

OVERVIEW OF THE PRINCIPAL ISSUES AND THEMES

Human health and the environment are inextricably linked.

Contamination of air, water, and soil by chemical and biological pollutants is suspected to be a key factor in the development of respiratory and gastrointestinal diseases, elevated blood lead levels in children, and pesticide poisonings.

In the U.S.-Mexico border region, there is heightened public concern about a variety of demographic, economic, and environmental factors that may contribute to increased risks to human health. These factors include:

- Rapid urbanization without commensurate development of health and environmental infrastructure
- Increased industrial/manufacturing activity and the attendant occupational risks
- Poverty
- Poor quality or lack of drinking water
- Inadequate treatment and disposal of domestic and industrial wastewater
- Domestic solid and hazardous waste and industrial wastes
- Improper handling and storage of pesticides
- Increases in the number of children
- Increases in the number of young adults in the workforce

In light of these issues—specifically those related to environmental factors—the Border XXI Environmental Health Workgroup (Health Workgroup) was established in 1996 to address and improve the quality of life on the border. Before its establishment, health and environmental officials in the United States and Mexico addressed environmental health issues through unilateral mechanisms. As part of that approach, the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Health and Human Services (HHS) worked closely together on the Interagency Coordinating Committee (ICC) for Environmental Health on the U.S.-Mexico border. In much the same way, Mexico's *Secretaría de Salud* (SSA, or Secretariat of Health) and *Secretaría de Medio Ambiente, Recursos*

Naturales, y Pesca (SEMARNAP, or Secretariat of Environment, Natural Resources, and Fisheries) worked together to address environmental health issues throughout Mexico. Rather than creating a new entity for the Border XXI Environmental Health Workgroup, it was decided that the ICC would represent the U.S. position on environmental health issues and continue working with the SSA and SEMARNAP in a binational context. The Environmental Health Workgroup became an avenue through which members of the ICC, SSA, and SEMARNAP could identify, measure, and address environmental health issues in a binational forum.

Environmental Health

OBJECTIVES OF THE ENVIRONMENTAL HEALTH WORKGROUP AND PROGRESS TOWARD GOALS

The Border XXI Environmental Health Workgroup seeks to increase binational collaboration between environmental and public health entities to improve the health of border communities. These collaborative efforts should improve the workgroup's ability to identify and address the environmental conditions that pose the highest health risks. The goal of the workgroup is to address environmental health concerns to reduce exposures and other factors associated with the increase in disease rates along the border. To that end, the objectives presented in Table 7-1 (on the following page) were defined.¹

In 1996, the workgroup identified seven discrete initiatives of mutual importance to support the five objectives. Representatives of participating U.S. federal agencies (EPA and HHS), state health and environmental agencies, and their federal and state counterparts in Mexico agreed on the initiatives. The initiatives fit within the workgroup's four programmatic areas of Research, Communication, Training, and Surveillance and include:

- Pesticide Exposure and Health Effects in Children
- Pediatric Lead (Pb) Exposure and Risk Reduction
- Neural Tube Defects (NTD) Surveillance
- Advanced Training
- Environmental Health Alerts and Communication
- International Toxicology Center Development
- Geographic Information Systems (GIS)

¹ Please note that subsequent sections will refer to these objectives.

Objectives
<ul style="list-style-type: none"> ● 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 studies. ● Improve the capacity of state, tribal, and local health and environmental agencies to deliver environmental health intervention, prevention, and educational services. ● Increase the opportunities for stakeholders on the border (for example, individuals, communities, institutions and organizations, and occupational groups) to participate in environmental health initiatives. ● Improve training opportunities for environmental and health personnel. ● Improve public awareness and understanding of environmental exposure conditions and health problems by providing information and educational opportunities.
<p>The objectives listed above may have been paraphrased from the <i>Framework Document</i>. For a more detailed description of the objectives, please refer to that report.</p>
<p>The objectives described in this section may be referred to by number. The numbers are intended for ease of reference only and do not imply order of importance.</p>

Table 7-1

Progress Toward Goals

Although the objectives of the workgroup have remained unchanged since 1996, a recent review of the program has caused the workgroup to re-evaluate its goals and objectives. Since its establishment, the workgroup has emphasized the need for public input and participation (accomplished through objective 3). In affirmation of that principle, the workgroup co-chairs unveiled a dynamic vision for the Environmental Health Workgroup at the 1998 annual workgroup meeting. The workgroup has since implemented the new model, which is discussed further in the Future Perspectives section of this chapter.

In Table 7-2, progress toward achieving the five main objectives is summarized. Following the chart are detailed descriptions of achievements realized through each initiative.

Pesticide Exposure and Health Effects in Children

This initiative addresses objectives 1, 2, 3, and 5. Through this initiative, the risks and possible health effects from constant exposure to pesticides from multiple sources and pathways affecting children who live along the U.S.-Mexico border are investigated. The subworkgroup responsible for this initiative recently published the *Phase I Pesticide Usage Report*

Overview of the Strategy					
Initiative	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Pesticide Exposure and Health Effects in Children	●	●	●		●
Pediatric Pb Exposure and Risk Reduction	●	●	●	●	●
NTD Surveillance	●	●		●	●
Advanced Training		●	●	●	●
Environmental Health Alerts and Communication		●	●		●
International Toxicology Center Development	●	●	●		●
GISs	●	●	●	●	●
● Initiative addresses this objective					

Table 7-2

and produced GIS crop usage population maps. The subworkgroup also has initiated Phase II pilot studies in Yuma, Arizona and El Centro, California. By increasing community awareness of specific health issues related to pesticide exposure, the Phase I report has improved the capacity of state, tribal, and local environmental agencies to deliver services to the communities. To date, several workshops have been convened to consider research methods and pesticide exposure assessments.

Pediatric Lead Exposure and Risk Reduction

This initiative, which includes three distinct efforts, meets all of the objectives of the Environmental Health Workgroup. Achievements under this initiative are listed below.

- The University of California-Irvine-(UCI) managed children’s blood lead investigation in Tijuana, Baja California is in its final stages. Data collection has been completed; local personnel have been trained; a community education program has been implemented; and children with elevated blood lead levels have been receiving follow-up care through case management to determine the source of lead exposure. In addition, a laboratory for blood lead analysis has been established at the *Hospital Municipal de Tijuana* (Tijuana Municipal Hospital).
- The Centers for Disease Control and Prevention/ National Center for Environmental Health (CDC/NCEH) conducted two field investigations, one

in the Arizona-Sonora border region in March 1998 and the other in the New Mexico-Chihuahua border region in January 1999. In both instances, CDC/NCEH donated portable blood lead analyzers and collection supplies to the state health departments to promote ongoing blood lead surveillance on both sides of the border. The final report on the Sonora-Arizona investigation is available from the Health Studies Branch of NCEH.

- The Texas Department of Health (TDH) Office of Border Health completed a survey of the health and environmental conditions of Texas border counties and *colonias* in 1997. As indicated in the Introduction, *colonias* are settlements on the U.S. side of the U.S.-Mexico border that frequently suffer from inadequate housing, inadequate or nonexistent infrastructure, and a lack of basic services.

Neural Tube Defects Surveillance

The NTD initiative fulfills objectives 1, 2, 4, and 5. Since the inception of the workgroup, participants from Mexico and the United States have worked to enhance the birth defect surveillance systems along the border. The U.S. National Birth Defects Prevention Network collected NTD monitoring data from the four U.S. border states. In Mexico, the National Surveillance System (SUIVE) has continued its ongoing collection and publication of NTD data from the six Mexican border states. Under the advanced training initiative, an epidemiology resident was assigned to work on NTD epidemiology in Baja California. In addition, the Pan-American Health Organization (PAHO), in partnership with the CDC and EPA, recruited an epidemiologist for the PAHO field office in El Paso to work on environmental health issues, including NTD surveillance and prevention. A proposal is in place for the *Centro Nacional de Salud Ambiental-Instituto Nacional de Salud Pública* (CENSA-INSP, or National Center for Environmental Health-National Institute of Public Health) to explore the relationship between genetic and environmental risk factors for anencephaly. Data collection began in Tamaulipas and Baja California. Work under the initiative continues in collaboration with the Texas NTD project, which is completing a case-control study to identify risk factors for NTD as well as the use of folic acid to reduce NTD occurrence.

Advanced Training

This initiative fulfills objectives 2, 3, 4, and 5. One aspect of developing a sustainable infrastructure for environmental health in the border region is the need to build expertise in environmental epidemiology and toxicology. Several of the initiatives of the Environmental Health Workgroup provide excellent opportunities for developing this capacity. The advanced training initiative therefore was created to provide a mechanism for the integration of training opportunities into other workgroup initiatives. A variety of training modalities—graduate training, short courses, faculty development, and such alternative methods as distance-learning programs and computer-based courses—will be used. The target audience includes those working in governmental and nongovernmental institutions and universities in the border region. Training will focus on developing the disciplines of environmental and occupational epidemiology, toxicology, engineering, and risk communication.

To date, the following accomplishments have been achieved through the advanced training initiative:

- Six short courses covering the themes of epidemiologic evaluations of environmental and occupational disease outbreaks, occupational epidemiology, industrial hygiene, epidemiology of NTDs, and surveillance of pesticide intoxications have been carried out in Mexico.
- A survey of training needs has been completed.
- A small research grant program to study lead poisoning and childhood asthma resulting from air pollution has been developed.
- An implementation plan for a cross-border training grants program has been designed.
- Two workshops on clinical toxicology have been conducted for physicians in charge of toxicology centers in Mexico.

This initiative provides training that improves local capacity for environmental health intervention and prevention, increases opportunities for stakeholders on the border to participate in environmental health initiatives, and improves public awareness.

Environmental Health Alerts and Communication

This initiative meets objectives 2, 3, and 5 by improving local capacity for environmental health intervention and prevention through increased communication, and by improv-

ing awareness of environmental health problems. In collaboration with the four U.S. border states, this initiative sub-workgroup compiled the *Environmental Health Yellow Pages*, a resource tool to help identify agencies responsible for particular environmental health issues. The yellow pages can be accessed at www.epa.gov/orsearth.

International Toxicology Center and Poison Control Center Development

The toxicology center and poison control center initiative addresses objectives 1 and 2 by improving local surveillance and education capacity. Toxicology centers have been established in Hermosillo, Sonora and Ciudad Juárez, Chihuahua to conduct surveillance and educational capacity projects. A third center is being established in Reynosa, Tamaulipas.

The initiative also addresses objectives 3 and 5 by improving training opportunities and public awareness of environmental health problems. In addition, advanced training programs have been established for qualified personnel who have practical experience in medical toxicology. To complete the advanced training program, students are required to pass a certification examination.

Geographic Information Systems

Through research and information-gathering, this initiative addresses all the objectives and provides municipalities with the capacities for intervention, prevention, and education. In conjunction with efforts under the pesticides initiative, the GIS subworkgroup has made several advances, including:

- The production of standardized base maps for both sides of the border
- The development of a border-wide inventory of environmental, population, and health data sets available for the Mexican border states
- The temporal analysis of pesticide applications
- The use of satellite imagery to identify crop types along the U.S.-Mexico border

These items have been integrated with data quality management and quality assurance plans. Further, (1) a listserv (an e-mail distribution list set up on a specific server housed at HHS) has been established to facilitate communication among individuals working on GIS on the U.S.-Mexico border (2) data quality management and quality assurance plans have been developed and (3) a report for environmental

health practitioners has been produced. The report addresses applications of GISs to public health, sources of GIS data for those applications, and opportunities for training.

ENVIRONMENTAL INDICATORS

In 1997, the Environmental Health Workgroup developed process indicators related to the seven initiatives previously discussed that fit into the following four programmatic areas of the workgroup, which also were discussed previously: Surveillance, Research, Communication, and Training. Because of a lack of baseline measurements for the identified initiatives, the primary focus of the workgroup has been to conduct research to develop the indicators. In addition, Mexico has developed and proposed some new indicators that may be explored by the workgroup.

A more detailed description of the data collection activities initiated for these indicators can be found in the implementation plans for 1999–2000.

Types of Environmental Indicators	
P	PRESSURE: ACTIONS OR ACTIVITIES THAT INDUCE PRESSURE ON THE ENVIRONMENT
S	STATE: ENVIRONMENTAL AND NATURAL RESOURCE QUALITY AND QUANTITY
R	RESPONSE: ACTIONS TAKEN TO RESPOND TO ENVIRONMENTAL AND NATURAL RESOURCE PRESSURES

R	PERCENT REDUCTION IN TOTAL PESTICIDE EXPOSURE AND NUMBER OF CHILDREN IMPACTED IN THE BORDER AREA
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As this type of measurement requires baseline data and measurements taken at some point in the future, the percent reduction is not yet available.

Pesticides Exposure and Health Effects in Children

The workgroup continues to work toward this goal. A report on pesticide use in the border region, Phase I Pesticide Usage Report, has been published by the workgroup. In addition, GIS crop usage population maps have been completed, and Phase II studies have been initiated in Yuma and El Centro. In January 2000, a project dealing with pediatric exposure to organophosphate pesticides and their association with cytogenetic harm began in Valle de San Luis Río Colorado, Sonora.

S NUMBER OF MAPS LINKING GEOGRAPHIC INFORMATION (FOR EXAMPLE, LAND USE) TO HEALTH EVENTS OR HIGH-RISK GROUPS

Geographic Information Systems

Base GIS maps were developed to research pesticide use. In addition, GIS maps are being employed to analyze NTDs in the border region. In total, 538 maps have been produced to date: 70 maps of Arizona, 72 of New Mexico, 98 of California, 212 of Texas, and 86 of Mexico. The maps serve as a baseline and do not yet link geographic information to health events. As data on health events are collected over the next few years, the links will be made. Additional maps are still being produced.

S PREVALENCE OF ELEVATED BLOOD LEAD LEVELS AND NUMBER OF EXPOSURE SOURCES OR RISK FACTORS IDENTIFIED FOR INTERVENTION

Pediatric Lead Exposure and Risk Reduction

The workgroup continues to work toward these goals. Several pediatric blood lead assessments have been completed in the border region. One report, The Sonora-Arizona Field Study, is available from CDC/NCEH. Other reports are expected in 2000. The workgroup anticipates that the completion of a document will tie together the discrete evaluations and provide a more comprehensive snapshot of pediatric blood lead levels in the border region.

S PREVALENCE OF NEURAL TUBE DEFECTS

Neural Tube Defects Surveillance

The workgroup continues to collect data on NTD prevalence in the U.S.-Mexico border region. Plans are being developed to create an NTD bulletin for the U.S.-Mexico border region.

R NUMBER OF POISON CONTROL CENTERS IN OPERATION AND NUMBER OF PEOPLE WHO HAVE RECEIVED FORMAL TRAINING SPECIFICALLY FOR THE BORDER AREA

International Toxicology Center Development

Toxicology centers have been established in Hermosillo and in Ciudad Juárez. A third center is being established in Reynosa.

Advanced training programs have been established for qualified personnel who have practical experience in medical toxicology.

R NUMBER OF BORDER AREA ORGANIZATIONS LINKED INTO AND USING THE HEALTH ALERT AND DISEASE OUTBREAK INFORMATION EXCHANGE AND A MEASUREMENT OF THE EFFECT OF ALERTS ON EARLY INTERVENTION IN SUDDENLY EMERGING HEALTH RISKS

Health Alerts and Communication

In addition to proposals for developing an electronic system, the workgroup has examined several existing alert systems that currently function in the four U.S. border states. The workgroup anticipates conducting a binational pilot test by expanding the U.S. Food and Drug Administration's (FDA) Epi-Net to Mexico. The Epi-Net is a fax-based system for sharing information with state and local agencies about hazards or problem products, import alerts, and resolutions and updates of problem situations.

To help people identify the office or agency responsible for a specific environmental health issue, the workgroup published the *Environmental Health Yellow Pages*. In addition, the workgroup developed a web site (www.epa.gov/orsearth) as a means of sharing information with the public. The Yellow Pages, which are posted on the website, are being translated into Spanish.

R NUMBER OF PEOPLE RECEIVING ADVANCED TRAINING AND NUMBER OF PROJECTS INITIATED IN THE BORDER AREA

Advanced Training

The following efforts have been completed:

- Six short courses related to environmental epidemiology have been conducted.
- A needs assessment has been performed.
- A plan for a cross-border grants program has been developed.
- Two workshops on clinical toxicology have been conducted for physicians in charge of toxicology centers in Mexico.

OTHER NOTABLE ACTIVITIES AND ACHIEVEMENTS

In addition to the seven initiatives, the workgroup has continued to monitor the development and implementation of seven projects begun under the auspices of the ICC. In-depth descriptions of the projects are available on the Border XXI Environmental Health Workgroup web site.

At the 1998 annual meeting of the Environmental Health Workgroup, the workgroup co-chairs outlined a new vision for the group that emphasized the need for increased interaction between the Environmental Health Workgroup and other Border XXI workgroups, especially the Air, Water, Hazardous and Solid Waste, and Environmental Information Resources workgroups. To that end, the SSA, the CDC, and EPA have started working together on various cross-linkages involving the Air and Water workgroups. Mexico recently highlighted two projects it had implemented, the *Agua Limpia en Casa* (Clean Water in Homes) program, and the Joint Advisory Committee (JAC). Additional information can be found at the workgroup's web site at www.epa.gov/orsearth.

The *Agua Limpia en Casa* program was developed in collaboration with Mexico's Comisión Nacional del Agua (CNA, or National Water Commission). The objective of the program is to address the basic sanitation needs of border communities, many of which have a high rate of infant (children less than one year of age) mortality caused by gastroenteritis. *Agua Limpia en Casa* is an outreach program to educate small communities about the relationship between basic sanitation and water-borne illness. Many activities are conducted under the project, including (1) evaluating community attitudes and practices with relation to basic sanitation; (2) monitoring water quality for human consumption; (3) promoting basic sanitation at the community level through discussions and video presentations; (4) promoting efficient water use; and (5) developing environmental sanitation certification programs.

The program has been very successful, obtaining very good results with few resources. Given that success, Mexico commented at the 1999 annual meeting of the Environmental Health Workgroup that it was hoped the program could be expanded to both sides of the border and instituted as a permanent program.

The most notable achievements of the program occurred in the municipality of Ojinaga, Chihuahua. Those achievements include:

- A clear decline (13.2 percent) in the prevalence of enteric diseases
- An increase (13 percent) in knowledge about water purification
- An incremental increase in the practice of water purification (between 3.5 and 20 percent)
- An increase (between 3 and 5 percent) in the practice of vegetable washing

A significant decline in the number of gastrointestinal illnesses was observed, as indicated by the preliminary results of the program's evaluation. The effects of the program extended to neighboring communities that were not involved in the program.

Under the other highlighted project, participation in the JAC provides a natural link for the Environmental Health Workgroup and the Air Workgroup. At the 1999 National Coordinators Meeting, the two workgroups agreed to pursue joint activities in collaboration with the JAC. Formed under the auspices of the 1983 *La Paz Agreement*, the JAC develops strategies to prevent and control air pollution in the El Paso, Texas-Ciudad Juárez-Doña Ana County, New Mexico Air Basin.² With this in mind, the implementation of a binational environmental system of epidemiological surveillance was proposed. The system of compatible information would deal with the effects of atmospheric pollution in sister cities. If the system is implemented, work on it will begin in Ciudad Juárez and El Paso.

In the United States, the workgroup has been working on cross linkages with the Air and Water workgroups. The workgroup recently established excellent relationships with the Texas Natural Resources Conservation Commission (TNRCC) and the local school system to support a planned children's pulmonary health study in El Paso. A pilot study was completed, with the principal study beginning in spring 2000. Another study from this area, *Ambient Air Quality and Acute Pediatric Respiratory Illness in the Paso del Norte Airshed*, has been completed. The study focused on children between the ages of 1 and 17 who visited the emergency room for

² The Agreement between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area was signed in La Paz, Baja California Sur, Mexico on August 14, 1983, and entered into force on February 16, 1984.

treatment of asthma. The study showed a positive correlation between elevated levels of particulate matter less than 10 microns in diameter (PM-10) and visits to emergency rooms two days after exposure. The report was published in May 1999 and is available from the CDC.

The Transboundary Air Pollution Project (TAPP), a year-long study to assess the possible transport of air pollutants from Mexico into the area in and around Brownsville, Texas was completed recently. The study results indicate that overall levels of air pollutants in the Brownsville area were similar to or lower than levels in other urban and rural areas in Texas. In addition, transport of air pollutants across the border from Mexico did not appear to adversely affect air quality on the U.S. side of the lower Rio Grande Valley. Few observations of pollutants exceeded comparative data, most being volatile organic compounds (VOC); those levels appeared to be the result of local events and immediate influences and not of persistent transboundary plumes from Mexico.³

In addition, several potential projects involving the Water and Health workgroups have been identified. These projects came about as a result of imminent changes scheduled for water treatment plants in El Paso and Del Rio, Texas. EPA has developed plans to conduct studies at those locations that will involve looking at endpoints before and after the scheduled changes in the treatment plants.

Another unique partnership has developed between the HHS Health Resources and Services Administration (HRSA) and EPA's Office of Research and Development (ORD). As part of the effort to improve the quality of health related to environmental issues along the border, EPA entered into an interagency agreement with HRSA to support environmental health training and surveillance activities on the U.S.-Mexico border. Through training, lay community health workers (*promotores*) and multi-disciplinary primary care clinicians (physicians, nurse practitioners, registered nurses, and physician's assistants) will learn to better recognize, understand, and manage illnesses related to exposure to environmental health hazards. This training will provide information about exposure to toxins found in air, water, and soil, as well as basic sanitation practices. The program will be accomplished by developing a two-track training curriculum, one for *promotores* and one for multi-disciplinary clinicians,

that will include implementation of a variety of didactic and clinical training activities. In the border communities, it is important to prepare *promotores* to provide effective outreach to and education of community members about exposure to environmental health hazards and to provide clinicians an opportunity to improve their skills in the areas of early diagnosis, treatment, and follow-up on illness related to environmental conditions.

Promotores are recognized as long-standing community leaders who provide a degree of continuity and stability within communities. As members of the community, the *promotores* are uniquely able to represent the linguistic, cultural, and socioeconomic identity of the community. *Promotores* are able to articulate information in an appropriate manner to community members and are known not only for their understanding of the needs of community members, but also for their ability to respond to health service organizations regarding those needs. Since there is a shortage and high turnover rate among primary care clinicians in rural areas, it is anticipated that in the future, *promotores* will play a greater role in reducing exposure to environmental hazards.

FUTURE PERSPECTIVES

To understand the direction of the Environmental Health Workgroup for 2000, the history of the workgroup should first be considered. The mission of the workgroup is based upon existing unilateral mechanisms that addressed environmental health issues. In Mexico, before the formation of the workgroup, SEMARNAP and SSA collaborated to identify their environmental health priorities. Similarly, in the United States, the ICC, consisting of state and federal partners working in collaboration, addressed priority environmental health issues in the U.S.-Mexico border region. Therefore, when the Environmental Health Workgroup was established in 1996, it was an easy transition to include the state partners in the United States and Mexico in the development of workgroup priorities and strategies. The seven discrete initiatives that the workgroup chose to pursue were identified with full participation by state environmental and health partners. Although tribal participation was minimal, the workgroup is exploring the possibility of expanding links with the tribes through the HHS Indian Health Service (IHS).

³ The findings are detailed in the Lower Rio Grande Valley Transboundary Air Pollution Project (TAPP) Project Report (Doc. No.: EPA/600/R-99/047), Project Summary (Doc. No.: EPA/600/SR-99/047), Community Summary (Doc. No.: EPA/600/S-99/004), and Question and Answer Fact Sheet (Doc. No. EPA/600/F-99-009), which are available for public distribution. The summaries and fact sheet are also available in Spanish.

State and federal representatives from the United States and Mexico volunteered to lead the initiatives. Of the seven initiatives, three were co-chaired by state representatives. The workgroup therefore was composed of four workgroup co-chairs (two from each country) and 14 initiative co-chairs (seven from each country).

In August 1998, the workgroup implemented a new model that expanded the original focus. Recognizing the importance of cross-linkages with other Border XXI workgroups, as well as the need to account for other environmental health activities in the U.S.-Mexico border region that did not fit within the realm of Border XXI, the co-chairs sought to foster a more comprehensive and inclusive workgroup. This new direction, or the “New Vision” as it is has come to be known, highlights three components: (1) cross-linkages, (2) binational initiatives, and (3) environmental health discussion forums – national and binational. The vision includes the understood need for increased bilateral coordination at all workgroup levels. Of particular importance is communication among all Border XXI Workgroup binational co-chairs (SSA, HHS, EPA, and SEMARNAP).

Cross-Linkages

Within the context of the New Vision, the workgroup has focused its efforts during the past year on including cross-cutting activities in collaboration with the Air, Water, Hazardous and Solid Waste, and Environmental Information Resources workgroups. As each of the programs developed, it became apparent that individual workgroup programs could benefit from one another through collaborative interaction. Since many of the health problems occurring along the border are the result of water-, air-, or hazardous waste-based vectors, changes occurring in these vectors by natural or man-made activities could be an ideal test bed for measuring changes in health status. The Environmental Health Workgroup has assigned liaisons from the United States and Mexico to each workgroup to ensure continued interaction. In addition, the workgroup is collaborating on a limited basis with the Air and Water Workgroups on existing projects that would benefit from the cross-linkage process.

Cross-linkages are also taking place among the seven initiatives. For example, activities under the advanced training initiative are being used to support activities conducted under the NTD initiative.

Binational Initiatives

The workgroup will continue to support the binational initiatives until the expected outcomes have been achieved. At the annual meeting, the workgroup will evaluate the progress of activities under the initiatives to determine which ones are complete and which ones require additional efforts to achieve the stated goals. The workgroup co-chairs will assign a representative to work with the initiative co-chairs to facilitate their work and nurture a continued binational dialogue. The workgroup supports the continued use of the Environmental Health Workgroup listserv as a mechanism for communication between workgroup participants and is considering the benefits of opening the listserv to the public.

The co-chairs also realize that the focus of the initiatives has become more project-oriented, and that the overall workgroup is more exclusive than inclusive. Using the New Vision as a guide, greater workgroup inclusiveness will be fostered by encouraging the initiative co-chairs to bring together experts in their respective areas to address specific issues in a binational manner, rather than on a project-by-project basis.

Environmental Health Discussion Forums – National and Binational

The New Vision delineates a convening role for the workgroup and emphasizes the importance of being inclusive. Numerous ongoing activities are taking place in the U.S.-Mexico border region that address environmental health issues. Universities, government agencies (federal, state, and local), non- and inter-governmental agencies and private industries all conduct work in the region. Some of the projects fit within the workgroup initiatives, while others do not; however, the workgroup, in light of its new vision, could serve as a convener for the various groups by providing an arena for national and binational discussion. By creating a forum for discussing U.S.-Mexico border environmental health issues in both unilateral and bilateral contexts, the workgroup will facilitate the interaction of health and environmental officials and stakeholders to identify and address priority issues.

The Environmental Health Workgroup is at a dynamic juncture in its evolving role and can move forward only

through its high-level binational commitment and understanding of the state and tribal priorities. The workgroup supports the newly signed *Coordination Principles Between the Border XXI National Coordinators and the U.S. and Mexican Border States and U.S. Tribes for the Border XXI Program (Coordination Principles)* (see Chapter 2) and will continue to work in cooperation and collaboration with our state and tribal partners. The resolution of border health issues can be accomplished only by understanding and addressing needs at the community level. The workgroup recognizes the importance of state and tribal input on these activities and will more vigorously pursue linkages with the tribes through IHS. The listserv and web site will be used as two of the mechanisms for increasing participation in the workgroup, and other means of enhancing communication will be explored. Further, to facilitate binational communication, the workgroup will continue to meet every six months to assess the continued development of the workgroup.

Near-Term Goals

On the basis of implementation plans developed by the leaders of the seven initiatives and other projects, the Environmental Health Workgroup has developed the objectives presented below.

The Pesticides and Children Initiative will:

- Complete Phase II pilot studies.
- Develop a project on pediatric exposure to organophosphate pesticides and their association with cytogenetic harm in Valle de San Luis Río Colorado, Sonora.

The Pediatric Lead Exposure Initiative will:

- Complete the Tijuana investigation.
- Produce a final report on the New Mexico-Chihuahua investigation.
- Conduct a pediatric blood lead assessment in the Texas-Tamaulipas border region.
- Produce a final report on the survey of the health and environmental conditions in the Texas border counties and *colonias*.
- Present to the federal authorities in Mexico City a final report of the various blood lead assessments conducted in the border region.

- Develop a comprehensive report on pediatric lead exposure in the border region.
- Address the issue of lead poisoning risk to workers (and those they live with) posed by industries or shops on the border through discussions and workshops.

The NTD Initiative will:

- Increase the institutional coverage and quality of NTD surveillance in U.S. and Mexican border states.
- Strengthen operation of the surveillance system with additional personnel.
- Summarize available epidemiological data from U.S. and Mexican border states obtained from regularly collected surveillance data.

The Advanced Training Initiative will:

- Provide advanced training in clinical toxicology to support the staff of the toxicology centers.
- Provide support for an applied epidemiology fellowship from the Mexican SSA for the NTD surveillance system along the border of Mexico.
- Initiate training for two border fellows at the Mexican Polytechnical Institute in environmental toxicology.
- Support short-term training of a Mexican toxicologist at the CDC in the laboratory analysis of pesticide residues.
- Support the provision of a training program in the use of GIS for Mexican border state health department researchers.
- Provide short courses in the border region, selected on the basis of the outcome of a survey of needs.
- Support the training of a Mexican epidemiologist at the doctoral level in an American university.

The Initiative on Health Alerts and Communication will:

- Conduct a binational pilot project of the FDA's Epi-Net product alert system.
- Translate the *Environmental Health Yellow Pages* into Spanish.
- Collaborate with Mexico to make the *Environmental Health Yellow Pages* binational.
- Expand the web site to include environmental health information.

The Toxicology Center Development Initiative will:

- Train the staff for the toxicology centers previously established in Chihuahua, Chihuahua. Training will be conducted at the toxicology center of the *Hospital Civil de Pensiones* in Chihuahua. The training has been designed to be completed over a long-term period.
- Open a toxicology center in Reynosa, Tamaulipas.
- Open a toxicology center in Baja California.
- Open a toxicology center in Coahuila.
- Create a statistical compendium of poisonings in the U.S.-Mexico border region.

The GIS Initiative will:

- Complete temporal analysis of pesticide applications (in progress).
- Complete soil sampling in school yards in Imperial Valley, California and in the lower Rio Grande Valley (in progress).
- Complete the Community Relations and Education Program Pilot (in progress).

With regard to the other projects, **the Environmental Health Workgroup will:**

- Implement the Agua Limpia en Casa (Clean Water in Homes) program in Mexico's northern border states.
- Implement projects in collaboration with the JAC.