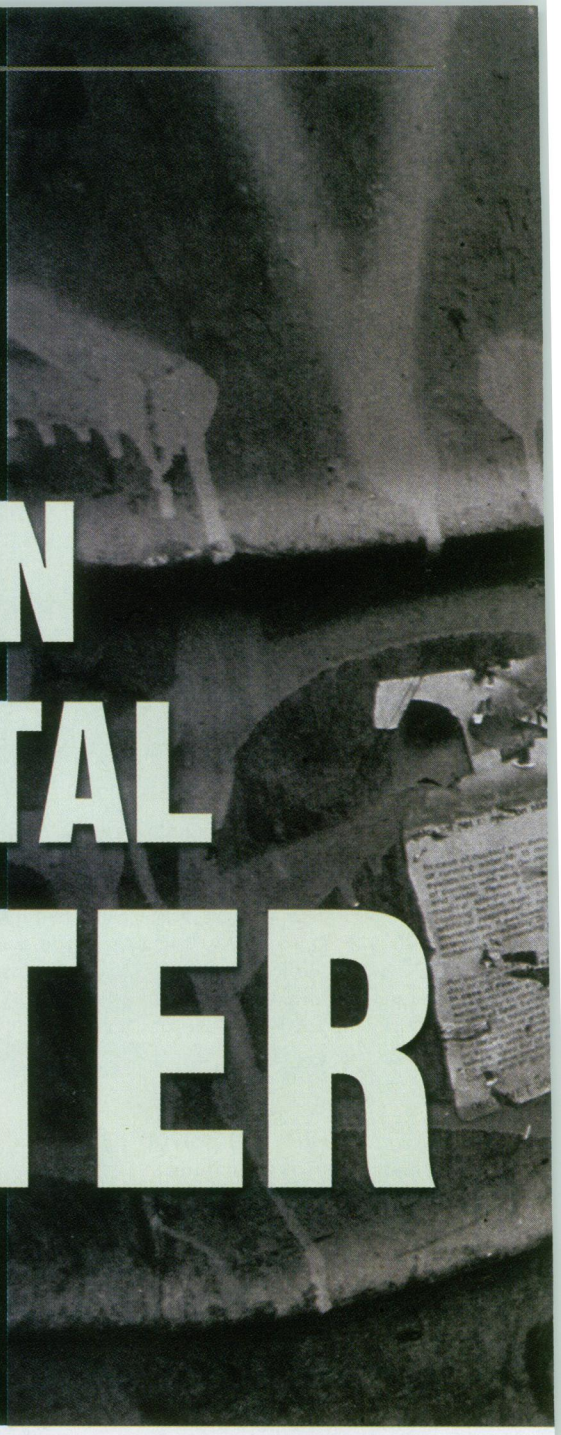
BORDERING ON ENVIRONMENTAL DISASTER



Mexico and the United States meet along a rugged and culturally diverse border that is awash in poverty. Millions of people live on the border, drawn by employment opportunities from industry and agriculture. Booming growth is expected to continue, with forecasters predicting a doubling of the border population from its current level of 10.5 million over the next 20 years. More than two-thirds of this growth is expected to occur on the Mexican side. The influx of people to this area has for decades outstripped the capacity of border towns and cities to provide adequate housing, clean water, sanitation, and other services for their populations, and a large percentage of the population live in sprawling, underserviced shantytowns. On the U.S. side, nine of the nation's poorest counties lie along this border. Although investments in public health have led to improvements, shortages in services such as drinking water treatment, wastewater treatment, and solid waste disposal are at crisis levels. In many ways, the environmental problems found on the border are among the most extreme faced by either Mexico or the United States today.

The U.S.–Mexico border comprises 10 states in total. The four states on the U.S. side include California, Arizona, New Mexico, and Texas. Texas, which has the longest border, is separated from Mexico by a 1,000-mile stretch of the Rio Grande. The six Mexican states include Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas. Much of the border population is urban and lives in any of 14 transborder sister cities, the largest of which include San Diego (California)–Tijuana (Baja California), Nogales (Arizona)–Nogales (Sonora), El Paso (Texas)–Ciudad Juárez (Chihuahua), Laredo (Texas)–Nuevo Laredo (Tamaulipas), and Brownsville (Texas)–Matamoros (Tamaulipas).

In March 2000, the U.S. General Accounting Office (GAO) completed a review of the environmental and public health infrastructure on the U.S.–Mexico border and the performance of institutions and associated programs responsible for promoting public health. Its conclusions, reported in *U.S.–Mexico Border: Despite Some Progress, Environmental Infrastructure Challenges Remain*, describe

entrenched problems that persist despite binational efforts to improve border conditions. According to the GAO, fully 12% of the border population lack access to potable water and 30% lack access to wastewater treatment. The GAO report also describes continuing problems with air pollution and solid and hazardous waste management. Contamination of air, water, and soil by pesticides, raw sewage, untreated wastewater, and microbes are suspected of contributing to poor health in the region. Impediments to infrastructure development vary by community. However, the GAO cites as a common contributing factor the "lack of human capital to plan, implement, and maintain environmental infrastructure; and the limited ability of communities to obtain affordable financing for the construction of needed projects."

Uncontrolled Border Growth

Many of the border's environmental problems are intimately connected to the region's explosive population growth. Accelerated growth in the region can be traced to the signing of the Border Industrialization Program (BIP) in 1965. This binational agreement allowed foreign-owned facilities in Mexico to export products back to the United States with reduced tariffs and trade barriers. The BIP spawned a huge number of industrial plants in Mexico, called *maquiladoras*, whose sole purpose is to make finished products with raw materials imported from the United States. These plants were initially restricted to a 12-mile zone on the Mexican side of the border. A 1972 revision to the BIP expanded the zone to include all of Mexico (save for Mexico City, Guadalajara, and Monterrey). Even so, most *maquiladoras* are still located in border cities. The largest concentrations are found in Tijuana, where 605 plants employ 140,000 workers, and Ciudad Juárez, where 302 plants employ 190,000 workers. The predominantly Mexican workforce earns wages much lower than those paid to comparable workers in the United States—average wages in the *maquiladoras* seldom exceed US$5 a day. According to an August 1998 report in the journal *Borderlands*, 50–60% of all Mexicans employed in the

maquiladora sector are female. Most of these workers are between 17 and 25 years old, are single, and have received only primary schooling. Their work is typically organized via assembly lines, with production quotas providing the "stick" and production incentives the "carrot." The result is a fast-paced and stressful workday conducive to ergonomic injuries, toxic exposures, industrial accidents, and the development of cumulative trauma disorders such as carpal tunnel syndrome.

Most newcomers to the border have flocked to its urban areas: less than a third of border inhabitants lived in cities in 1990 compared to 90% in 1997, according to the report *United States–Mexico Border Environmental Indicators 1997*, published by the U.S. Environmental Protection Agency (EPA). The growth rate in most cases is outstripping the ability of municipalities to provide basic services to the people. Drastic housing shortages lead to skyrocketing rents, which most of the low-wage workers on the border can't afford. Consequently, the border is dotted with numerous unincorporated settlements called *colonias*. *Colonias* have been described as a creative solution to an urban housing dilemma and an unavoidable consequence of the surging population. Some are well-developed, with solid construction, paved roads, and municipal services. But more often, these urban shantytowns, home to over 1.5 million people on the U.S. side alone, are comparable to the worst squatter settlements of the developing world. Many *colonias* lack clean water, sewage lines, and garbage disposal. According to Teresa Leal, an organizer with the Southwest Network for Environmental and Economic Justice, a public interest group based in Albuquerque, New Mexico, homes in the newer *colonias* are made with scrap materials found on the street. "People who take to squatting are usually too poor to buy construction materials, and they build with what they have," she says.

Environmental Threats to Border Health

Perhaps the greatest environmental challenges are posed by the region's dwindling water resources. The needs of border populations, industry, and agriculture are placing severe demands on the region's aquifers, many of which are in danger of being depleted, especially in the El Paso–Ciudad Juárez area, where 90% of the water supply comes from the severely overdrawn Hueco Bolson and Mesilla aquifer. According to Robert Varady, deputy director of the Udall Center for Studies in Public Policy at the University of Arizona in Tucson, this aquifer is likely to be depleted by 2025, causing massive shortages in the region. Water problems on the Mexican side of the border tend to be acute. For example, only 34% of the wastewater in Ciudad Juárez is actually treated, and according to the GAO, raw sewage often flows into drinking water sources that are shared by residents across the border in El Paso. Parasites and other microbes in sewage-contaminated water cause gastrointestinal disease, which is a leading cause of infant death in the border region. Portions of three major rivers on the border (the Rio Grande, the Colorado River, and the Rio Conchos) as well as their tributaries are polluted with sewage, trash, and toxic chemicals. In some cases, the pollution levels are as extreme as those found anywhere on the North American continent. For example, the New River, a man-made tributary of the Colorado River, is a disease-ridden, toxic cesspool that has tested positive for nearly 30 viruses from hepatitis A to polio and that contains caustic chemical runoff from the region's factories as well as pesticide runoff from local farms, says Jose Angel, a senior engineer with the California State Water Resources Control Board. Health risks from exposure to New River water are considered so serious that border patrol agents have been ordered to stay out of the water altogether. But illustrating the desperation of their circumstances, thousands of illegal immigrants swim the river every year as they attempt to cross the border into the United Sates.

Air quality on the border is another serious concern. Industrial emissions and vehicular exhaust are responsible for most of the region's air pollution, although dust from unpaved roads and the surrounding desert, open burning of trash, and smoke from fireplaces and wood-burning stoves are also thought to be important sources. According to Ronald J. Dutton, director of the Office of Border Health in the Texas Department of Health in Austin, long lines of idling trucks at border crossings, particularly in the city of Laredo, which is the busiest overland port in the world, are leading to concerns about diesel emissions, which the EPA suspects may be carcinogenic. In addition, winter inversions in the El

(left) An industrial park in Nogales, Sonora. (above) In a Nogales, Sonora, dump, insulation is burned off of scrap copper wire so the copper can be sold. (right) Electronic manufacturing parts in the same dump.

Paso–Ciudad Juárez airshed (in which cool air becomes trapped underneath warm air masses, trapping pollutants at ground level) are particularly harmful, leading to high ground-level concentrations of ozone, particulate matter, carbon monoxide, and other air pollutants. According to Varady, Mexico regulates air pollution with health-based ambient standards that often match those of the United States. Unfortunately, however, many Mexican communities lack the professional technicians and monitoring equipment needed to enforce those standards.

Finally, shortages of solid and hazardous waste disposal are a major problem for most border communities. According to the GAO, 25% of the border population lack access to solid waste disposal. Furthermore, according to an article by Varady published in the March 2000 issue of *Environmental Practice*, only one in every nine tons of hazardous waste generated by border industries is properly treated. Although industry is directed by Mexican law to return industrial wastes to the country of origin, evidence suggests that *maquiladora* wastes are more often mismanaged and left behind. Estimates made by the Mexican Instituto Nacional de Ecología indicate that only 2% of the hazardous wastes generated in border states in 1997 were actually returned to the United States by border industries. At least part of the problem is a centralized Mexican tax structure that requires that revenues be sent to Mexico City, where they are redistributed around the country and therefore may not be used in the border region for purposes such as building treatment plants and other environmental infrastructure. The resulting lack of a waste treatment infrastructure creates an incentive for illegal dumping along the border.

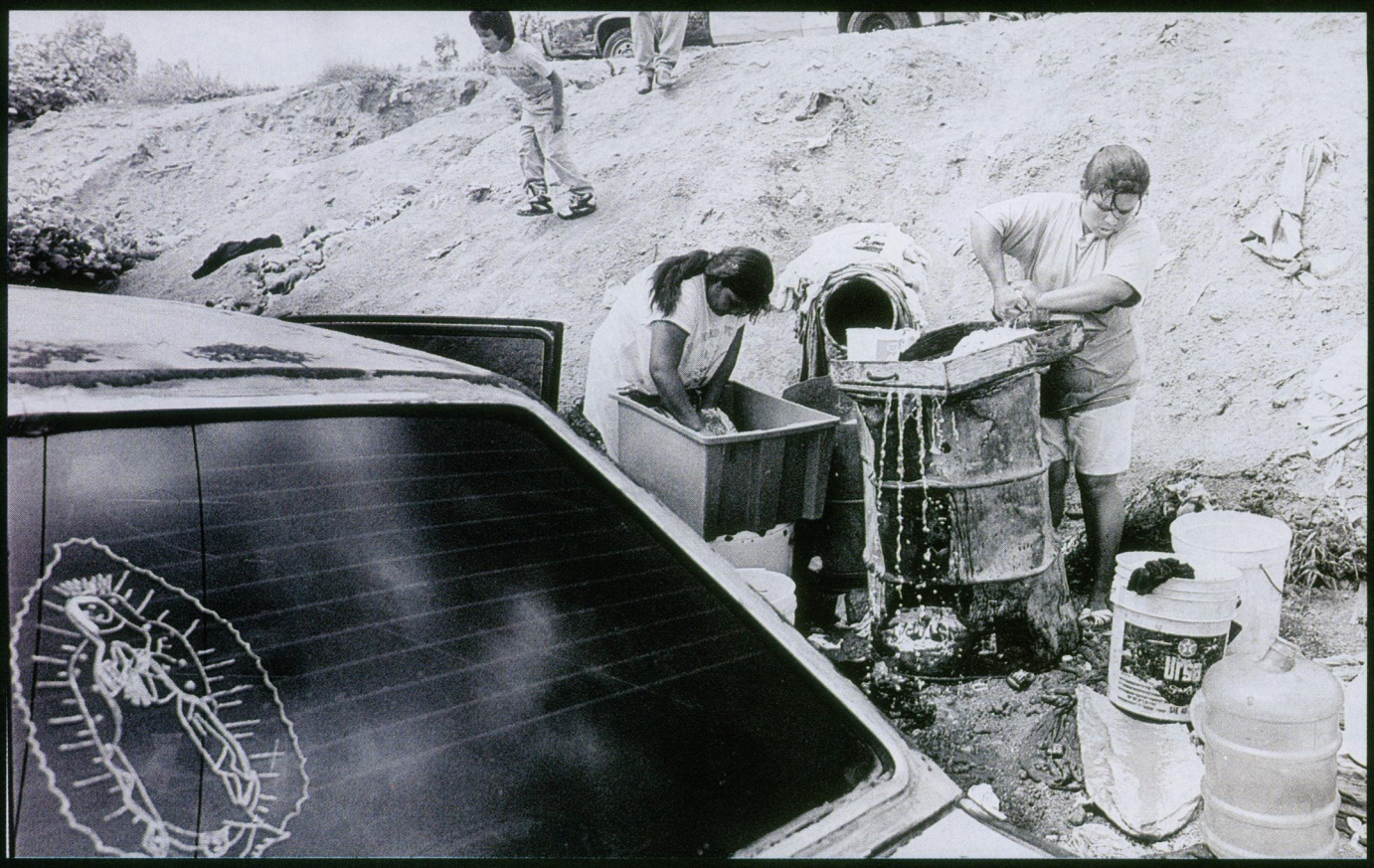
The Effects of Contamination

At one time or another, a host of adverse health conditions have been linked to poor environmental conditions on the border. These conditions include gastrointestinal infections, asthma, tuberculosis (TB), multiple myeloma, systemic lupus erythematosus, hepatitis A, neural tube defects, pesticide poisoning, and elevated blood lead concentrations. Major disease surveillance programs are fairly recent, with most coming on the heels of the North American Free Trade Agreement (NAFTA), signed in 1993. Therefore, a complete picture of the current health profile remains elusive. Many of the data gathered thus far are specific to individual states and regions, and without a central repository it's difficult to assess health conditions on the border as a whole. Efforts to synthesize health data are ongoing at the Pan American Health Organization's (PAHO) field office in El Paso. According to Rosalba Ruiz, an epidemiologist with PAHO who has been leading the effort (called the Sister Communities Health Profiles), the organization is gathering disease and death rate data on 13 pairs of sister cities that contain 85% of the border population. Ruiz expects a report describing PAHO's findings to be released later next year.

Currently available evidence points to gastrointestinal disease from exposure to waterborne viruses and bacteria as the border's most conspicuous health problem. Dutton says that investigations performed by the Texas Department of Health have identified high rates of hepatitis A, shigellosis, and salmonellosis in several Texan border communities. "Rates for these diseases are from two to five times higher than the national average, so the concerns are borne out by the data," he says. Diarrheal diseases are a particular concern for children in affected areas. For example, according to the PAHO publication *Mortality Profiles of the Sister Communities on the United States–Mexico Border 1992–1994*, the most recent compendium of these data currently available, gastrointestinal disease linked to water contaminated with sewage is the leading cause of infant death in the six Mexican border states. Three of the four cities with the highest rates of childhood gastrointestinal infections are in the state of Sonora, which lies south of Arizona.

Chemical contaminants from industry and agriculture also threaten potable water. Today, the *maquiladoras* and their low-cost labor make products ranging from textiles to electronics to chemicals. Many have industrial processes that require large amounts of hazardous materials imported from the United States, which poses a serious health risk to workers, particularly because industrial safeguards are often lacking in the poorly managed *maquiladoras*.

How the chemical profile of U.S. water supplies compares to Mexican supplies is difficult to say. Water quality data on the U.S. side are much more complete than in Mexico, where laboratory equipment is in short supply. Nevertheless, available studies suggest that chemically contaminated water in the region is a serious problem. A recently completed study



(above) Women in a *colonia* outside Nogales, Sonora, do their laundry in a barrel containing water from a pipe that runs from beneath the municipal dump. (right) A man drinks water from the same pipe. The pipe is the only source of water for the *colonia*.

titled *Binational Nogales Wash United States/Mexico Groundwater Monitoring Program Interim Report, May 1998*, published by the International Boundary and Water Commission, a binational federal agency based in El Paso–Ciudad Juárez, investigated chemical contaminants in 14 wells in the sister cities of Nogales–Nogales. The study identified high concentrations of nitrates—which limit the oxygen-carrying capacity of blood—and carcinogenic compounds including perchloroethylene and trichloroethylene. The study goes on to attribute the chemical contamination of water supplies in the Nogales region (which also suffers microbial contamination from frequent rupturing of sewer lines and sewage overflow) to discharges of volatile organic compounds by the local *maquiladora* industries.

Local health officials also worry about chemical residues in containers used domestically to store water in the *colonias*. According to Leal, many underserviced households in the *colonias* get their water from tanker trucks that pass through the communities on a regular basis. Residents often store this water in 55-gallon barrels obtained from the *maquiladoras*, which Leal suspects are contaminated with industrial chemicals. "The chemicals that remain in these barrels present the long-term threat of cancer," she warns. "These are [unfamiliar] contaminants that people can't just boil away." However, she says, because the possibility of cancer is more remote than the immediate threat of gastrointestinal disease, convincing residents of the need to address the danger of industrial chemicals can be difficult. "It's hard to gauge a threat that sounds like a theory," she says. "Poor people have to be pragmatic; it's hard to convince them that they have to do something."

Beyond the issues of water and air pollution, border health officials are especially concerned about pesticide exposures, particularly among migrant workers and their families. Agriculture, involving mostly food crops including green chiles, wheat, peanuts, pecans, avocados, lettuce, and onions, continues to be an important component of the border economy in both the United States and Mexico. The most agriculturally active counties in the United States are Imperial County (California), Yuma County (Arizona), Hidalgo County (Texas), and Cameron County (Texas). Preliminary assessments in these areas indicate intensive use of organophosphate and carbamate insecticides, both suspected carcinogens, which target the central nervous system in both insects and humans.

According to the EPA's Integrated Risk Information System, an online toxicity database of specific chemicals, organophosphate and carbamate exposures in humans can result in a wide variety of nervous system effects including memory loss, muscle weakness, and fatigue, and at higher doses mental confusion, cyanosis, and coma. Another documented effect from occupational exposure to organophosphates and carbamates (although not necessarily in border agricultural workers) is a semipermanent condition called organophosphate-induced neurotoxicity, which is characterized by muscle weakness in the arms and legs giving rise to a clumsy, shuffling gait.

Public health experts are especially concerned about pesticide exposures in children. Exposures in children are often of a greater magnitude than those in adults because children have higher inhalation rates and greater exposed dermal surface area per unit of body weight. Furthermore, because childhood exposures occur during critical periods of development, they are suspected of producing effects on neurobehavioral and cognitive functioning. Epidemiological data on the

effects of pesticides on children are rare. However, a study published in the June 1998 issue of *EHP* by Elizabeth A. Guillette, an anthropologist and adjunct professor with the Bureau of Applied Research in Anthropology at the University of Arizona, found preliminary evidence of pesticide-induced effects on measures of neurobehavioral function in a group of children living in the Yaqui Valley of northwestern Mexico.

Migrant farm workers are known to be the most at-risk population on the border. In contrast to a life expectancy of 75 years in the United States, life expectancy among Mexican farm workers is reduced by high accident rates, malnutrition, and other factors associated with poverty to an average of only 49 years, according to a report in the July 1998 issue of the journal *Borderlines*.

Jackilen Shannon, a border health epidemiologist with the Texas Department of Health, is concerned because many of the crops grown on the border require considerable physical handling. "They grow a lot of orchard citrus crops and vegetables, which involve a lot of hand labor," she says. "This increases the risk of exposure [to pesticides]." Another concern is that Hispanic migrant workers are unable to read safety labels written in English and may apply pesticides inappropriately. Concerns over childhood exposures involve not only child labor in the fields but also residential exposures from contact with worker clothing, spray drift into the *colonias*, and contaminated food and water.

Officials with the U.S. EPA and the Centers for Disease Control and Prevention (CDC) have, over the last several years, been conducting extensive investigations into pesticide use and handling on the border. Most of these investigations fall under the environmental health provisions of a joint program known as Border XXI, which is a binational effort to unite Mexican and U.S. federal entities working on the environment. A major ongoing study under this program is titled Pesticide Exposure and Adverse Health Effects in Young Children along the U.S.–Mexico Border. This study, conducted by a variety of U.S. agencies including the EPA and the CDC along with Mexico's SEMARNAP (Secretaría de Medio Ambiente, Recursos Naturales y Pesca, the Mexican equivalent of the EPA), has three major components: development of a database of pesticide use in the border region, followed by pilot studies to develop methods and data to document exposures in children ages one through five, and finally, a determination of the extent of exposures and associated risks to health in this population. This study is currently in Phase II, with resources directed toward identifying an appropriate study population in Yuma, Arizona, an agricultural and predominantly Hispanic area.

Border XXI Health Studies

The Environmental Health Workgroup of Border XXI oversees the most extensive binational efforts to conduct health and environmental studies on the border. Based upon an assessment of the most pressing needs as determined by discussions with the border states, the Environmental Health Workgroup has identified seven discrete initiatives of mutual importance on which to focus its attention. They include neural tube defect assessment, pesticide exposure and health effects in young children, pediatric lead exposure, advanced training for health professionals, a regional system for posting health alerts, a toxicology and poison control development program, and geographic information systems. All of these programs are currently under way.

The United States and Mexico have, on occasion, experienced difficulties in conducting binational disease surveillance. For example, Enrique Paz, a physician and environmental health advisor with PAHO's El Paso field office, says that the United States does more active surveillance, meaning that field workers go to the regions and obtain information from sample populations directly, while Mexican investigators do more passive surveillance, meaning that data are processed and sent back to state and federal agencies in Mexico City. Julie Rawling, an infectious disease epidemiologist with the Texas Department of Health, adds that Mexican investigators tend to base diagnoses of disease on clinical symptoms, while their U.S. counterparts base them on laboratory results. "These differences are an impediment to how we do disease surveillance," she says. "It's hard to know what's a case and what isn't." The discrepancy is based in part on the lack of equipment in many Mexican laboratories, which don't have resources to perform conclusive tests.

Limited laboratory capacity in Mexico is particularly worrisome when it comes to TB. Studies have shown that new drug-resistant strains of TB are present at higher levels in Mexican border states and some areas in southern Mexico than they are in the United States. Responding to border concerns, officials with the U.S. Agency for International Development recently announced they are putting $16 million into the TB fight along the U.S.–Mexico border. This year, $3 million will facilitate binational information exchange systems in six border states. Another $13 million will be available between 2001 and 2004. A significant portion of this money will be used to build communications and laboratory infrastructure for Mexican health officials. "This is an example of the way that building capacity on the Mexican side serves our own interests, too," says Dutton. Adds Texas Commissioner of Health William R. Archer, "Our large urban areas and several counties along the Texas–Mexico border bear a great burden of TB. TB does not exist in isolation. We cannot seal our state's borders. We live in the world community of trade, travel, and displaced people, and the world's forecast for TB is deadly without a great coordinated effort."

Establishing environmental links to border diseases such as cancer, systemic lupus erythe-

matosus, and neural tube defects is difficult. Scientists concerned with these life-threatening conditions are busy sorting through epidemiological data to compare prevalence rates and risk factors. Concern over neural tube defects on the border has been widespread ever since April 1991, when three women in a single hospital in Brownsville gave birth to children with anencephaly, a fatal condition in which the child is born missing the top of the skull and most of the brain. Incidence rates for neural tube defects in Brownsville as well as its Mexican sister city Matamoros remained elevated for two years before dropping back to baseline. In response, several agencies, including the Texas Department of Health, the EPA, and the CDC on the U.S. side and the Centro Nacional de Salud Ambiental and the Instituto Nacional de Salud Publico in Mexico, initiated case–control studies investigating risk factors for neural tube defects. The largest of these studies, involving 450 women in 14 counties on the Texas–Mexico border, is headed by Katherine Hendricks, division director for infectious disease epidemiology and surveillance at the Texas Department of Health. Hendricks says she and her colleagues have recently finished identifying study subjects and will soon complete an analysis of suspected risk factors. Such factors include occupational and environmental exposures, dietary deficiencies of folic acid and vitamin B_{12}, and naturally occurring toxins in food, particularly corn products.

Interpretation of these data is complicated by differing background rates for neural tube defects among ethnic groups on the border. Russell Larsen, an epidemiologist at the Texas Department of Health with the Texas Neural Tube Defects Project, says that the overall rate for neural tube defects is in fact 33% higher on the border than it is in other areas of the United States. What must be considered, however, is that 90% of all live births on the border are to Hispanic women, whose babies tend to have higher rates of neural tube defects throughout Mexico compared with non-Hispanic populations. According to Paz, the Hispanic prevalence rate for neural tube defects is lower on the Mexican side of the border than it is in other areas of Mexico. The lowest rates overall are found in El Paso, which ironically is among the border's most industrialized cities. Comparative studies have found that Hispanics in Mexico have among the highest rates for neural tube defects in the world, which leads to the suggestion that genetics or gene–environment interactions may be involved. Says Larsen, "We believe that there is probably a genetic factor to which the higher predisposition may be attributed, and there are many geneticists trying to find the gene. There may be several genes." Paz adds, "Better surveillance systems for neural tube defects are needed on both sides of the border."

(above) A migrant farmworker's hands are unprotected as he picks crops treated with pesticides. (right) Smoke pours over the U.S.–Mexico border wall from Nogales, Sonora, into Nogales, Arizona.

The Need for Development

Implementation of NAFTA in 1994 brought with it a substantial rise in spending on border infrastructure. NAFTA is sometimes called a "green" trade agreement because it established three associated environmental institutions: the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADbank), which were charged with identifying and funding infrastructure projects in Mexico and the United States, and the Montréal-based North American Commission for Environmental Cooperation (CEC), which is charged with confronting environmental problems in the whole continent. Since 1994, Mexico and the United States have spent approximately $3.1 billion to improve border conditions, 80% of which has come from the United States, most of it funneled through the EPA, according to the GAO report.

The report estimates that $3.2 billion more will be needed to meet existing needs for potable water, wastewater treatment, and solid waste disposal. This estimate was calculated by the Southwest Center for Environmental Research and Policy, a consortium of five U.S. and four Mexican universities. Rick Van Schoik, the consortium's director, has suggested that even this number may be a gross underestimation. Van Schoik has done a meta-analysis that he says suggests $6–20 billion may be needed to address current shortages, with a similar investment added over the next 20 years. In contrast to the GAO figure, these higher estimates include costs for treating health problems caused by a poor environment.

The GAO report acknowledges that Mexican and U.S. efforts during the 1990s have led to many improvements in the border region. Nevertheless, a number of impediments continue to frustrate progress in the area. One problem in particular is the functioning of BECC and NADbank, the two institutions that are supposed to guide infrastructure development. These institutions work in tandem: the BECC certifies that proposals submitted by border communities are technically and financially feasible, and NADbank makes the loans that pay for them. NADbank also administers EPA grants through the Border Environment Infrastructure Fund. These grants can be used for projects in the United States and Mexico as long as the infrastructure deficiency affects both sides of the border. As of September 1999, the BECC had certified 31 projects, 12 in Mexico and 19 in the United States. Twenty-eight projects were for water and wastewater treatment, and three were for solid waste disposal.

To date, only seven of these projects have actually been funded with loans administered by NADbank. According to the GAO, NADbank loan rates are beyond what many border communities can afford, especially in the *colonias*. The GAO emphasizes that Mexican interest rates are especially high. In contrast to rates of between 5.15% and 7.40% offered for projects in the United States, NADbank adds a margin to cover the

risk of exposure to currency conversions that drive the Mexican interest rate as high as 27.00%. But Victor Miramontez, managing director and chief executive officer of NADbank, resists these comparisons. Cheaper alternatives are available in the United States, he says, but NADbank's rates are the lowest in Mexico, once adjusted for inflation. "We have the best loan rate in Mexico," he says. "Loan rates in Mexico were between 50% and 60% last year."

NADbank was created to be a self-sustaining entity—borrowers have to meet the same standards for creditworthiness as those of any commercial bank. According to Varady, this need for financial solvency creates an inherent tension between the two institutions: BECC looks for projects that contribute to environmental sustainability in the poor communities, and NADbank gives out loans to communities that can pay them back.

In some cases, grant monies from the Border Environment Infrastructure Fund are provided to communities that can't afford a loan. However, Miramontez says that the decision to offer a grant depends on a community's ability to run a facility once it's been built. "We only give money if something is promised in return, not if it's invested in something you don't take seriously," he says. "Our grants are focused on long-term operation and maintenance. We'll be married to these communities as long as they exist. We will always be their partner."

Unfortunately, the border has an acute shortage of people trained to operate these facilities, especially in Mexico. U.S. officials are frustrated by the fact that local Mexican administrators are replaced automatically every three years, often taking with them the experience gained on the job as well as personnel in key management positions. A number of programs have been established to address this shortage, for example NADbank's Institutional Development and Cooperation Program, which attempts to develop utility management skills for communities hoping for BECC certification. However, these programs still have a long way to go toward meeting the needs of border communities.

Differences in government structure offer additional complications along the border. For example, while state agencies on the U.S. side have considerable autonomy, Mexico has a centralized government with heavy federal involvement in state affairs. Says Varady, "In Mexico, everything goes through the federal agencies like the Ministry of Health. So a department like the Texas Department of Health doesn't have a comparable counterpart on the other side of the border. The result is that it's hard to establish good bilateral relationships between agencies."

Finally, efforts to address community needs on the border are hampered by the lack of a comprehensive plan for identifying and meeting infrastructure requirements. The GAO states in its report, "To date, none of the agencies and institutions with environmental responsibility have developed a comprehensive strategy to identify overall border infrastructure needs, the communities' ability to develop needed infrastructure, the available resources, and measurable outcome objectives." The GAO is particularly critical of the EPA's Border XXI program, whose directors had apparently said they were going to inventory all existing environmental information in the border region. Hal Zenick, the associate director for health at the EPA's Office of Research and Development in Research Triangle Park, North Carolina, who serves as one of the U.S. cochairs of the Border XXI Environmental Health Workgroup, acknowledges that Border XXI is still working to meet this goal. "One of our charges is to handle that task," he says. "But it's overwhelming and much larger than initially conceived. There's a lot of data that hasn't been collected in a systematic fashion. My sense is that there's a commitment to do that, but the universe [of information] is substantial."

The U.S.–Mexico border represents monumental environmental challenges for both countries. The need to improve conditions along the border is becoming more acute as the population continues to grow and stretch the limits of the region's natural and other resources. Much is being spent to meet infrastructure needs, but lack of an overall strategy, lack of access to sources of funds by poor communities, and cultural differences in approaching these problems are standing in the way of continued success. Meanwhile, the health and well-being of the millions who live on the border, as well as the millions yet to arrive, continue to hang in the balance.

Charles W. Schmidt
Photos by Jeffry Scott