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Border XXI

Environmental Health Workgroup

Fact Sheet

Environmental health is defined as human health influenced by exposure to chemical, physical, and biological agents in the community, workplace, or home. Contamination of air, water, and soil by heavy metals, volatile organic compounds (VOC), hazardous materials and waste, pesticides, nitrates, raw sewage, untreated wastewater, parasites, and bacteria can cause health problems in the U.S.-Mexico border region.

In 1993, the U.S. Department of Health and Human Services (HHS) and U.S. Environmental Protection Agency (EPA) established the Interagency Coordinating Committee for U.S.-Mexico Border Environmental Health (ICC) to address environmental health concerns. In Mexico, the Secretariat for Environment, Natural Resources, and Fisheries (SEMARNAP) and the Secretariat of Health (SSA) have initiated efforts to generate information, investigations, auditing, and control of environmental risks. To increase binational collaboration between environmental and public health partners, the Environmental Health Workgroup was established in [illegible] Program in 1996.

The following conditions of the border [illegible] challenges to the environmental health [illegible] communities:

- Rapid industrialization without developing adequate health and environmental infrastructure
- Increased industrial and manufacturing development and the accompanying occupational risks
- Changing age demographics resulti[illegible] from migration, which increases the number of young working adults and children
- Widespread poverty
- Lack of clean drinking water supplies
- Inadequate treatment or disposal of

The Border XXI Program

The Border XXI Program (Border XXI) is an innovative binational effort between the United States and Mexico to protect the natural resources and environment of the border region. The mission of Border XXI is to achieve a clean environment, protect public health and natural resources, and encourage sustainable development along the U.S.-Mexico border.

Border XXI is implemented through nine binational workgroups. The nine workgroups under the Border XXI Program are *1 water, 2 air, 3 hazardous and solid waste, 4 pollution prevention, 5 contingency planning and emergency response, 6 cooperative enforcement and compliance, 7 environmental information resources, 8 natural resources, and 9 environmental health.*

Environmental Health Workgroup

These conditions, and the resulting contamination of air, water, and soil, are suspected of being factors contributing to illness and health risks in populations along the border. For instance, the possible relationship of asthma and systemic lupus erythematosus (an autoimmune disorder), to chemicals found in the border regions are currently under study. Blood lead levels and the possible association of pesticide exposure and health effects in children living along the border are also being studied by the Environmental Health Workgroup. The Border XXI Environmental Health Workgroup has initiated several projects to address border environmental health issues. Workgroup activities are conducted in the following four related program areas:

(1) Research to link environmental exposures and health risks
(2) Training and education
(3) Environmental monitoring and assessment
(4) Communications

Objectives

The mission of the Environmental Health Workgroup is to improve the environmental health of U.S.-Mexico border communities by identifying and addressing those environmental conditions that pose the highest human health risk. Specific objectives of the Environmental Health Workgroup include the following:

- Improve the capacity of state, tribal, and local health and environmental agencies to assess the relationship between human health and environmental exposures by conducting surveillance, monitoring, and research
- Support projects to improve the capacity of state, tribal, and local health and environmental agencies to deliver environmental health intervention, prevention, and educational services
- Increase opportunities for all border stakeholders (individuals, community organizations, and occupational groups) to participate in environmental health initiatives
- Improve training opportunities for environmental health personnel
- Improve public awareness and understanding of environmental health problems by providing information and educational opportunities

Projects intended to link environmental exposures and health risks include Geographic Information System (GIS) mapping for environmental health and a study of pesticide exposure and possible health effects in young children. Projects intended to develop environmental health training and education include a border area advanced training program as well as a program to increase the number of Poison Control Centers and health professionals trained specifically for problems associated with the border area. Studies on pediatric lead exposure and risk reduction, as well as neural tube defects, are intended to assess and monitor the prevalence of specific health effects in the border area. Finally, communication projects, such as the creation of a Health Alert and Disease Outbreak Information Exchange, will improve public knowledge and prevention of diseases and other health risks.

The projects initiated by the Environmental Health Workgroup cannot eliminate disease. However, the data collected during these projects will enhance decision making by public health and environmental officials and contribute to the development of more effective health promotion and risk reduction strategies.

Neural Tube Defect Project

Clusters of Neural Tube Defects (NTD) have been identified in several border communities during the past decade. The following two projects on both sides of the border have been initiated by the Environmental Health Workgroup to address the prevalence of NTDs.

NTD Assessment Along the U.S.-Mexico Border. Three phases of data collection will be used to document and reduce the prevalence of NTDs through case-control and epidemiological studies, fortification of flour and grain food products, training of health professionals in the border region, and education of at-risk populations. In the first phase, available NTDs surveillance data from border states, border "sister cities" and data from elsewhere in Mexico will be collected to estimate the prevalence of NTDs. In the second phase, a case-control etiologic study will be conducted in Tamaulipas. In the third phase, baseline folate intake along the U.S.-Mexico border will be assessed using the most recent Mexican National Nutrition Survey. Community-based projects will be undertaken to educate reproductive-age women about good dietary habits and the protective effects of high folate intake. Blood folate levels will be monitored in women of child-bearing age as a complement to the Texas NTDs study.

Texas NTD Study. In 1995, the Texas Department of Health initiated a four-year case-control study of risk factors for NTDs in 14 counties along the Texas-Mexico border. The last component of the project, supported by the Environmental Health Workgroup, is to determine whether environmental contaminants contribute to NTDs. An anticipated outcome of this project is the identification of unique biomarkers of environmental exposure, genetic susceptibility, and genetic-environment interaction that lead to the development of NTDs in Hispanic populations.

Ongoing Projects

Border XXI Environmental Health Workgroup Projects

1996-1999 Initiative for Pediatric Lead Exposure Identification and Risk Reduction
1996-1999 Border Health Alert and Disease Outbreak and Environmental Health Organization and Information
1996-1999 Advanced Training in Environmental and Occupational Health
1997-1999 Border Geographic Information System (GIS) for Environmental Health
1996-2001 Neural Tube Defect Assessment
1996-2002 Pesticide Exposure and Health Effects in Young Children Along the U.S.-Mexico Border
1997-2000 International Toxicology and Poison Center Development Program

Projects established by ICC and now monitored by the Environmental Health Workgroup

1995-1998 Texas Neural Tube Defect Project
1996-1998 Lower Rio Grande Valley Transboundary Air Pollution Project
1996-1998 Retrospective Study on Pediatric Asthma and Air Quality
1996-1998 Texas Border Health Survey
1996-1998 Evaluation of the Hispanic Health and Nutritional Examination Survey (HANES) Database
1996-1999 Investigation of Systemic Lupus Erythematosus
1996-1999 National Human Exposure Assessment Survey (NHEXAS)

Pesticides and Children Project

An important focus of the current environmental health research program is a three-phase study of the health effects in young children of exposure to low level pesticides. Phase I consisted of surveying pesticide usage along the border the mapping agricultural areas and population densities. In Phase II young children living in the vicinity of agricultural areas will be screened for pesticide exposure using questionnaires and urine analysis. In Phase III, a more complete assessment of children classified as "high end exposures" is planned, including detailed screening for multiple pesticides and their metabolites. If the results of this assessment warrant further study, an epidemiological study will then be undertaken to determine the potential health consequences of pesticide exposure. Partners in this project include border state and local health departments, the Centers for Disease control and Prevention, the U.S. Environmental Protection Agency, and the Secretary of Health-Sonora.

Phase II screening will commence during the coming year and include approximately 160 children in kindergarten and first grade from several Yuma County schools. Specific goals of the Yuma Study include:

- Evaluation of pesticide exposure among children who live in homes and attend elementary schools adjacent to farm land and compare these children to those who live and attend school away from farm land.
- Assess the general environmental levels and sources of contamination through dust samples obtained in homes and schools of participants.
- Assess the exposure of siblings of those participants whose urine pesticide levels fall in the highest and lowest 10% of the total children studied to assess the overall exposure of all children in these households.

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