

# U.S.-Mexico Environmental Program: Border 2012

Implementation and Mid-Term Report: 2007





Dear Border Colleagues, Partners, and Stakeholders,

For over 20 years the United States and Mexico have collaborated in joint efforts to protect the environment and public health along the U.S.-Mexico border, most recently, through the Border 2012 U.S.-Mexico Border Environmental Program. The program partners have made tremendous progress on addressing critical environmental problems in these two decades. These gains have occurred at the same time that our border population has nearly doubled and industrial growth has nearly tripled.

This report highlights many examples of how we have managed to align our binational resources with the environmental needs of border communities. It also highlights the power of partnership, collaboration, and leveraging of resources to achieve on-the-ground results. It is our commitment to continue to promote the guiding principles of Border 2012, especially with regard to transparency, public access to information, and binational accountability as we progress toward achieving the goals and objectives of the program. This report conveys this commitment and articulates the great advances that have been achieved, while acknowledging the future challenges we face together to accomplish the Border 2012 mission “to protect the environment and public health in the U.S.-Mexico border region, consistent with the principles of sustainable development.”

As National Coordinators for Border 2012 in the U.S. Environmental Protection Agency (EPA) and Mexico’s Secretariat of Environment and Natural Resources (SEMARNAT), we offer our deepest gratitude to the environmental authorities in the 10 Border States; the U.S. border tribes; the co-chairs and staff of the program’s Regional and Borderwide Workgroups, Policy Forums (and their respective Task Forces); academic, industry, and NGO partners; and communities along the border that have been actively engaged with us to advance our collective vision of improving environmental conditions for all border residents. Their support, enthusiasm and participation, individually and jointly, have been essential to coordinate and implement this program.

**Jerry Clifford**  
*National Coordinator, United States*

**Ma. Teresa Bandala Medina**  
*National Coordinator, Mexico*



# Border 2012 – Environmental Results through Binational Partnerships

Since its inception, the Border 2012 Program has demonstrated the power of partnership and collaboration. With the leadership of the 10 border states, 26 U.S. tribes, numerous binational institutions, and active participation of border communities, the Border 2012 program has leveraged knowledge, resources, and expertise to significantly improve the quality of life and the environment for communities along the U.S.-Mexico border. The Border 2012 partnership has been at the core of these remarkable achievements and future efforts will continue to embrace innovation, environmental results, collaboration, and leveraging of resources to fulfill the Program's Mission and Goals.

Together, the Border 2012 partners are committed to uphold the Program guiding principles that border communities have voiced loud and clear over the past decade; these include:

- Achieving concrete, measurable results;
- Fostering transparency and public participation;
- Adopting a bottom-up approach for setting priorities and in decision-making;
- Measuring program progress;
- Reducing the highest public health risks;
- Recognizing sovereignty of U.S. tribes;
- Recognizing historical debt of indigenous peoples in Mexico;
- Addressing disproportionate environmental impacts;
- Improving stakeholder participation; and
- Strengthening capacity.



**Campo Band of Kumeyaay Indians**



**Tohono O'odham Nation**



**Procuraduría Federal de Protección al Ambiente**  
**Mexico's Federal Attorney General for Environmental Protection**



**Ewiiapaayp Band of Kumeyaay Indians**



**Comisión Federal para la Protección contra Riesgos Sanitarios**  
**Mexico's Federal Sanitary System**



**Good Neighbor Environmental Board**



**Instituto Nacional de Ecología**  
**Mexico's National Institute of Ecology**



*"The goals achieved by Border 2012 illustrate the commitment of our two countries in fulfilling the ongoing mission of promoting environmental protection and developing strategies of cooperation that, with a local and regional focus, promote the development of sustainable infrastructure in the border region. In this regard, the work of the NADBank is complemented and facilitated greatly."*

**North American Development Bank**



*"The Border 2012 Program advances sound environmental principles through financially-responsible financial investments for environmental success... Environmental conditions along the U.S.-Mexico border are a shared concern among all states that benefit from international trade and economic development between the U.S. and Mexico...ECOS strongly supports the Border 2012 Programs and the progress it has made improving public health and the environment in the U.S.-Mexico Border region."*

**Environmental Council of the States**



*"In 2001, the 10 Border States drafted the initial framework for what is now the U.S.-Mexico Border Environmental Program Border 2012. Since then, in partnership with USEPA, Mexico's Environment Ministry (SEMARNAT), and the U.S. border Tribes, we have made tremendous progress in accomplishing most of the goals and objectives of the program."*

**10 Border States**



*"Pala is committed to helping bring clean water and improving the health of fellow tribal members in Mexico, insuring they're able to improve their quality of life and better care for their community members, while continuing to live on their ancestral lands."*

**Pala Band of Mission Indians**



*"The National Water Commission has made progress in one of its fundamental goals: to provide drinking water and sewage services to a greater amount of users located within the border region, within a frame of interinstitutional cooperation, sustainable development and mutual benefit for both countries. This effort has been achieved thanks to the support and cooperation from the diverse governmental institutions and tribes from United States of America and Mexico, involved in Border 2012."*

**Comisión Federal para la Protección contra Riesgos Sanitarios**  
**Mexico's Federal Commission for the Protection against Sanitary Risks**



*"The Border 2012 U.S.-Mexico Environmental Program has proven to be a very effective and well structured model for supporting the implementation of sustainable solutions to the environmental and health problems facing the border region, through the committed and direct involvement of federal, state and local stakeholders. For BECC, continuing to support the implementation of special projects identified through the program remains a high priority."*

**Border Environment Cooperation Commission (BECC)**



# Acknowledgements



The Border 2012 Program would like to thank all the individuals who have worked with the program, and those that continue to work with the program, for their leadership, dedication, and hard work; without these devoted individuals, many of the accomplishments highlighted in this report would not have been possible. The program would also like to thank the various individuals, partners and organizations whose support was essential to the completion of the Biennial Implementation and Mid-Term Report.



**U.S.-Mexico Border Region**

# Contents

<b>Introduction</b>		<b>2</b>
<b>Water</b>		<b>4</b>
<b>Air</b>		<b>8</b>
<b>Land</b>		<b>12</b>
<b>Environmental Health</b>		<b>16</b>
<b>Emergency Preparedness and Response</b>		<b>20</b>
<b>Compliance and Enforcement</b>		<b>24</b>
<b>Contacts List and Acronyms</b>		<b>28</b>

# Introduction

In April 2003, EPA, SEMARNAT, the 10 Border States, and 26 U.S. tribes agreed to renew our collective commitment to improve environmental conditions along the 2000-mile border. This commitment is embodied in the U.S.-Mexico Border 2012 Program, which includes six goals that address reduction of pollution in our air, water and land, improving environmental health, reducing exposure to chemicals from accidental releases or terrorism and improving environmental performance through compliance, pollution prevention and the promotion of environmental stewardship.

Since the signing of Border 2012, this 10-year, binational, results-oriented environmental program has focused on supporting binational efforts that engage in collaborative and consensus-driven commitments and projects that will result in sustainable and tangible environmental benefits.

This report describes environmental improvements along the border from 2003-

2005 attributable to the Border 2012 program. It also details the region's unique environmental challenges and the projects and programs addressing these issues. Finally, the report outlines the overall program investment from 2003 to 2005. During these years, over \$8.1 million was invested in 109 projects along the border. The projects implemented address environmental problems along the border in a variety of innovative ways.

Tribal governments play an integral role in identifying priorities and participating in program activities, while also hosting tribal caucus meetings to foster involvement in the program. Active tribal leadership and participation in the program has led to the successful completion of projects that have provided thousands of tribal border residents' access to safe drinking water and wastewater infrastructure, and removed tons of solid waste.

Participation from the 10 Border States has also been instrumental in ensuring the program's success. Through active participation and leadership, the 10 Border States have expedited the availability of ultra-low sulfur diesel fuel along the border and have consistently provided valuable recommendations on program modifications and establishing priorities that facilitate the Border 2012 program's progress.

Environmental degradation and the depletion of natural resources along the border can be linked to many factors, including population growth, increased industry and lack of infrastructure. Increased economic activity has resulted in increased population and infrastructure needs. Since 1996, the population of the 24 U.S. border counties has increased nearly 30 percent. In 2000, the estimated population of the entire border region was 11.8 million and projections indicate the population is expected to increase to approximately 16.8 million by 2020.



## Goal #1

Reduce Water Contamination



## Goal #2

Reduce Air Pollution



## Goal #3

Reduce Land Contamination

Three of the ten fastest-growing metropolitan areas in the United States are along the U.S. Mexico border. While the border region has seen tremendous growth, it has not seen proportionate prosperity; for example, the unemployment rate along the U.S. side of the Texas-Mexico border is 250-300 percent higher than in the rest of the country.

## Measuring Environmental Conditions

To achieve Border 2012 goals and objectives, it is essential that all actions taken by program partners have concrete and measurable results. The Border 2012 framework document calls for the development of environmental and performance indicators to measure these results. To accomplish this, the program established a Border Indicators Task Force.

The role of the Indicators Task Force is to collaborate with all Border 2012 coordinating bodies and partners to generate and use objective indicators to measure program progress and assess changes in the region's conditions. Ongoing review of these indicators will provide local com-

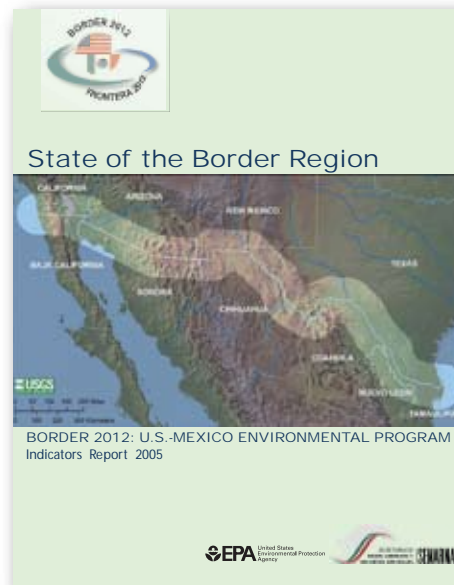
munities, partners, and decision-makers with informative tools that can help shape research, public health and environmental policy priorities. To guide the border indicator effort, the Border Indicator Task Force and the Environmental Health Work Group prepared a *Strategy for Indicator Development*. It is available online at [www.epa.gov/border2012/indicators.htm](http://www.epa.gov/border2012/indicators.htm)

## State of the Border Region Indicators Report, 2005

Through a collaborative and iterative review process, the Indicators Task Force developed protocols to identify, select and use a set of binational indicators. The resulting State of the Border Region Report informs communities and stakeholders in the region about the state of the environment and progress made to address the six goals of the Border 2012 Program. The report incorporates environmental and public health information in the following areas: water, air, land, emergency preparedness and response, and enforcement and compliance. Twenty-three indicators are presented in an easy-to-understand format with brief data source information below each indicator. This initial Binational Set of Indicators will

be refined over time by modifying existing indicators or incorporating additional indicators.

The State of the Border Region Indicators Report will be available online at [www.epa.gov/border2012](http://www.epa.gov/border2012)



### Goal #4

Improve Environmental Health



### Goal #5

Reduce Exposure to Chemicals as a Result of Accidental Chemical Releases and/or Acts of Terrorism

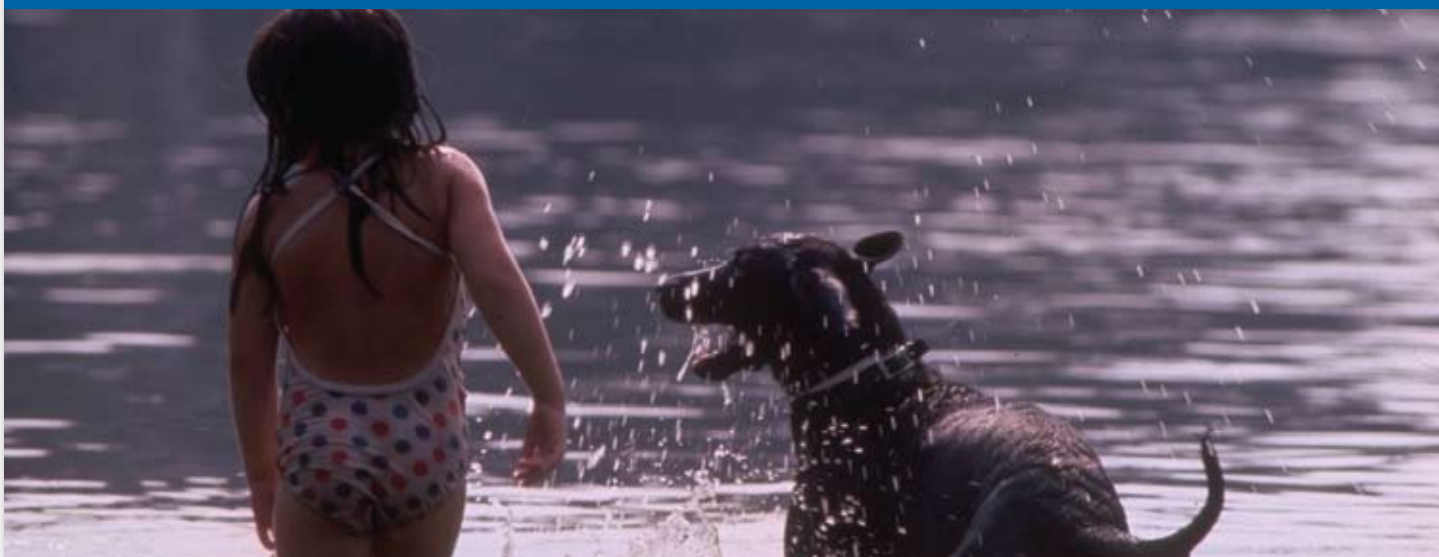


### Goal #6

Improve Environmental Performance through Compliance, Enforcement, Pollution Prevention, and Promotion of Environmental Stewardship



# Water



## Challenges Along the Border

In northern Mexico, significant industrial development that fueled regional job growth, combined with an ongoing southwesterly migration in the U.S., has resulted in a population surge near the border.

The new industrial employment opportunities have resulted in makeshift housing that has sprung up near industrial parks in large Mexican northern border cities providing imperfect housing lacking basic services.

Many of these unincorporated communities with sub standard housing conditions, called colonias in the United States and periferia in Mexico, lack adequate sanitation and drinking water services; outhouses are often the only available means of sewage disposal. Pollutants from both countries contaminate shared waters due to inadequate sewage treatment. In rural areas, agricultural runoff and chemical waste pollute drinking water.

With population continuing to rise and groundwater tables depleting at rapid rates, binational cooperation and sustainable infrastructure continue to be the biggest challenges along the border.

Although shared waterways have benefited from infrastructure improvements, sewage and other contaminants continue to pollute binational aquifers, surface waters and coastal waters.

In Nogales, Sonora, the sewer system does not provide service to all residents. Spills from the antiquated sewer system combined with discharges from unsewered homes cause raw sewage to flow

into the binational Nogales Wash. The inadequate storm drain system results in frequent flooding during heavy rains. The water quality problems caused by these deficiencies in infrastructure significantly impact Nogales, Sonora, and the downstream city of Nogales, Arizona.

U.S. and Mexican federal governments, the U.S. represented by EPA and Mexico by SEMARNAT, provide direct assistance to border communities for water and wastewater infrastructure.

## Investment Along the Border

The U.S. and Mexico have invested millions of dollars to build adequate water and wastewater infrastructure; to date these improvements are impacting over 6.7 million border residents. These infrastructure improvements not only improve water quality, but also preserve shared waterways, prevent beach closures, provide safe drinking water, and protect human health. Between 2003 and 2005, EPA approved Border Environment Infrastructure Fund (BEIF) grants for 11 water projects that are estimated to benefit over 1.6 million people. During this period, nine BEIF projects funded in previous years completed construction. The nine drinking water and wastewater infrastructure projects improved services for over 1.5 million people.

Mexico's 2001-2006 National Development Plan, under President Vicente Fox's Federal Administration, identified the border region as a high priority. The joint investments on drinking water and wastewater infrastructure for Mexican communities from

### Border Timeline 2002 - 2006



**Jan. 2002 – June 2002:** EPA, SEMARNAT, 10 States and U.S. Tribes negotiate Border 2012 Draft Framework. Partners agree to create Drafting Committee to develop Border 2012 plan



**Sep. 2002 – Nov. 2002:** Public Comment Period On Draft Border 2012 Program: Public Meetings held in 19 different border cities; over 1,000 comments were received during this time



2001 to 2005 — with funds from the National Water Commission, border states, municipalities, EPA, BECC and NADBank — was 5,268.7 million pesos (approximately \$500,000,000 USD). Over 80 percent of these funds were invested from 2003 to 2005. Twenty percent of the total investment was from binational resources, including BEIF grants and NADBank loans. The bulk of the funds, approximately 80 percent, were provided by the Mexican federal government and border states. These investments, along with considerable performance improvements from many water utilities, resulted in increased access to drinking water and wastewater treatment for many of Mexico's border communities. In large part, these achievements are due to the collaboration between EPA and Comisión Nacional del Agua (CONAGUA) through the Border Drinking Water and Wastewater Infrastructure Program, the support of border states, tribes and municipalities, and the participation of both the BECC and NADBank.

## Projects and Results

In the past three years, Border 2012 funds implemented 22 projects throughout the border region to assess surface water quality, protect shared waterways, gauge the effectiveness of innovative wastewater treatment technologies, and provide training to border residents, municipal workers, and others on water system upkeep and basic sanitation practices.

Approximately 30 percent of water projects focused on building capacity along the border, which included training wastewater utility operators and developing a wastewater database. Education and outreach projects made up roughly 15 percent of the projects, including a watershed education program in California-Baja California, in which a team of trained bilingual educators are teaching over 500 students on watershed protection, monitoring, and public health. To address the drinking water needs in Texas's colonias, El Paso's Centro de Salud, trained colonia residents in proper water purification techniques and distributed educational, environmental health information.

Three projects totaling \$180,000 in funding focused on the Rio Grande. The river, a natural boundary dividing the two nations along the Texas-Mexico border, stretches for over 1,200 miles. Both nations draw from its waters to serve agricultural, industrial, and drinking water needs making its use, protection, and sustainability extremely important. The Rio Grande projects focused on a variety of issues including developing a framework for sustainable use, assessing the impact of infrastructure to the river, and finally, identifying the chemical and microbial impact of wastewater on the river's water quality.



**New River, Mexicali, B.C.** Considered one of the most polluted rivers in North America, the New River flows from Mexicali into the U.S. through Calexico; agricultural runoff, raw sewage and industrial solvents pollute this shared waterway. EPA, SEMARNAT, California, and Baja California continue to work together to restore the river's condition

## Partnering for Success: Regional Efforts

Each Regional Workgroup convened public meetings along the border to hear communities' concerns and develop plans to address pertinent issues. Work plans were established and often, new groups evolved. The workgroups play another important role - providing project support. The Texas-Coahuila-Nuevo León-Tanulipas workgroup has supported the Eagle Pass, Matamoros, and Nuevo Laredo water infrastructure projects and increased the availability of drinking water to residents via the Texas Colonias Initiatives program. Information exchange is also a vital aspect of workgroup success. For example, New Mexico-Texas-Chihuahua's concerns about high fluoride levels in the Columbus-Palomas groundwater basin prompted the workgroup to identify the need for exchange of binational groundwater data.

## Border-wide Efforts

The Water Policy Forum, guided by binational priorities, addresses border-wide policy issues and resources for projects that emphasize pollution prevention. Highlights of this effort include:

- Binational agreement on the need and purpose of a Geographic Information System (GIS) water quality database
- Development of first phase of a water quality database for the border area's watersheds
- Binational agreement on the selection of 14 parameters to assess water quality
- Alternative means for evaluating the efficiencies of the border area water utilities;
- Various studies from 2003-2004 of various aspects of water utilities in seven communities by the NADBank's Institutional Development Cooperation Program



**Jan. 2003:** Border 2012 Drafting Committee, made up of representatives from 10 border states, 26 tribes, EPA and SEMARNAT, develop final Border 2012 framework incorporating comments from Public Comment Period.



**April 2003:** Border 2012 Signing Ceremony EPA, SEMARNAT, 10 States, 26 U.S. Tribes and partners commit to environmental results along the border

## Spotlight: Water

The Colorado River extends more than 1400 miles through four U.S. states and Mexico. The river is used for drinking water, energy, agriculture and recreation. Rapid development has degraded the quality of water in the Colorado River



### **Tribal & Indigenous Communities: Providing Tribes with Access to Safe Drinking Water, Sewage Treatment and Protecting Shared Waterways**

Tribal and indigenous communities along the border also lack safe drinking water and basic wastewater sanitation. Nearly all the indigenous communities in the Mexico border region do not have access to safe drinking water and basic sanitation. EPA's Tribal Border Infrastructure Program has funded 39 projects for 15 U.S. tribes in the California and Arizona border region, providing access to safe drinking water and basic sanitation for over 32,000 people.

Mexican indigenous communities are also receiving water infrastructure improvements. The Quitovac potable water project provides drinking water for a small community and a tribal boarding school. Using Border 2012 funds, the Tohono O'odham Utility Authority constructed the water distribution system.

In addition, the project rehabilitated a drinking water well, increased the water storage facilities, and improved the wastewater treatment facilities for the boarding school. To increase capacity, a 3,000 gallon water storage tank was installed and groundwater protection measures were implemented.

At a cost of \$30 per home, the Tohono O'odham Utility Authority installed continuous chlorination units for 71 drinking water sources on the reservation, previously chlorination occurred monthly or only once every three months. These units ensure that the water serving 20,000 residents is safe to drink.

In partnership with EPA and the U.S. Department of Agriculture Rural Development, the San Pasqual Band of Mission Indians built a new drinking water system, including a water treatment plant, a storage tank, and new water mains to replace substandard lines. The new system, serves 960 residents in 192 homes and provides safe pressures throughout the system to prevent contamination. The booster fire pump was connected the day before the Paradise

### **Border Timeline 2002 - 2006, cont.**



**April 2003:** Good Neighbor Board Report: U.S.-Mexico Border Environment



**June 2003:** First California-Baja, California Regional Workgroup Meeting: Seven task forces created, including: Waste/Enforcement, Water, Two Air, Two Emergency Response and Environmental Education

Fire swept through the reservation in October 2004, allowing many homes to be saved.

The Pechanga Tribe constructed a trunk sewer line to serve government buildings and approximately 90 homes. The sewer replaces septic systems that posed a contamination threat to the shallow alluvial aquifer—the tribe's sole source of drinking water. The project will also extend sewer lines to serve the 90 homes on the reservation.

Baja California indigenous communities completed an assessment of the drinking water supply and possible sources of water contamination. The assessment, completed in partnership with the Pala Band of Mission Indians, the Baja California Inter-tribal Council and others, identified significant drinking water contamination in six of seven indigenous communities. Subsequently, Mexico's Comisión Nacional para el Desarrollo de los Pueblos Indígenas (National Commission for the Development of Indigenous Communities, CDI) provided \$900,000 and EPA provided \$66,000 to construct new drinking water infrastructure for these communities.



**Five Quitovac students benefit from cleaner drinking water and wastewater infrastructure**



**Quitovac's new water storage tank has increased storage to three days; the new water system uses solar and wind power**



**Aug. 2003:** First Texas-Coahuila-Nuevo Leon-Tamaulipas Regional Work Group Meeting



**Aug. 2003:** First Binational Tribal Caucus Meeting in San Diego: Meeting established tribal engagement, leadership and communication on Border affairs



# Air



## Challenges Along the Border

Air quality is a major concern throughout the border region. The pressures associated with industrial and population growth, increasing numbers of old vehicles, differences in governance and regulatory frameworks, and topographic and meteorological conditions present a challenging context for air quality management. Common sources of pollutants include motor vehicles, power plants, industrial facilities, agricultural operations, dust from unpaved roads, and open burning of trash and agricultural fields. The most common and damaging pollutants from these sources include sulfur dioxide, particulate matter (both  $PM_{10}$  and  $PM_{2.5}$ ), nitrogen dioxide, ground-level ozone, and carbon monoxide. All of these pollutants degrade urban and regional air quality in the border region and contribute to the challenge.

## Investment Along the Border

Investments in air quality improvement along the border follow two broad strategies. Between 2003 and today, the Border 2012 Program partners have

continued to focus investments on building the infrastructure and information necessary for science-based decisions on priorities and control strategies. This includes support for emission inventories and real-time binational air quality monitoring networks. Second, investments support priority initiatives, such as clean diesel and road paving that reduce or eliminate actual and potential sources of air pollution. Many funded projects include a component for building capacity for sustainable progress in the priority areas. U.S. federal funds often leverage or are matched by other funds from Mexico or U.S. state and local governments, and in some cases by border partners who provide in-kind services.

## Projects and Results

Projects and partnerships promoted through the Border 2012 Program are contributing significant progress towards environmental results. Examples where projects have led to measurable improvements in air quality are in Douglas, Arizona and El Paso, Texas, where each city is undergoing formal re-designation of "attainment" for national ambient air quality standards for certain pollutants.

### Border Timeline 2002 - 2006, cont.



**Oct. 2003:** Texas Commission on Environmental Quality (TCEQ) hosts Border Hazardous Materials/Waste Seminars



**Oct. 2003:** San Diego/Tijuana Sister-city Emergency Contingency Plan Signing Ceremony: Signed agreement on binational response between the City and County of San Diego and Tijuana

A number of Border 2012 projects are yielding pollution reductions from specific sources such as diesel engines, old vehicles, unpaved roads, brick kilns, and power plants.

Unpaved roads contribute to high levels of particulate pollution in several communities along the border. Border 2012 projects are working to demonstrate new paving applications, such as using rubberized asphalt in Ciudad Juarez. In addition, the NADBank has recently funded road-paving projects in several municipalities in Baja California, Sonora, Chihuahua and Tamaulipas, through \$90 million in loan monies to fund \$221 million in paving projects.

While diesel emissions, older vehicles, and unpaved roads all present air quality challenges along the border, many other challenges exist. For example, projects in Chihuahua, Sonora and Baja California focus on reducing emissions from traditional brick kilns. Recently, a private company invested nearly \$1 million to construct new brick kilns in Ciudad Juarez based on design work supported by the Border 2012 Program. Additional Border 2012 projects are demonstrating the potential for producing biodiesel in border communities to reduce particle emissions. The Ysleta del Sur Pueblo Tribe has implemented a pilot project to collect waste vegetable oil and use the fuel on a test vehicle. Other border projects are exploring ways to increase fuel efficiency through measures such as the Smartway Program that lowers fuel consumption in trucks fitted with fuel saving devices.

## Partnering for Success

Among successes of the Border 2012 Program are the binational partnerships that have formed to meet the program's goals. Part of the success lies in the fact that these partnerships exist at all levels-national, regional and local. The Air Policy Forum was formed to provide a binational forum for discussing air quality issues along the U.S.-Mexico border. The forum has worked to identify and prioritize common goals and build consensus about the federal actions needed to address binational priorities. Over the past two years the forum has begun to narrow its focus on: 1) improving air quality and meeting both U.S. and Mexican air quality standards (National Ambient Air Quality Standards and Normas de calidad del aire en Mexico) through regulatory, market-based, and voluntary approaches by developing emission inventories, developing and/or maintaining air quality monitoring networks and 2) through air emission reduction projects. The forum seeks to strengthen collaboration among border air quality stakeholders by facilitating information exchange and coordination across a broad network of programs and projects, the majority of them at the regional and local levels.

Regional Workgroups have supported forum priorities by helping border-wide stakeholders implement emission reduction and science-enhancing projects. One recently completed project examined the effects of diesel exposure and traffic-related air pollution on asthmatic children in Ciudad Juarez.

## Spotlight: Air

### Air Quality Management

Science based air quality management tools are essential in air quality planning and implementation. Both emissions inventories and ambient monitoring networks are fundamental elements of a successful air quality management program. EPA and SEMARNAT have continually supported the development and use of both of these tools along the border to evaluate potential control strategies in the region and fulfill the goals set forth in the Border 2012 Plan. Recently, the air quality management plan, PROAIRE, for Ciudad Juarez was unveiled by Mexican Environmental Minister Jose Luis Luege Tamargo defining 23 actions that will take place from 2006–2012 to improve the region's air quality. The document includes recommendations made by the Joint Advisory Committee based on emission inventory analysis.

### Emissions Inventory

On Thursday, June 9, 2005, in Ciudad Juarez, Chihuahua, Mexico, the Instituto Nacional de Ecologia, a division of SEMARNAT, unveiled the first air emissions inventory for the six northern states of Mexico bordering the United States. This baseline emissions inventory was developed to increase the understanding of emissions sources located in Northern Mexico and to support air quality assessments. It is a product of binational government partnerships completed through collaborative efforts between the U.S. and Mexico. Later that year a ten-state inventory, including the four states on the U.S. side of the border, was developed with a special focus on the 100-km border region. Both inventories will help federal, state and local governments, as well as, academic institutions and private sector industries, to better understand, analyze and improve air quality in the border region.

In September 2006, the first emissions inventory for the entire country of Mexico (MNEI) was published. As part of the inventory development, a version of the mobile sources non-road model for Mexico was also completed. This model can be used throughout Mexico to calculate non-road emissions. In addition, development of online training materials for Mexican state officials has begun. The report is available online at [www.erg.com/mnei/](http://www.erg.com/mnei/) (User ID: mexico; Password: emissions [all lower case]).



**Dec. 2003:** National Coordinators Meeting (NCM), Matamoros, Mexico: First Border 2012 NCM, coordinating bodies present their implementation plans and priorities



**Jan. 2004:** First Arizona-Sonora Regional Workgroup Meeting: Created five task forces (Air, Water, Waste/Enforcement, Emergency Preparedness and Children's Environmental Health). Implementation Plan is released

## Spotlight: Air

### Ambient Air Monitoring Networks

PM<sub>10</sub> and ozone continue to be the most persistent and pervasive pollutants found in the border region. A number of urban areas, with air monitoring networks, remain out of compliance with national air quality standards. EPA, SEMARNAT, the 10 Border States, 26 U.S. tribes and Mexican indigenous communities continue to support many binational ambient air monitoring networks in the border region, providing valuable information on air quality trends and assisting in identifying emission reduction strategies. In the California-Baja California Region, EPA is working with the California Air Resources Board, the Baja California Secretariat for Environmental Protection (SPA) and SEMARNAT to transfer the operation and maintenance of an extensive ambient monitoring network in Tijuana, Tecate, Rosarito and Mexicali to the Baja California SPA. In 2004, the participating agencies signed a Memorandum of Understanding memorializing their intent to transfer the network by 2007.

While most monitoring occurs in urban areas, because tribes are experiencing air quality degradation, many have implemented extensive air quality programs. The Pala Band of Mission Indians, La

Posta Band of Indians, Yselta del Sur Pueblo, and Torres Martinez Desert Cahuilla Indians all have air monitoring programs.

Recent efforts to provide real time reporting of air quality has also enabled residents along the border to obtain air quality and health information on a real-time basis. In Northern Baja California, Southern California and El Paso/Ciudad Juárez, residents are able to make informed decisions about their daily activities based on air quality data in their area. Visit these sites for more information: <http://aire.baja-california.gob.mx>, <http://www.sdapcd.org/>, <http://imperialvalleyair.org>, and <http://www.tceq.state.tx.us/cgi-bin/compliance/monops/monitors?06>

### Diesel Emission Reductions

Because of the relatively large contribution of pollutants from diesel emissions, particularly PM<sub>10</sub>, PM<sub>2.5</sub> and ozone, significant investments have been made in emissions testing, retrofits, and collaboration to reduce these emissions. In January 2006, Mexico modified its fuel standard for gasoline and diesel fuels. An accelerated calendar was included for the border region, with the goal to provide ultra low sulfur diesel to the border region by January 2007.

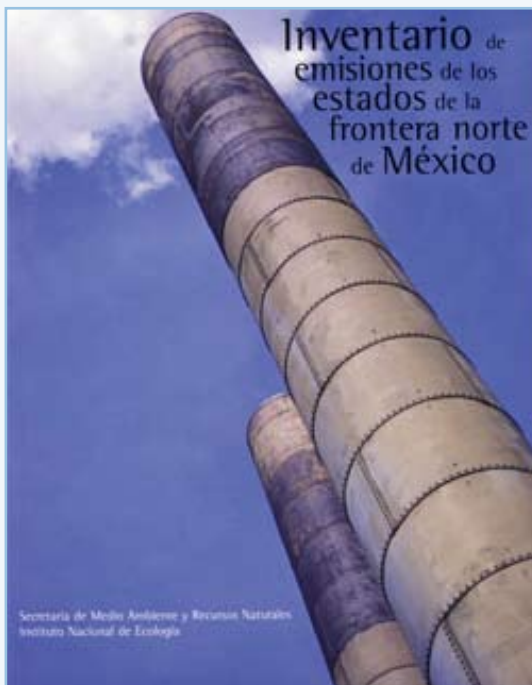
### Emissions Testing

In June 2005, the Texas Transportation Institute of Texas A&M University led a study to measure emissions from diesel trucks at ports of entry in El Paso-Ciudad Juárez. In a similar project in Nogales, opacimeters and other remote devices were used to estimate the emissions from 13,000 trucks passing through the Nogales Port of Entry. The objective of these studies was to demonstrate the use of emerging technologies to assist in developing emissions profiles of trucks crossing the border. This information will be used to develop strategies to minimize wait times on these bridges, thereby reducing air emissions due to idling.

### Diesel Retrofits

The San Diego Air Pollution Control District is retrofitting sixty heavy-duty diesel trucks from Tijuana with diesel oxidation catalysts (DOCs). These reduce PM<sub>10</sub> by 25 percent. In addition, the Laredo Independent School District is modifying 50 school buses to burn ultra-low sulfur diesel fuel, while the Rio Rico,

#### Mexico's first Emissions Inventory



#### Border Timeline 2002 - 2006, cont.



**Jan. 2004:** Nogales, Sonora and Nogales, Arizona Sister-city Emergency Contingency Plan updated and signed. Signed agreement on binational response between the two cities



**Feb. 2004:** Good Neighbor Board releases a report on children's environmental health along the U.S.-Mexico Border



Arizona school district is implementing a similar project. These two projects will reduce school children's exposure to fine particulate matter and serve as a demonstration project for other school districts on both sides of the border. All three of these projects were funded from Border 2012 funds.

### Collaboration

The West Coast Diesel Collaborative (in EPA Regions 9 and 10) and the Blue Skyways Collaborative (in EPA Regions 6 and 7) are initiatives that will improve the quality of life in North America by reducing air pollution through fuel innovations and green energy technology. The collaboratives have developed partnerships among international (both Mexico and Canada are active participants), federal, state and local governments, non-profit organizations, environmental groups and the private sector. The partnerships will reduce emissions throughout North America by sharing technology and leveraging financial resources.



**A retrofitted truck boasts its clean air technology**



**Remote sensing technology allows air technicians to gather data on trucks crossing the border without holding up traffic**



**April 2004:** 10 Border States Retreat, Ensanada, Mexico



**May 2004:** Binational Tire Pile Cleanup Commitment. EPA, SEMARNAT, BECC and Baja, Calif., celebrate kickoff of tire pile cleanups along the border

# Land



## Challenges Along the Border

Inadequate waste management infrastructure, in addition to ongoing problems like makeshift waste dumps, unsupervised waste sites, scrap tire pile fires and other factors contaminate the land along the border. For example, the steady demand in Mexico for used tires from the U.S. makes border cities host to temporary tire piles containing millions of scrap tires. The tire piles are fire hazards that can generate acute air and water pollution. Tire piles also serve as ideal breeding grounds for mosquitoes, rodents and other vermin that are vectors for the spread of West Nile virus and malaria. The Border 2012 program addresses tire piles, adequate waste disposal facilities and proper handling of hazardous waste.

## Investment Along the Border

From 2003-2005 over \$2.1 million was invested along the border on 23 projects aimed at reducing land contamination. Tire pile cleanups and improving scrap tire management practices made up 35 percent of projects; 30 percent dealt with hazardous waste activities; over 22 percent funded strategy development, waste reduction and recycling programs, and 13 percent funded contaminated site cleanups.

Land contamination cleanup funds are roughly 25 percent of total Border 2012 project funding.

## Projects and Results

More than \$1.3 million supported hazardous and municipal waste activities. These projects included tire pile and contaminated site cleanups; port-of-entry inspection and compliance assistance training programs; hazardous waste reduction; and tracking hazardous waste imports and exports.

Over \$480,000 was invested in eight projects dealing with tire pile cleanups, and tire reuse projects, including feasibility studies and demonstration projects. Tire pile cleanups removed approximately 2.2 million tires, many of which were sent to cement kilns as tire-derived fuel (TDF); others were used in demonstration projects and feasibility studies to assess the economic viability of reuse. Although the tire pile cleanups have made a significant impact, tire piles continue to grow. In Ciudad Juarez, home to the largest tire pile in the border region (4 - 5 million), each month 60,000 tires are removed from the pile, but 30,000 tires are added. Currently, the Border 2012 Program is also working to develop a scrap tire management strategy to serve as a framework for

### Border Timeline 2002 - 2006, cont.



**Jun. 2004:** EPA, SEMARNAT and Baja California commit to cleanup of Metales y Derivados site, cleanup of tire piles and transfer of air monitoring networks to Baja, California



**Aug. 2004:** Binational Forum on Air and Wastes: BECC-sponsored event focusing on vehicle emissions and solid waste reduction

improving scrap tire management in the border area and to prevent the creation of more tire piles.

Nearly \$200,000 supported waste inventory projects, waste strategy development, waste reduction and recycling programs. One project targets colonias in the New Mexico/Texas/Chihuahua area by utilizing Geographic Placement System (GPS) data and Geographic Information System (GIS) analysis to develop a strategy to prevent illegal dumping.

An additional \$125,000 funded other cleanup projects along the border. In the states of New Mexico, Texas and Chihuahua illegal dumpsites were cleaned up. In Arizona and Sonora, one project cleaned up trash left by undocumented migrants in the Tohono O'odham Nation, while another will clean up a contaminated copper mine.

### Partnering for Success: Regional Efforts

The four regional workgroups held public meetings to hear citizen concerns and identify needs. In October 2004, the Border 2012 program sponsored a brownfields workshop in El Paso, Texas which provided grant training and funding opportunities to both U.S. and Mexican partners. The diverse stakeholders attending the workshop stimulated binational coordination and efforts in brownfields' redevelopment. Mexico has offered to host the next Brownfields workshop.

### Border-wide Efforts

Border-wide efforts have made tremendous progress in coordination, information exchange and prioritization of issues. With input from Regional Workgroups and Task Forces, the Waste Policy Forum tackled a variety of waste-related issues. Highlights include:

- Developing an action plan that identifies and prioritizes actions to improve institutional and infrastructure capacity for waste management and pollution prevention. The plan focuses developing capacity to prevent scrap tire piles, better management of selected waste streams, and enhancing municipal waste landfills
- Producing a report describing the Mexican and U.S. systems for tracking transboundary movements of hazardous waste. This report has informed efforts to improve transboundary waste tracking
- Developing a binational policy on the cleanup and revitalization of contaminated sites in the border area.

## Spotlight: Land

### Metales y Derivados Cleanup Projects

Metales y Derivados is an abandoned lead recovery facility, which recovered lead from vehicle batteries and other materials containing lead. The Metales site is zoned for light industry and close to Tijuana's Colonia Chilpancingo, home to over 10,000 residents. The facility was shut down in 1989 by PRO- FEPA and SEMARNAT due to substandard hazardous waste management of lead slag and metal-laden battery casings. Consequently, the U.S. owner abandoned the facility. In April 2005, the state of Baja California expropriated the site and is now responsible for its remediation.

A Metales y Derivados Technical Workgroup was formed in June 2004 after Mexico signed a declaration of cooperation and commitment to remediate the Metales site and create a transparent process to inform and involve the community on the cleanup. The Workgroup proposed a four-phase remedial plan involving:

Phase 1: Removal Action: remove waste posing highest risk to the public

Phase 2: Cleanup Alternative Analysis: analyze and select preferred cleanup remedy

Phase 3: Design Remedy: prepare cleanup design and award engineering contract

Phase 4: Complete Cleanup: implement remedy (from Phase 2); restore property to productive use

This four-phase process is underway. To date, Phase 1 and 2 are complete and Phase 3 is underway. Accomplishments include the removal of 2,000 tons of hazardous waste and recycling 50 tons of lead smelter process equipment in Mexico. The installation of fencing and warning signs in ad-



Above: Metales site prior to cleanup

Below: Metales site after cleanup



Sep. 2004: San Diego/Tijuana Diesel Retrofit Project kick-off. San Diego Air Pollution Control District received a check to begin retrofits of diesel trucks in San Diego/Tijuana



Sep. 2004: Texas-Coahuila-Nuevo Leon-Tamaulipas Regional Work Group Meeting



## Spotlight: Land

dition to community outreach and education on the facility's hazards has increased awareness and reduced the risk to neighbors.

As part of the project's second phase, EPA and SEMARNAT completed a baseline human health risk assessment and field sampling to fill data gaps. Site characterization and risk assessment are both essential to better understand exposure sources and pathways that pose a public health risk. The Technical Workgroup will design remediation strategies that consider risk reduction and eliminating exposure pathways.

### Border-wide Tire Pile Management Strategy

Improper management and disposal of scrap tires is creating significant environmental problems in the border area. The California Integrated Waste Management Board, in partnership with Baja California stakeholders is currently undertaking an 18-month study to evaluate the economic benefit and environmental challenges posed by the used tire trade phenomenon. Once completed, the study will provide data that can be used as a tool in developing policy on used and waste tires.

Tire piles present serious land contamination, health and potential air quality issues in the border area. Cleanup of these piles is a Border 2012 and Binational Commission priority. Tire pile fires can last weeks to months, causing severe air pollution from the dense smoke and noxious fumes emitted. Tire fires also generate large amounts of liquid wastes which can contaminate soils, ground water and surface water. In addition, tire piles serve as breeding ground for mosquitoes, rodents and other disease vectors. The West Nile virus, dengue fever and malaria have already been associated with tire piles in the eastern U.S.-Mexico border regions.

The border region economy is expected to continue growing, and scrap tires are expected to be generated in even larger quantities. Even with the efforts of both nations, a binational tire management strategy is critical.

During a November 2004 Binational border visit, former SEMARNAT Minister Cardenas and former EPA Administrator Leavitt signed a Letter of Intent to develop a Comprehensive Scrap Tire Management Strategy. The purpose of this strategy is to improve effective management of scrap tires in the border

area and throughout Mexico. This strategy will also provide guidance to continue cleanup efforts on both sides of the border, and beyond.

The strategy consists of six proposed actions that meet Border 2012 Program goals and four basic principles. Some of the proposed actions are already underway in both countries, either independently, or jointly under Border 2012. However, with the strategy, both countries will be clear and consistent on the basic principles, and the short and long-term actions that are necessary to properly manage scrap tires. Further, the strategy will help both countries leverage existing resources. After signing the strategy, the U.S. and Mexico agreed to seek funding and implement the strategy.

### Tire Pile Cleanup

The cleanup of abandoned tire piles is a significant binational border priority because of the known public and environmental threats. One of the largest tire piles in the whole border region is the Juárez pile, with approximately 4 - 5 million tires. In the California/Baja California region, the largest tire piles were Centinela, with 1.2 million tires and INNOR, with over 400,000 tires.

Working in cooperation with local and state governments and industry, cleanups at all three of the largest tire piles along the border are underway or completed. Cleanup at the INNOR tire pile in the Mexicali area is complete. Cleanup of approximately 900,000 tires from the 1.2 million-tire pile at the Centinela site, also in the Mexicali area, is underway, and the entire tire pile is expected to be completely removed at the end of 2006. Both of these projects send the waste tires to cement kilns where they are used as tire derived fuel. The removal of tire piles reduces land contamination and public health risks in both Baja California and California.

In Arizona and Sonora a project removed 40,000 scrap tires in Agua Prieta. Tires were collected and transported by rail to a cement plant and used as fuel. The cleanup has reduced land contamination and public health risks in Mexico and Arizona. Tire pile cleanup is also a priority for tribes along the border. The Pala Band of Mission Indians removed over 34,000 tires from its reservation and issued a cease and desist order to an unlicensed junk yard.

EPA, SEMARNAT, NADBank, BECC and Ciudad Juárez were instrumental in the success of the Binational Forum on Air and Wastes held in Sep-

#### Border Timeline 2002 - 2006, cont.



**Oct. 2004:** Air Policy Forum Meeting: Break-out sessions focused on seeking local/regional consensus on Air Policy direction for six broad areas



**Oct. 2004:** Border Binational Health Week



**Above: INNOR tire pile prior to cleanup**

**Below: INNOR tire pile after cleanup**

tember 2004 in Ciudad Juárez, Chihuahua. Under an agreement, SEMARNAT, EPA, the state of Chihuahua, and the City of Ciudad Juárez began the cleanup of the pile. As a result of this agreement over 1 million scrap tires have been removed and used as tire derived fuel in a local cement kiln, and a road was paved with rubberized asphalt. In addition, EPA is working with BECC, Ciudad Juárez and GCC Cemento, S.A. de C.V., Samlayuca, a local cement plant, to remove approximately 620,000 scrap tires from the Juárez pile. This project will showcase the advantages of using scrap tires for energy in the U.S.-Mexico border region.

In the Lower Rio Grande Valley a project will analyze available tire recycling technology which can be used to construct and operate a facility, determine local needs for incorporating crumb rubber applica-

tions, and estimate the number of waste scrap tires generated annually.

Texas A&M University in Kingsville is evaluating waste tire applications as possible sustainable technology solutions for highway engineering projects. The researchers there are testing the use of waste tires as roadway subgrade and base material. The project will provide science-based information to help solid waste managers safely process and re-use the tires.

The City of Eagle Pass has a project underway to remove approximately 50,000 tires, and eliminate health and safety hazards associated with tire piles. A 50/50 mix of clean fill and tire shreds will be used in the construction of concrete flood ditches.



**Nov. 2004:** U.S.-Mexico Binational Commission Meeting, Mexico. Letter of Cooperation between EPA and SEMARNAT signed; State to State Partnership



**Nov. 2004:** Arizona-Sonora Regional Workgroup Meeting. Task Forces present their accomplishments and priorities for the coming year

# Environmental Health



## Challenges Along the Border

Socioeconomic factors, demographic distribution, high population growth, lack of health insurance and environmental degradation along the border create a serious need to improve health conditions. Inadequate and often nonexistent environmental infrastructure makes border residents more susceptible to higher rates of asthma, hepatitis and spread of infectious diseases than the population as a whole. For example, tuberculosis in the 24 border counties is double the U.S. national average. In Mexico, the incidence of tuberculosis along the border is heterogeneous, nevertheless, in Mexicali, for instance, the incidence of tuberculosis is three times the national average (48.7 cases per 100,000 people). In Texas' Rio Grande Valley, cases of hepatitis A are four times as common as the rest of the state; in 2002 alone, over 700 cases of hepatitis A were reported in Baja California. Poor air quality can increase the incidence of asthma, respiratory ailments, heart disease and diminished lung capacity. Nearly all of the 24 counties along the border in the U.S. have been by the Department of Health and Human Services designated health professional shortage areas.

## Projects and Results

Border 2012 funded seven pesticides-related projects addressing a variety of issues and populations along the border. These projects dealt with reducing children's exposure to pesticides through integrated pest management programs at border schools, and the measurement and analysis of children's exposure and susceptibility to pesticides. For example, the Pala Band of Mission Indians implemented a Integrated Pesticides Management Plan, requiring pesticide applicators to obtain a permit from the tribal office before dispensing pesticides within the reservation. Other projects compiled pesticide use data and assessed the feasibility of a pesticide poisoning tracking system. Farm worker training was another important component of the pesticides projects. Three projects supplied educational materials and training to farm workers, while one project provided crop specific data to farm workers and their employers on the exposure hazards associated with pesticides.

In Texas, Coahuila, Nuevo León and Tamaulipas, an environmental education program trained over 100 teachers from four pairs of border sister cities. Other efforts included a lead poisoning prevention campaign in Arizona, the development of an Internet environmental education database for educators, and a binational community action plan to educate resi-

### Border Timeline 2002 - 2006, cont.



**Jan. 2005:** Waste Policy Forum meets in Tijuana. Agreements made regarding the development of a binational Waste Action Plan and policy on clean-up of waste sites



**Jan. 2005:** Environmental Health Workgroup and Border Indicators Task Force Joint Meeting



dents and prevent the spread of West Nile virus and dengue fever in New Mexico, Texas and Chihuahua.

Similarly, funds were invested to build the capacity of border professionals and residents to respond to environmental threats. One project developed a binational capacity building course for health care providers. Trainers developed environmental health skills appropriate for health care response and management along the Border. The course trained one hundred physicians on common binational environmental health exposure and corresponding patient care management. Another project organized community members among four Hidalgo County colonias and helped them assess their environmental health needs. Through these assessments, the four Hidalgo County colonias developed a Colonias Health Action Plan to engage public and private health and infrastructure institutions to resolve the identified priority issues. In addition, the Environmental Health Work Group was influential in implementing projects along the border.

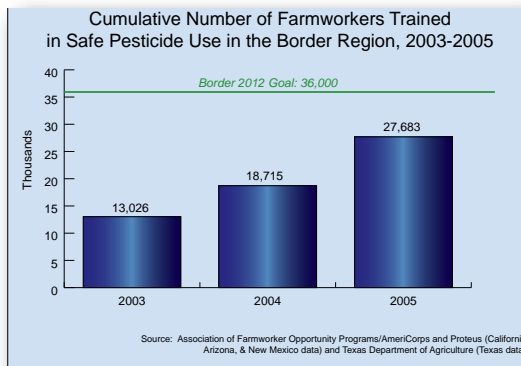
### Partnering for Success: Border-wide Efforts

The Environmental Health Work Group serves as a main conduit for addressing binational environmental health concerns. The work group's efforts have developed and supported a wide range of projects.

Four projects funded the development and definition of indicators to gauge the health of border residents. A key aspect of improving environmental health depends on defining indicators of specific human health conditions. Once indicators are defined, data can be gathered over time to assess changes in human exposure and health conditions due to specific environmental interventions.

In partnership with the U.S. Geological Service (USGS) the Border 2012 program has created a new environmental health website for the Rio Grande. This website, the first of its kind, incorporates environmental and health data from both sides of the border into a Geographic Information System (GIS) format. The site is a tremendous success, offering information to border residents, health care professionals, scientists and policy makers. Due to the website's success, in 2006 it is expanding to include the entire border region. To visit the site, go to <http://borderhealth.cr.usgs.gov/index.html>

The Environmental Health Work Group also supported the Binational Border Health Week. Organized by the U.S.-Mexico Border Health Commission in October of 2004 and 2005, Binational Border Health Week brings together more than 29 federal partner agencies and programs, and 310 community organizations to promote public health along the border, particularly environmental health.



Source: State of the  
Border Region, Indicators  
Report 2005

Finally, the work group helped fund a number of projects in conjunction with the Health Resource Services Administration, including:

- An analysis of resources currently available in selected Community and Migrant Health Centers along the border to determine their level of knowledge and need for additional information to promote respiratory and cardiovascular health, and prevent contamination and disease resulting from exposure to airborne contaminants;
- Clinical Impacts of Promotoras-led Education on Child Pesticides Exposure. This project will develop and test a methodology for assessing environmental health education, and the integral role of training local women as promotoras for community environmental health education, on clinical outcomes for children who might be subject to pesticide exposure;
- Establishment of a U.S.-Mexico Border Binational Environmental Health Connections E-Group to establish communication among and between U.S. and Mexican Health Professionals to:
  - Identify common health and environmental problems which affect public health along the border
  - Identify needs which can be addressed through collaboration, and
  - Share information about solutions and intervention models which have been successful among peers in facilitating resolution of problems and addressing needs.
- Disease susceptibility, risk analysis and prevention projects were also funded. These included binational surveillance of air pollution-related diseases and environmental health interventions that concentrated on lead exposure, water and air contamination reduction and risk assessment.

For more information on Environmental Health Work Group Projects, go to [www.epa.gov/ehwg](http://www.epa.gov/ehwg)



*Feb. 2005: Good Neighbor Board Report: Water Resources Management on the U.S.-Mexico Border*



*Feb. 2005: Chihuahua-New Mexico-Texas Regional Work Group Meeting*

## Spotlight: Environmental Health



During the hands-on toxics training, two women learn the importance of reducing children's exposure to toxics and how to decrease exposure

### Binational Tracking Network of Environmentally Related Diseases

This project addresses the information gap on diseases associated with environmental exposures throughout the Chihuahua-New Mexico-Texas Border Region by establishing a pilot program to collect data in El Paso, Sunland Park, and Ciudad Juarez. An inclusive committee will set criteria for the various classes of environmental diseases and analyze results to see if links can be established between environmental quality and disease. The first phase of the pilot program considers only respiratory-based diseases. The project seeks to improve public knowledge and understanding of the relationship between air quality and respiratory diseases. The pilot project will initiate a tracking network to provide comprehensive data on diseases and their relationship to environmental conditions. It will be designed to provide common criteria and methodology for the U.S.-Mexico border region on disease tracking and data reporting, and possibly develop

indicators for environmental health. Among the most widely mentioned issues in the development of disease tracking networks is the difficulty in developing compatible databases. This project will attempt to remove that barrier. For more information, go to [www.infofrontera.org/btnerd/index.htm](http://www.infofrontera.org/btnerd/index.htm)

### Pesticides Studies: Pilot Study to Measure Neurobehavioral Effects of Pesticides in Children

The purpose of the first pilot pesticide project is to identify a field-ready method to evaluate cognitive and / or behavioral endpoints in very young children living in U.S.-Mexico border communities. The project addresses the need to evaluate young children with potentially high exposures to pesticides. Based on a thorough review of available methods and approaches, a relatively new questionnaire, the Infant and Toddler Social and Emotional Assessment was selected. The Spanish version of the assessment

#### Border Timeline 2002 - 2006, cont.



**Feb. 2005:** California and Arizona Border Tribal Caucus Meetings held to identify accomplishments and priorities



**March 2005:** National Coordinators Meeting, Tucson, Arizona: Priorities included promotion of diesel retrofit projects and cleanup of abandoned waste and tire sites





A woman interviews a farmworker to assess what precautions he takes while working in the fields. The health official offers bilingual educational materials on pesticides to reduce exposure

was evaluated for use within two colonias in the Rio Grande Valley. Thirty-nine children between 12 and 47 months of age were enrolled in the study. For each child, a parent or other primary caregiver completed the assessment. This pilot study intends to demonstrate the assessment as an acceptable instrument for evaluation of young children in U.S.-Mexico border communities. Specific recommendations will be made to modify and standardize the administration of future assessments. For more information, go to [www.epa.gov/ehwg/projects\\_publications/neurobehavioral\\_effects.html](http://www.epa.gov/ehwg/projects_publications/neurobehavioral_effects.html)

### **Pesticide Collection Project to Dispose of Obsolete Pesticides in Two Border Communities Reduces Exposure Risk**

The Pesticide Collection Project is a pilot program that organized pesticide collection and disposal events in Yuma County, Arizona, and in San Luis Rio Colorado, Sonora. This demonstration project improved protection of human health and the environment through the removal of unwanted or obsolete pesticides from agricultural areas. This prevented use of these "legacy" pesticides on both sides of

the border, as well as prevented contamination from improper pesticide storage. Over 46 tons of waste pesticide was removed during the collection events in August, 2006. Based on this project, Mexico has initiated a nationwide inventory of waste pesticides. This project is intended to illustrate the need for sustainable collection programs in both Arizona and Sonora.

**The Baja Mobile Medical Clinic brings medical care to residents that are unable to seek medical attention otherwise. Medical care on wheels is of paramount importance for residents of rural areas**



**May 2005:** Mexicali/Imperial Valley Sister-city Emergency Contingency Plan Signing Ceremony



**May 2005:** INNOR tire pile cleanup complete



# Emergency Preparedness and Response



## Challenges Along the Border

Increasing numbers of industrial facilities that create hazardous waste have led to more frequent chemical emergencies. At the same time, because of the population boom, a much higher risk of public exposure to these contaminants exists. As a result, there is an immediate need to improve response capability through training and joint response exercises. Any spill, release, fire, or explosion that has the potential to affect either country is reported to the 24-hour U.S.-based National Response Center or the Mexico-based National Communications Center. Between 2003 and 2005, these centers received over 700 calls.

In an effort to coordinate and respond to emergencies, the U.S.-Mexico Joint Response Team was established in 1999. The team is comprised of federal,

state and local emergency response and preparedness agencies from both nations. The 1999 Joint Response Team laid the groundwork for sister-city plans. These plans are binational emergency contingency plans that detail roles and responsibilities for federal, state and local emergency response agencies. To date, 15 pairs of sister-cities have established emergency contingency plans that provide coordination among both nations' emergency responders.

## Investment Along the Border

Government agencies have invested over \$300,000, supporting twelve projects in the border region to support emergency response and preparedness activities. About 72 percent of these funds, were used for capacity building projects, including emergency

### Border Timeline 2002 - 2006, cont.



**June 2005:** Arizona-Mexico Commission Meeting: As a result of this meeting the Ambos-Nogales Air Quality Plan is signed which outlines 12 recommendations for reducing air pollution



**July 2005:** Following caucus meetings, border tribes release the Tribal Border Communiqué on tribal accomplishments and priorities along the border

contingency training development and emergency responder training. Nearly 30 percent was used for planning, coordination and preparedness activities. This investment is crucial, since preparedness and capacity building are essential to the ability of any agency to respond to an emergency. Response and preparedness funds account for 4 percent of Border 2012 project funds. In addition to project funds approximately \$880,000 was invested in contract support to assist in the development of the sister-city plans.

Building capacity among emergency responders is an essential component. From 2003-2005 nine projects involved capacity building. In Arizona-Sonora, over \$67,000 was invested to support training activities. These projects included courses on tanker cars, hazardous materials, response to chlorine releases, and also supported a binational workshop on the Operation Response Emergency Information System. As a result of the training, emergency responders are able to make competent, informed decisions and are better equipped to respond to an emergency situation involving hazardous materials. In California-Baja over \$120,000 was invested in the binational Baja California Emergency Management Institute to ensure long-term sustainability of training capacity among emergency responders along the border. In the New Mexico-Texas-Coahuila-Nuevo León-Tamaulipas-Chihuahua border area, over \$58,000 was

invested to support hazardous material trainings and a joint education initiative.

Aside from building capacity, \$95,000 was invested to support emergency response planning, coordination and preparedness activities. In the New Mexico-Texas-Chihuahua border area, \$60,000 supported emergency response simulation exercises and evaluations of local sister city response capabilities. These exercises are mock emergency situations that determine the effectiveness, coordination and communication of emergency responders. In Arizona-Sonora \$35,000 was invested to update Ambos Nogales' binational prevention and emergency response plan. Frequent revisions to emergency contingency plans are important because new technologies and threats change the face of emergencies.

### **Partnering for Success: Regional Efforts**

In the cities of Presidio, Texas, Ojinaga and Palomas, Chihuahua and Columbus, New Mexico, the New Mexico-Texas-Chihuahua Workgroup has been instrumental in coordinating local sister city contingency plans.

The workgroup conducted a hazardous materials commodity flow study for El Paso, which included the inspection of commercial truck traffic transporting hazardous materials across the Zaragoza-Ys-



**The EPA mobile command center is a total communications center. With secure phone lines, GIS capabilities and cameras; this truck enables emergency responders to set up a base of operation and communications**



**July 2005:** Secretary Luege and Administrator Johnson meet as newly appointed Agency heads



**Oct. 2005:** Binational Event Announcing availability of ULSD on Mexican side of the border in 2007: Letter of intent signed to promote emission reductions along the border



leta International Bridge. In addition, the Commodity Flow Study included facility inspections and risk and vulnerability analyses of the hazardous materials of concern for major truck transportation routes. The workgroup also supported preparedness in environmental health emergency response; trainings were held in five major hospitals and two clinics in El Paso, Texas and Ciudad Juarez, Chihuahua on hospital mass casualty decontamination.

Other accomplishments include implementing several binational and tri-national (including Tribal Nations) exercises to help develop preparedness and prevention in the region. These efforts include risk and consequence analysis, risk reduction, and counterterrorism. The workgroup has also conducted several binational training sessions in the areas of hazardous materials, field operation guides, chemical / biological / radiological / nuclear responses, incident command/unified command systems, and the Department of Homeland Security's National Incident Management System and National Response Plan.

### Border-wide Efforts

The Emergency Preparedness and Response Border-wide Workgroup improved binational coordination among emergency responders, and increased transparency among federal, state and local agencies while continuing to support Joint Response Team activities. Highlights include:

- A Joint Contingency Plan established the framework and foundation for the 15 sister-city plans;
- The National Response Plan includes Mexican protocols, and updated notification procedures;
- The workgroup is currently revising the chemical emergency notification system between the U.S. and Mexico last tested in late 2005. The revisions will enhance binational preparedness, while improving coordination and communication

Ongoing activities include revising an all-hazards emergency notification system between Mexico and the U.S. and expedited border crossings for emergency response personnel. The all-hazards notification system is being updated and has been included in the Joint Contingency Plan. Eventually, the updated system will be incorporated into each sister city plan. The overall effort will enhance health and safety for both Mexican and U.S. citizens. Expedited border crossings for emergency response personnel are essential for the safety and security of both nations' citizens. Officials are working to develop a viable protocol for emergency responders to expedite their crossing.

**EPA Superfund  
Emergency Responders  
decontaminate Snowball,  
to remove any mercury  
that might be hidden in  
his fur. EPA, PROFEPA,  
and state and local  
emergency responders  
collaborate to develop  
binational emergency  
contingency plans to  
enable coordinated and  
effective emergency  
response operations**



### Border Timeline 2002 - 2006, cont.



**Oct. 2005:** Binational Commission Meeting:  
Theme is Border Security



**Dec. 2005:** Arizona-Sonora Regional Workgroup  
meeting



## Spotlight: Emergency Preparedness and Response



### Baja California Emergency Management Institute

The Baja California Emergency Management Institute is a public/private binational partnership for sustainable Border emergency preparedness through certified academic programs and binational standardization of skills and procedures. Focusing first on chemical emergencies, the Institute plans to expand to other hazards such as bioterrorism and conduct research and risk reduction programs. In 2005 the partners signed a memorandum of collaboration. The autonomous State University of Baja California serves as fiscal and organizational coordinator; other partners are the Tijuana Fire and Civil Protection Department, Mexico Attorney for Environmental Protection, EPA, County of San Diego, and State of California Specialized Training Institute. The private sector is represented by the Tijuana Chamber of Commerce and the Pro-Bomberos Tijuana Association. In 2005 the Institute also conducted first level responder training.

### Arizona-Sonora Emergency Preparedness Task Force Achievements

In 2003 the Border 2012 Arizona-Sonora Emergency Preparedness Task Force supported a field exercise in Ambos Nogales to simulate a response to a terrorist attack. In 2005, this binational task force conducted a table-top exercise to test a response involving the sister city plans in Cochise County, Douglas, and Agua Prieta. The exercise simulated an overturned tanker truck releasing sulfur dioxide.

In addition, the Arizona-Sonora task force sponsored training in exercise design, the Operation Respond Emergency Information System, rail-car safety, and the Incident Command System. The training paid off with coordinated binational responses to five emergencies in 2005: the Nogales fire, San Lazaro rail spill, Nogales floods, a Nogales raw sewage spill and the Naco landfill fire. Finally, the Task Force met with the Tohono O'odham Nation Council and identified capacity-building and tri-national planning as potential collaborative projects.

The Baja California Emergency Management Institute will host classes for local emergency responders. In this table-top exercise emergency responders are determining roadways to use and roadways to block in the event of an emergency



**Jan. 2006:** The Texas-Coahuila-Nuevo Leon-Tamaulipas Regional Workgroup formed three binational, geographically focused environmental Task Forces: the Gulf Task Force, the Falcon Task Force and the Amistad Task Force



**Feb 2006:** First Gulf Task Force Meeting

# Compliance and Enforcement



## Challenges Along the Border

Growing industrial activity along the border has led to increased air emissions, waste generation, and water and energy use on both sides of the border. These environmental impacts make collaboration and cooperation between both nations increasingly important to ensure environmental compliance and foster enhanced participation in voluntary programs. The border region is home to over 19,000 regulated facilities, with roughly 8,600 in the U.S. and 11,000 in Mexico; “regulated” is defined as any facility needing an air or water discharge permit or that handles hazardous waste. Both nations must work with the manufacturing sector to improve environmental conditions through compliance assistance, incentive-based voluntary programs, and targeted enforcement efforts.

## Projects and Results

From 2003-2005, over \$300,000 was provided for projects along the border to ensure compliance, provide technical assistance, target enforcement activities, and reduce waste through pollution prevention programs and Environmental Management System (EMS) training.

The money supported six projects. Nearly 70 percent of projects funded dealt with pollution prevention and provided EMS training and implementation. Enforcement targeting and compliance assurance related activities made up the remainder. All these projects support related efforts to reduce waste.

### Border Timeline 2002 - 2006, cont.



**March 2006:** First Falcon Task Force Meeting



**March 2006:** U.S. - Mexico Binational Commission Meeting, U.S.: Letter of cooperation between USAID, EPA and SEMARNAT signed on Methane to Markets





Arizona Governor Janet Napolitano (center left) with Sonora Governor Bours (center right) present AMIGO award to Sonora industry recipients for their outstanding achievements

### Partnering for Success: Regional Efforts

The four regional workgroups worked to address citizen concerns, identify needs, and provide guidance and support for projects in the past three years. The California-Baja regional workgroup supported the Green Business Pilot Program for the Automotive Industry in Tijuana, Mexico, which reduces hazardous waste through pollution prevention, education, training, and cost incentives. To date, people working at 23 automotive repair shops were trained in green business practices. In addition, the workgroup is also supporting EMS and pollution prevention training for businesses and port-of-entry inspections training for the California-Baja area. The Arizona-Sonora workgroup supported similar projects, including EMS workshops and the Arizona Mexico International Green Organization (AMIGO) Program to bring Arizona and Mexican industries closer together to share technologies that reduce waste and pollution, while increasing profits, worker safety, and environmental health.

The Texas-Coahuila-Nuevo León-Tamaulipas Regional Workgroup, working with Texas and SEMARNAT held seven Pollution Prevention and Resource Conservation workshops from 2003-2005. In the same period two voluntary site assistance visits to maquiladoras were made, yielding significant reductions to pollution along the border.

The project has produced dramatic results in reducing waste generation and energy consumption in border facilities. Since 1994, participating maquiladoras have reported:

- Reducing hazardous waste generation by about 21,000 tons
- Reducing non-hazardous waste generation by more than 117,000 tons
- Reducing volatile organic compound emissions by more than 95,000 pounds
- Reducing CO<sub>2</sub> emissions by about 900,000 pounds
- Conserving approximately 523 million gallons of water
- Conserving more than 481 million kilowatt hours of electricity and
- Saving partner U.S. facilities nearly \$89 million in avoided material and disposal costs

### Border-wide Efforts

To enhance environmental performance, the Border-wide Cooperative Enforcement and Compliance Workgroup

- Developed an inventory of high-risk facilities
- Promoted self-auditing and voluntary compliance programs
- Established a Web-based Border Compliance Assistance Center
- Supported training for Mexican and U.S. customs officials on environmental violations
- Established a protocol for sampling hazardous waste compounds at ports of entry



PROFEPA "Clean Industry" program to honor businesses that take measures to reduce their environmental impact



March 2006: 10 Border States Retreat, San Francisco



March 2006: Good Neighbor Board Report: Air Quality, Transportation and Natural Resources along the border



## Spotlight: Compliance and Enforcement



State personnel safely remove and dispose hazardous materials

### Radio Frequency Identification Pilot for Hazardous Waste Transports

Efforts are underway to test the use of Radio Frequency Identification (RFID) as a means to track shipments of hazardous waste from maquiladoras in Mexico to their final treatment or disposal facility in the U.S. The RFID tags and corresponding readers enable customs officials, the waste generators, and others to track the waste from a maquiladora site as it travels through Mexican and U.S. border checkpoints, along U.S. highways, to its designated receiving facility for recycling, treatment or disposal. Successful implementation of the pilot program will

facilitate safe transport of hazardous waste and reduce the potential for illegal dumping of the material. It could also speed border crossings, thus reducing air emissions and fuel use by trucking companies using the technology.

### Border Compliance and Enforcement Prioritization Tool

By extracting information from national databases on over 8,000 facilities in the border region, EPA has developed a tool to incorporate data on compliance history, pollutant releases, and population statistics that allows users to sort and rank facilities based on a number of factors. The tool is designed to help

#### Border Timeline 2002 - 2006, cont.



**April 2006:** Strategy for Indicator Development Report



**April 2006:** National Coordinators Meeting, Ensenada, Mexico. Priorities included: removal of obsolete pesticides, increased availability of low-sulfur fuel, pilot technologies related to transboundary movement of waste

regional work groups prioritize compliance activities, such as inspections and compliance assistance for different facilities, geographic areas or industrial sectors. It has been distributed to the regional task forces for implementation, not only for compliance activities but also for helping to identify facilities that may pose significant environmental risks from industrial pollutant releases. For example, it can help identify facilities that may be causing a disproportionate environmental impact on a particular population, or help identify which facilities are polluting a stream or watershed.

### **Border Compliance Assistance Center**

The Border Center is a web-based compliance assistance resource developed in partnership with the National Center for Manufacturing Sciences. The purpose is to help businesses importing hazardous waste from Mexico understand and comply with applicable environmental regulations. Providing the regulated community with information can help them meet and exceed environmental compliance in both countries. The center provides online, plain language explanations in both English and Spanish on environmental requirements that apply to U.S. importers, U.S. warehouse/storage facilities, U.S. and Mexican transporters, and Mexican generators. The information includes federal and state regulations, packaging and labeling requirements, paperwork preparation guidelines, as well as customs yard information

at ports of entry from California to Texas. While the Border Center serves three main groups (Mexican hazardous waste generators, Mexican and U.S. transporters, and U.S. importers/brokers), it is also useful to federal and state regulators and the public.

Center usage has increased by an impressive 412% since the Center's 2003 inaugural year. For more information, go to [www.bordercenter.org/index2.cfm](http://www.bordercenter.org/index2.cfm)

Major accomplishments include a cooperative effort between the Border Center, EPA and U.S. Customs and Border Protection to provide U.S. hazardous waste manifests from each port of entry, for development of a hazardous waste manifest database. The compilation of data is in its pilot phase, and includes types and quantities of hazardous waste entering U.S. ports of entry and their final destination. The Border Center will use the data to develop a hazardous waste destination directory to help maquiladoras and importers decide where to most efficiently send their waste.

The center is establishing three new key features: (1) Crossing the Border, which provides Customs contacts, number of open lanes/longest wait times, and paperwork instructions for transporters; (2) a Waste Code Dictionary cross-referencing EPA and INE hazardous waste codes; and (3) a Broker Directory to help locate U.S. waste brokers.



**Secretary Enrique Villegas of the Baja California Secretariat for Environmental Protection addresses private and public sector representatives at the 2006 Eco-Efficiency Conference in Tijuana, MX.**



**May 2006:** Joint Advisory Committee 10th Anniversary



**June 2006:** First joint BECC/NADBank Meeting: Agreement on developing BECC technical assistance program, using \$50 million in paid-for capital, making the Solid Waste Program permanent



# Contact List: United States



*The following contacts can provide information on environmental issues and activities in their respective states and regions.*

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# List of Acronyms

<b>BECC</b>	Border Environment Cooperation Commission
<b>COFEPRIS</b>	Mexico's Federal Sanitary System
<b>CONAGUA</b>	Mexico's National Water Commission
<b>EPA</b>	U.S. Environmental Protection Agency
<b>GNEB</b>	Good Neighbor Environmental Board
<b>INE</b>	Mexico's National Institute of Ecology
<b>NADBank</b>	North American Development Bank
<b>PROFEPA</b>	Mexico's Federal Attorney General for Environmental Protection
<b>SEMARNAT</b>	Mexico's Secretariat for the Environment and Natural Resources

