning needs to be ongoing.

Abstract # 205

Authors: Erin L. Tompkins, Tom Vaughan

Organization:

Presentation Title: Fecal Coliform in the Rio Grande: A Risk to Human Health for the Texas-Mexico Border

Abstract Content:

Title of Presentation: Fecal Coliform in the Rio Grande: A Risk to Human Health for the Texas-Mexico Border

Purpose of Study: EPA and the International Boundary Water Commission have designated the section of the Rio Grande River around Laredo, Texas USA for primary contact recreation. However, monthly sampling over a ten year period along this section shows a risk to those having both primary and secondary contact with the water. This report reviews and analyzes data collected from four sites around the Laredo area to determine if this portion of the river meets the EPA standards for “fishable, swimmable waters.”

Methods: Four sites above, within and below the Laredo city limits were tested for fecal coliform density and rate of flow over a ten-year period of time. Rainfall data from the USGS for four sites was used for non-parametric comparisons. Regression analyses were also used to detect predictors of fecal coliform density in the four sites analyzed.

Results: Significant positive correlations were found between fecal coliform density at all measured sites, and rainfall in Laredo. The speed of flow of the river was also a significant predictor for coliform density at one site, and rainfall in Laredo was found to predict fecal coliform density at two of the four measured sites.

Conclusions & Policy Recommendations: The data indicate that this portion of the Rio Grande may need to be re-designated as not for primary contact by the EPA. Rainfall in Laredo indicates that a high fecal coliform density is likely to occur in portions of the river in and downstream of Laredo. It is not currently known how many people are exposed to the water of the Rio Grande in these areas. More research is needed to determine the exposed population, and the effect of high coliform densities on downstream communities.

Abstract # 140

Authors: Vanessa E. Galaviz, Josefina Blanco Ramirez, Kathryn C. Dowling

Organization: San Diego State University

Presentation Title: Importance of Cultural Exposures to Lead among Latino Children in San Diego

Abstract Content:

Lead exposure continues to threaten children's health. In addition to the familiar environmental sources, certain cultural practices contribute to lead exposure. However, the importance of cultural exposures to lead is not well understood. Still, it is apparent that the Latino community engages in a number of traditional practices that may increase lead exposure. Various sources such as Mexican candy, lead-glazed potter for food preparation and storage, and lead-containing home remedies have been implicated for lead contamination. The quantitative amount that each source contributes to exposure on a population level remains unclear. In October 2005, we conducted a focus group study to probe into mothers' perceptions of these products, with the goal of generating more effective and culturally-appropriate ways of surveying their use. A total of 12 Latina mothers from the urban area of San Diego participated in two discussions. It is clear that Mexican products are culturally significant and the mothers continue to use them, although lower access may somewhat restrict products used in California, in comparison with Mexico. Sources and suppliers of these products in San Diego will be discussed, including underground suppliers.

To estimate the importance of multiple exposures among Hispanic children, an exposure/source assessment study is taking place in San Diego. Lower socio-economic status (SES) populations tend to live in older housing in the city and in close proximity to the many freeways that crisscross the urban area. They consequently suffer higher exposure to lead-based paint and soil contaminated by the historic use of leaded gasoline, respectively. The goal of this investigation, planned for a total of 150 households, is to examine both environmental and cultural contributions to children's blood lead burden. Quantitative analysis of lead concentrations in paint, soil, dust, and water, is underway in and around randomly-selected homes. We are seeking samples of lead-based home remedies for analysis. The study relies on questionnaires to access doses of candies, pottery, and home remedies. Questionnaires also are used to evaluate the level of acculturation and socio-economic status (including access to medical care). Ultimately, we hope to test the hypothesis that both socioeconomic status and level of acculturation are significant contributors to, and inversely correlated with blood lead levels. We will present preliminary data on the study and its progress.

Resumen # 196

Autores: Luz Patricia Álvarez Larios, Jesus Armando Jiménez Gutiérrez, José Víctor Calderón Salinas, Narciso Alberto Chavelas Servin, Juan Pablo Martínez

Organización: Servicios Médicos Municipales

Título de Presentación: Evaluación de la exposición a plomo en dos zonas de Ciudad Juárez Chihuahua

Contenido del Resumen:

a) Título de la presentación. Evaluación de la exposición a plomo en dos zonas de Ciudad Juárez Chihuahua

b) Propósito del estudio. Evaluar si existe intoxicación crónica por plomo en habitantes de una zona de Ciudad Juárez Chihuahua cercana a una planta metalúrgica., Generar un marco de referencia de certeza científica para evaluar, apoyar y generar bases sólidas para la toma de decisiones gubernamentales, de salud y sociales en un posible problema de salud pública municipal

c) Métodos utilizados. Selección con validez estadística de una muestra representativa de dos zonas de Ciudad Juárez Chihuahua, una de ellas cercana a la metalúrgica, información a la población y aceptación del estudio, evaluación clínica y análisis de laboratorio., encuestas epidemiológicas dirigidas, determinación de plomo en sangre por voltametría, determinación de parámetros de intoxicación con plomo y daño específico, análisis estadístico de la información, difusión de la información por los canales adecuados. Se realizó un estudio epidemiológico transversal, comparativo de base poblacional.

d) Resultados. Se seleccionaron dos zonas de Ciudad Juárez., La zona I en la colonia “Anapra” en un diámetro no mayor a 1500 metros de la planta metalúrgica “azarco”., La zona II en la colonia “Carlos Chavira” a más de 4300 metros de la planta metalúrgica. Se estudiaron: 312 pacientes en total, 223 de la zona I., 89 de la zona II., Distribución y número de individuos validado por pruebas estadísticas, El promedio de edad en los individuos de ambas zonas es similar. La distribución de la edad de los individuos en ambas zonas fue similar. La distribución por género de los individuos en ambas zonas fue similar. Los individuos de la zona I tuvieron mayores concentraciones de plomo, aun estando por debajo de los niveles aceptados como normales. Hay una diferencia de 0.6 ug/dl entre los promedios de plomo en sangre de la zona I con respecto a la zona II.

e) Conclusiones y recomendaciones.

• No hay evidencia de que en este momento exista un proceso activo de exposición a plomo en la llamada zona I, de Ciudad Juárez, cercana a la metalúrgica “azarco”

• No existe evidencia actual de la presencia de efectos crónicos de exposición y daño por plomo

• No se puede encontrar, con relación a la edad, huellas de una exposición a plomo en individuos de la zona I

• Existe una mayor concentración de plomo en sangre en individuos de la zona I con respecto a los de la zona II, lo cual puede ser consistente con un discreto incremento en las concentraciones ambientales de plomo en la zona I.

• La presencia de elevadas concentraciones de plomo en algunos individuos de la

zona I puede ser compatible con zonas discretas y limitadas de exposición o con exposiciones puntuales de los individuos.

¶ La concentración de plomo en la sangre de los individuos menores de 18 años y en los hombres es mayor en relación a los mayores de 18 años y mujeres respectivamente, con lo primero se concluye que no existe un patrón de exposición crónica y sugiere un cambio en la cinética distributiva y de excreción de plomo.

Abstract # 184

Authors: Raquel Sabogal, Rebecca H McElroy, Gary Robertson, Dana B. Barr, David Camann, Carol Rubin, Stephanie Kieszak, Stephen Hern

Organization: Centers for Disease Control and Prevention

Presentation Title: Pesticide Exposure among Children Living in Agricultural Areas along the United States-Mexico Border: A cross-sectional study

Abstract Content:

Families of agricultural workers face an increased risk of pesticide exposure because they live in close proximity to treated fields or because pesticides are carried into the home by the worker. There is particular concern that the health of children, who may be more susceptible to the effects of pesticides, may be jeopardized by such exposures. This study was to assess pesticide exposure among children living near the U.S.-Mexico border.

We evaluated pesticide exposure among 152 children aged 4-9 years who lived in Yuma County, Arizona from October 1999 through February 2000. We completed a questionnaire with the study participant's parent or guardian and collected one urine sample from each child. Urine samples were analyzed for six dialkyl phosphate metabolites associated with organophosphate pesticides. We also collected dust samples from each participating home and from 25 classrooms in six schools and measured selected organophosphate, carbamate, organochlorine, pyrethroid pesticides and one disinfectant. Recruitment and data collection was performed by promotores (lay community health workers) when peak quantities of organophosphate pesticides were expected to be applied to crops.

Organophosphate pesticide metabolites were detected in all the urine samples. Pesticides also were detected at low levels in the dust samples in homes and schools. We found no difference in urinary pesticide metabolite levels in children living close to or further from an agricultural field (greater than or less than 250 feet). Household use of pesticides and take-home pesticide exposure were more closely related to levels of pesticide metabolites measured in the urine than the distance the child lived from an agricultural field.

This study shows that children had detectable levels of dialkyl phosphate metabolites in their urine samples. These results suggest that living with a parent or other adult may contribute to exposures in the home.

Abstract # 138

Authors: Dora Elia Cortés Hernández, Kirby C. Donnelly, Hermelinda Tamez, Leslie Cizmas, Juan Ramírez

Organization: Brigadas Internacionales Universitarias de Promoción de la Salud, Universidad Autónoma de Nuevo León

Presentation Title: Assessment of Childhood Exposure and Susceptibility to Pesticides in the Texas-Mexico Border Region

Abstract Content:

Exposure studies conducted in the Rio Grande Valley of Texas recently observed organophosphate pesticide (OP) metabolites in the urine of young children at concentrations that were approximately 3.5 – 13 times the levels seen in the general US population. This exposure did not appear to be associated with farm worker activities, nor was there a clear correlation between pesticide levels in the children's urine and distance from the home to nearby agricultural fields. Household pesticide use in the colonias may be one of many factors that contribute to childhood exposure to OPs. These investigations have recently been expanded to include activities to improve family knowledge regarding sources of pesticide exposure in colonias near the Texas-Mexico border, and to reduce these exposures. An educational module about pesticide use in the home has been developed. Experienced promotoras who have worked in these colonias will present this module to colonia residents in their homes, and will discuss with the mothers methods they can use to reduce the family's exposure to pesticides. Both before and after the household training, urine samples will be collected from young children in these families for analysis of OP metabolite levels. The impact of the health education module on pesticide metabolite levels in the children will be evaluated. Among children who are exposed to OPs, individuals with a slow-metabolizing form of the paraoxonase-1 (PON-1) gene would be expected to retain OPs longer in the body and thus may be more sensitive to these compounds. A pilot study was conducted to investigate the impact of genotype on pesticide elimination. Urine samples and hand rinse samples were collected from 26 children in two communities. For children with the slow form of PON-1, hand rinse to urine ratios ranged from 17 to 697, while children with the rapid form of PON-1 had ratios ranging from 0.76 to 47. Although these data were obtained on a relatively limited population, they suggest that individuals with the slow form of PON-1 are likely to retain pesticides longer than those with the rapid form of PON-1. The US Environmental Protection Agency and Centers for Disease Control have funded a collaborative study being conducted by Texas A&M University in Texas and Brigadas Internacionales Universitarias at the Universidad Autónoma de Nuevo Leon in Monterrey, Nuevo Leon. The goal of this study is to collect additional samples to compare exposure and retention of OPs in children with the slow and fast forms of PON-1.

Resumen # 134

Autores: Maria Alarcón Herrera, Luz Helena Sanin, Margarita Ornelas, Fernando Díaz-Barriga, Sandra A. Reza, Isabelle Romieu

Organización: Centro de Investigación en Materiales Avanzados

Título de Presentación: Riesgo Residual y Alternativas de Restauración en el Caso de una Fundidora de Plomo

Contenido del Resumen:

OBJETIVO: Presentar la evaluación del riesgo residual de intoxicación por plomo en la zona habitacional de un sitio contaminado por una fundidora, y las alternativas de solución más viables propuestas para la recuperación del sitio. **MATERIAL Y METODOS:** Siete años atrás se hizo una Evaluación de riesgo en el área, de acuerdo a la metodología de la EPA (Agencia de Evaluación Ambiental de los Estados Unidos) con estratificación de la zona de acuerdo a la distancia a la fundidora. En cada uno de los tres estratos definidos, se seleccionó una muestra aleatoria de madres en edad reproductiva y sus hijos de 1 a 5 años de edad; se tomaron muestras de sangre capilar de los binomios madre e hijo, analizando mediante voltametría, (lead care). En cada una de las viviendas muestreadas se tomaron muestras de suelo, pintura, polvo y agua para su análisis posterior por voltametría anódica. A su vez se seleccionaron escuelas pre-escolares de cada estrato, donde se tomaron muestras de sangre capilar a niños menores de 6 años, y muestras ambientales correspondientes a cada escuela. Recientemente se hizo una evaluación del estrato cero (área límite de las instalaciones) y de puntos estratégicos de los otros estratos. Se cotejaron los datos recientes y anteriores y se evaluaron posibles soluciones de restauración del sitio para presentar una propuesta de restauración. **RESULTADOS:** En la evaluación inicial se examinaron un total de 661 niños cuyos valores de plomo en sangre oscilaron entre 3.0 - 59.0 $\mu\text{g/dL}$ con una media geométrica de 11.45 $\mu\text{g/dL}$ (± 8.72), y un porcentaje de 40% mayor o igual a 10 $\mu\text{g/dL}$ y 20% $>20\mu\text{g/dL}$. Las concentraciones de plomo mostraron relación inversa con la distancia a la fundidora. La media global de plomo materno fue de 5.22 $\mu\text{g/dL}$ (± 3.36). Las muestras de tierra superficial analizadas muestran un rango de 100-9000 mg/Kg. Los predictores de plomo en niños, mediante Regresión Lineal Múltiple se relacionan con la exposición a suelo. La evaluación reciente muestra concentraciones que van desde 509 mg/Kg en los estratos I y II y hasta más de 15000 mg/Kg en el estrato cero. Se propone la Fitoremediación para la recuperación del suelo de parques y jardines en la zona habitada y con ello la minimización del riesgo. **CONCLUSIONES:** Se estima que el suelo está aportando más del 90% como fuente de exposición al plomo, especialmente en niños menores, con valores por arriba de lo estipulado por la EPA para tomar medidas de remediación. Es claro que existe una contaminación residual en la zona aledaña a la fundidora a la cual debe remediarse antes de seguir destinando la zona a actividades recreativas y culturales. Se propone la fitorestauración de la zona habitada, además de las actividades educativas y de vigilancia epidemiológica.