

Metadata for the *State of the Border Region Indicators Report, 2005*

Border 2012: U.S.-Mexico Environmental Program

Table of Contents

U.S.-Mexico Border Region

Population Projections for the Border Region	2
Native American Population in the U.S. Side of the Border Region	3
Languages Spoken at Home in the U.S. Side of the Border Region	4
U.S.-Mexico Trade.....	5
Biodiversity in the Border Region	6

Water

Percentage of Households in the Border Region with Access to Piped Drinking Water within the House .	7
Wastewater Services in the Border Region.....	8

Air

Number of Days Exceeding Air Quality Standards in Border Monitoring Areas	9
Ozone Concentrations in the Border Region	10
Particulate Matter (PM ₁₀) Concentrations in the Border Region	11
Prevalence of Physician Diagnosed Asthma in Calexico/Mexicali	12

Land

Estimated Abandoned Waste Tire Piles in the Border Region	13
Amount of Pesticide Use in the Border Region.....	14
Number of Farmworkers Trained in Safe Pesticide Use in the U.S. Side of the Border Region.....	15
Cumulative Number of Farmworkers Trained in Safe Pesticide Use in the Border Region.....	16

Emergency Preparedness and Response

Number of Incident Notifications in the U.S. Side of the Border Region Received by NRC	17
Number of Incident Notifications in the Mexican Side of the Border Region Received by COATEA	18
Progression of Signed Sister City Plans.....	19

Enforcement and Compliance

Regulated Facilities in the U.S. Side of the Border Region.....	20
Number of Enforcement Actions in the U.S. Side of the Border Region	21
Inspection Results for Facilities in the Mexican Side of the Border Region	22
Pollution Reduction from Federal Enforcement Actions in the U.S. Side of the Border Region.....	23
Number of State and Federal Inspections of Facilities in the Border Region.....	24
Penalties in Number and Dollar Value in the U.S. Side of the Border Region.....	25

U.S.-Mexico Border Region

Population Projections for the Border Region		Type of Indicator
Figure 1		Driving forces
		Goal and Objective: -
Description of the INDICATOR		
<i>Definition</i>	Low, medium and high projections of population growth in U.S.-Mexico border region in five year increments from 2005 to 2030.	
<i>Importance of the indicator/purpose</i>	Over the last 20 years, population has grown rapidly in the border region to more than 11.8 million people. This figure is expected to reach 19.5 million by 2030 according to medium population projections. From 1990 to 2000, population growth in the border region was over two times that observed for either respective country nationwide. Population growth in the border region places demands on infrastructure to supply clean water. Increases in industry and traffic contribute to air and water pollution.	
<i>Units of measure</i>	Total number of people in border in all border communities.	
<i>Concepts and definitions</i>	<p><u>Population</u> – All people, male and female, child and adult living in a given geographic area.</p> <p><u>Population projections</u> - High projections assume that recent trends in fertility, mortality, and migration continue without interruption. The medium projections assume a continuation of recent trends in fertility and mortality, but incorporate reduced migration rates. The low projections maintain the same assumptions about fertility and mortality but assume a net migration of zero.</p>	
<i>Coverage</i>	Five year increments from 2000 to 2030	
<i>Calculation</i>		
<i>Sources of information</i>	<p>Population projections for the U.S.-Mexico border region are available from the Southwest Consortium for Environmental Research and Policy (SCERP) at http://www.scerp.org/population.htm. The projections are based on an unpublished study by Peach and Williams (2003) which is based on census data collected in 2000 in both in the U.S. and Mexico.</p> <p>The data for low projections are presented in Table 1-1; for medium projections in Table 1-2; for high projections in 1-3. Table 1-4 lists the total projected population across all border municipalities in the border region for five year intervals from 2000 to 2030.</p>	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>	Projections are based on 63 border counties and municipalities located immediately adjacent to the border. Thus, these projections represent a subset of the border region as defined by the La Paz Agreement, 100 km north and south of the border. This would include additional counties and municipalities that fall partially within the border region.	

Native American Population in the U.S. Side of the Border Region Figure 2		Type of Indicator
		Driving forces
		Goal and Objective: -
Description of the INDICATOR		
<i>Definition</i>	Number and percent of population of Native Americans in U.S. side of the border region by U.S. state in 2000	
<i>Importance of the indicator/purpose</i>	The U.S.-Mexico Border Region is characterized by many social, economic, and political contrasts between the people who share the natural resources of the area.	
<i>Units of measure</i>	Number and percent by state and total across all states for border region	
<i>Concepts and definitions</i>	<p><u>American Indian or Alaska Native</u> – A person having origins in any of the original peoples of North and South America (including Central America) and who maintain tribal affiliation or community attachment.</p> <p><u>Race</u> - The concept of race, as used by the U.S. Census Bureau, reflects self-identification by people according to the race or races with which they most closely identify. These categories are sociopolitical constructs and should not be interpreted as being scientific or anthropological in nature. The racial classifications used by the Census Bureau are categorized by white, black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian and Other Pacific Islander.</p>	
<i>Coverage</i>	2000. U.S. side of the border region.	
<i>Calculation</i>	The number of native Americans is downloaded from the Census database by border county. (Note: American Indians are grouped with Alaskan natives into one Census category.) The total native population in each state is calculated by adding the numbers for each county. (Table 2-1.) The total number of native Americans is divided by the total border population to calculate a percentage of persons in the border region on the U.S. side who are native American.	
<i>Sources of information</i>	U.S. Census 2000 data on population statistics are available from http://factfinder.census.gov .	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>	The boundaries of the counties selected may extend beyond the 100 km region designated as the “border region”, thus the reported values may overestimate the actual population numbers.	

Languages Spoken at Home in the U.S. Side of the Border Region Figure 3		Type of Indicator Driving forces
		Goal and Objective: -
Description of the INDICATOR		
<i>Definition</i>	The number and percentage of persons who speak English only, Spanish only, are bilingual (Spanish and English) or speak another language (Other) in the U.S. side of the border region for 2000.	
<i>Importance of the indicator/purpose</i>	The U.S.-Mexico Border Region is characterized by many social, economic, and political contrasts between the people who share the natural resources of the area.	
<i>Units of measure</i>	Percentage	
<i>Concepts and definitions</i>	<p><u>Ability to speak English</u> - For a respondent who speaks a language other than English at home, refers to his/her assessment of his ability to speak English, from "very well" to "not at all."</p> <p><u>Language spoken at home</u> - The language currently used by respondents at home, either "English only" or a non-English language which is used in addition to English or in place of English.</p>	
<i>Coverage</i>	2000	
<i>Calculation</i>	<p>Download data from the U.S. Census database by county. Tables 3-1 to 3-4 present the data for each state as reported by county on languages spoken including the number of people and the percent of the total county population. Table 3-5 summarizes the language data across all U.S. border states for the four distinct language categories: English only, Spanish only, bilingual (English and Spanish), other Indo-European languages, and Asian/Pacific island languages.</p> <p>The total number of people speaking English only, Spanish only, bilingual (English and Spanish) and other were calculated as follows:</p> <p>% of Spanish speakers that speak "only" Spanish '= number who speak English less than "very well" divided by the number who speak Spanish</p> <p>% of total pop that speaks "only" Spanish '= number who speak English less than "very well" divided by the total population 5 years and over</p> <p>Speak Spanish and speak English at least "very well"' = number who speak Spanish minus the number who speak English less than "very well"</p> <p>% of Spanish speakers that also speak English "very well" = number who speak Spanish and speak English at least "very well" divided by the number who speak Spanish.</p> <p>% of total pop that is bilingual (English and Spanish) '= number who speak Spanish and speak English at least "very well" divided by the total population 5 years and over.</p> <p>Other = Total of Indo European and Asian and Pacific Island</p>	
<i>Sources of information</i>	<p>U.S. Census Bureau at http://factfinder.census.gov. Languages spoken at home in the U.S. side of the border region.</p> <p>These data were recorded based on responses to questionnaires administered during the 2000 Census that asked people aged 5 and over if they spoke a language other than English at home. Respondents who said they spoke English "very well" were considered to have no difficulty with English. Those who indicated they spoke English "well," "not well," or "not at all" were considered to have difficulty with English — identified also as people who spoke English "less than very well."</p>	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>	--	

U.S.-Mexico Trade Figure 4		Type of indicator Driving force
		Goal and Objective: -
Description of the INDICATOR		
<i>Definition</i>	Total exports from Mexico to U.S. and total imports from U.S. to Mexico in billions of U.S. dollars by year for 1994 to 2004.	
<i>Importance of the indicator/purpose</i>	Since industry (maquiladoras) located in Mexican border municipalities produce a large percentage of export products, trade translates into increased trucking of products across the border. This can contribute to elevated vehicular emissions and affects air quality for residents on both sides of the border. In the border region, trade is also compounded by increasing population, production, and unplanned city expansion, which leads to greater environmental effects. This suggests that many border residents may be subject to unhealthy air, contaminated water, and lack of wastewater treatment.	
<i>Units of measure</i>	Billions of U.S. dollars	
<i>Concepts and definitions</i>		
<i>Coverage</i>	1994 to 2004	
<i>Calculation</i>	Download data from Tradestats database for all merchandise types for years of interest (1994-2004) and total by year. Plot totals for each year imports and exports. The reported U.S. dollars (\$) on items that are exported from the U.S. to Mexico and imported from Mexico to the U.S. are presented in Tables 4-1 and 4-2.	
<i>Sources of information</i>	TradeStats Express Home (http://tse.export.gov), web site sponsored by the Office of Trade and Industry Information (OTII), Manufacturing and Services, International Trade Administration, U.S. Department of Commerce.	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>		

Biodiversity in the Border Region		Type of indicator
Text box		Driving force
		Goal and Objective: -
Description of the INDICATOR		
<i>Definition</i>	Types of habitat, globally endangered species and critically endangered species in the U.S.-Mexico border region.	
<i>Importance of the indicator/purpose</i>	The U.S.-Mexico Border Region is also characterized by great biological diversity including many rare and locally distinct species. According to the International Union for the Conservation of Nature and Natural Resources (IUCN), there are four primary types of habitat composing most of the U.S.-Mexico border region. Within these habitats there are 2,143 animal species of which ten are listed as globally endangered species and two are critically endangered.	
<i>Units of measure</i>	List	
<i>Concepts and definitions</i>		
<i>Coverage</i>	2006	
<i>Calculation</i>	Species and habitats were identified based on geographic maps Table 5-1 provides a list of the 10 endangered species and 2 critically endangered species found in the U.S.-Mexico border region. Figure 5-1 presents the geographical regions that these species are found and summarizes the information by area and taxa.	
<i>Sources of information</i>	2004 IUCN Red List of Threatened Species. http://Redlist.org World Wildlife Fund (WWF) – WWF has information on biodiversity. It has created a map-driven searchable database (WildFinder) that provides data on the global distribution of species. WildFinder includes information for four large taxonomic groups: amphibians, reptiles, birds, and mammals. The information on these species and their distributions comes from published sources, such as field guides and species counts, and from unpublished sources such as compiled museum records or directly from experts.	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>		

Water

Percentage of Households in the Border Region with Access to Piped Drinking Water within the House		Type of indicator
Figure 5		State
		Goal and Objective: 1.1
Description of the INDICATOR		
<i>Definition</i>	Percentage of households in the U.S.-Mexico border region, by border county / city, with access to piped drinking water within the house, 2000	
<i>Importance of the indicator/purpose</i>	Population and industrial growth along the border has created large demands for safe drinking water. Water is also the most limited resource in this primarily arid region, further emphasizing the need to protect it through means such as adequate infrastructure and efficient and responsible use.	
<i>Units of measure</i>	Percentage	
<i>Concepts and definitions</i>	<p><u>Piped water</u> (U.S.) - Percentage of "Occupied Housing Units" (if it is the usual place of residence of the person or group of people living in it at the time of enumeration) that have complete kitchen facilities. A unit has complete kitchen facility when it has all of the following: (1) an installed sink with piped water, (2) a stove or range, and (3) a refrigerator. A housing unit having only a microwave or portable heating equipment such as a hot plate or camping stove should not be considered as having complete kitchen facilities. An ice box is not considered to be a refrigerator. Percentage is obtained by subtracting from the universe of "Total Housing Unit" the percentage of "Lacking Complete Kitchen Facilities." Source: U.S. Census Bureau, Census 2000.</p> <p><u>Piped water</u> (Mexico) – Percentage of private homes (viviendas particulares) – residence destined to lodge one or more people forming one or more households – that have access to piped water within the home. Does not include sources of water available within the property, or hauled water from a public source or hydrant, water distributed by tank trucks or wells, rivers, lakes, creeks, o another source. Source: INEGI Censo de Población y Vivienda 2000.</p>	
<i>Coverage</i>	2000 Census data. U.S.-Mexico border region by county / city.	
<i>Calculation</i>	<p>Percentages reported represent the number of households with water piped into the house divided by the total number of households by county on the U.S. side and city on the Mexican side. Total reported include 15 counties and 13 cities.</p> <p>Formula specific for Mexican data: Take value of Z140 - Houses with piped water within the house - divided by Z120 - Houses with residents at time of survey and multiply by 100. Plot the percentages geographically.</p>	
<i>Source(s) of information</i>	<p>U.S. Census Bureau, Census 2000.</p> <p>INEGI Censo de Población y Vivienda 2000.</p>	
<i>References (Additional information)</i>	<p>Pan American Health Organization (PAHO). 2003. <i>Basic Indicators 2003. Health Situation on the U.S.-Mexico Border</i></p> <p>Fernandex, L. and R.T. Carson (Eds). 2002. <i>Both Sides of the Border: Transboundary Environmental Management Issues Facing Mexico and the United States</i>. Kluwar Academic Publishers. Netherlands.</p> <p>U.S. General Accounting Office (GAO). U.S.-Mexico Border: Despite Some Progress, Environmental Infrastructure Challenges Remain (GAO/NSIAD-00-26). March 2000.</p>	
<i>Limitations of the indicator</i>	Mexico's national reporting system tracks a broader definition of access to piped water, including access in the close proximity such as on the lot.	

Wastewater Services in the Border Region		Type of indicator
Figure 6		State
		Goal and Objective: 1.1
Description of the INDICATOR		
<i>Definition</i>	Percentage of households in the U.S.-Mexico border region, by border county/ city, with access to wastewater services, 2000. U.S. households are those with access to wastewater collection and treatment services. Mexican households are those with wastewater collection services; the percentage of those households that are connected to a treatment system has not been tracked.	
<i>Importance of the indicator/purpose</i>	Population and industrial growth along the border has created large demands for clean and safe drinking water. Water is also the most limited resource in this primarily arid region, further emphasizing the need to protect it through means such as adequate infrastructure and efficient and responsible use.	
<i>Units of measure</i>	Percentage	
<i>Concepts and definitions</i>	<p>Wastewater service (U.S.) - "Complete Plumbing Facilities" include: (1) hot and cold piped water; (2) a flush toilet; and (3) a bathtub or shower. All three facilities must be located in the housing unit. Housing unit - a house, an apartment, a mobile home or trailer, a group of rooms, or a single room occupied as separate living quarters, or if vacant, intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants live separately from any other individuals in the building and which have direct access from outside the building or through a common hall. For vacant units, the criteria of separateness and direct access are applied to the intended occupants whenever possible. Source: U.S. Census Bureau, Census 2000.</p> <p>Wastewater Collection Service (Drenaje) (Mexico) – Percentage of inhabited, private homes that have access to a system of pipes through which wastewater is eliminated (connected to a public network). If at least one of the household's sanitary installations (laundry, toilet, sink, or patio) has a system of pipes to eliminate wastewater, they are considered to have drainage. Fuente: INEGI Censo de Población y Vivienda 2000.</p>	
<i>Coverage</i>	2000 Census data. U.S.-Mexico border region by county / city.	
<i>Calculation</i>	<p>U.S. percentages reported represent "Housing Units" with "Complete Plumbing Facilities". Take "Total Housing Units" minus the percentage of "Lacking Complete Plumbing Facilities" both occupied and vacant housing units. Total reported include 15 counties and 13 municipalities.</p> <p>Mexico data: Take Z136 - Houses connected to public wastewater collection system – divide by Z120 - Houses with residents at time of survey – and multiply by 100. Plot percentages geographically. The code in brackets is the variable code in INEGI.</p>	
<i>Source(s) of information</i>	<p>Pan American Health Organization (PAHO). 2003. Basic Indicators 2003. Health Situation on the U.S.-Mexico Border</p> <p>U.S. Census Bureau, Census 2000.</p> <p>INEGI Censo de Población y Vivienda 2000.</p>	
<i>References (Additional information)</i>	<p>Fernandex, L. and R.T. Carson (Eds). 2002. Both Sides of the Border: Transboundary Environmental Management Issues Facing Mexico and the United States. Kluwar Academic Publishers. Netherlands.</p> <p>U.S. General Accounting Office (GAO). U.S.-Mexico Border: Despite Some Progress, Environmental Infrastructure Challenges Remain (GAO/NSIAD-00-26). March 2000.</p>	
<i>Limitations of the indicator</i>	Data for Mexican households do not indicate whether the water from the public drainage system goes to treatment facilities.	

Air

Number of Days Exceeding Air Quality Standards in Border Monitoring Areas Figure 7		Type of Indicator State
		Goal and Objective: 2.1
Description of the INDICATOR		
<i>Definition</i>	Number of days any one monitor in a geographical monitoring area exceeded the 8-hour binational standard for ozone (0.08 ppm) or the 24-hour U.S. standard (150 µg/m ³) for PM ₁₀ , 2001-2005.	
<i>Importance of the indicator/purpose</i>	This indicator indicates the number of days, in a geographic area, that air pollution reached levels considered unhealthy for sensitive individuals, and possibly others, depending on the actual levels of air pollution reached. At levels slightly above the standards, members of sensitive groups may experience health effects but the general public would likely not be affected. At higher levels, everyone may experience health effects, and sensitive individuals might experience more serious health effects.	
<i>Units of measure</i>	Number of days any one monitor exceeds the standards.	
<i>Concepts and definitions</i>	<p>Ozone (O3) – Ozone is a photochemical oxidant and the major component of smog formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) and oxides of nitrogen (NOx) in the presence of sunlight. These pollutants are emitted by transportation and industrial sources.</p> <p>O3 is reactive and damages lung tissue, reduces lung function, and increases sensitivity to other irritants.</p> <p>Particulate Matter 10 (PM10) -- Particulate matter (PM) with an aerodynamic diameter of 10 microns or less (PM10) consists of ground geologic material entrained into the air by agricultural processes, unpaved roadways, and quarry and cement manufacturing. Exposure to PM is a major human health concern including effects on breathing, aggravation of respiratory and cardiovascular disease and premature death.</p> <p>Air Quality System (AQS) Air Quality Index (AQI)</p>	
<i>Coverage</i>	Yearly 2001 - 2005. Five geographic monitoring areas: Tijuana/San Diego, Mexicali/Imperial Valley, Nogales/Nogales, Ciudad Juarez/El Paso, Lower Rio Grande Valley. Monitors are located on both sides of the border except in the Lower Rio Grande Valley area. Air data is also available, but not included in this indicator, for outlying sites in between the geographic areas. (Figure 9-1).	
<i>Calculation</i>	<p>To determine the monitors within each area, run the CICA Border Air Quality Data "Monitor Values Report" for the areas of interest. (The location of air monitoring sites within these areas is depicted in Figure 9-2 for Tijuana/San Diego, Figure 9-3 for the Mexicali/Imperial Valley, Figure 9-4 for Nogales/Nogales, Figure 9-5 for Ciudad Juarez/El Paso, and Figure 9-6 for Lower Rio Grande Valley.) Since three years of data are necessary, run three reports - Review and select the U.S. and Mexican monitors common in all three reports.</p> <p>Derive the number of exceedance days from the Air Quality System (AQS) using the AMP410S Air Quality Summary Report. Run a report for each Geographic Area/Pollutant/Year using the List of Monitors and use the by "state" option. The output is one page for each state showing the AQI value for each day of the year. Manually make a list of all the dates with an AQI greater than the standard (100), including all U.S. and Mexico border states. Delete duplicate dates from the list. Count the dates on the list and this is equal to the exceedance days for the geographic monitoring area. The data are listed in Table 9-1 for Ozone and 9-2 for PM10.</p>	
<i>Sources of information</i>	<p>Data were provided by EPA based on a search of the U.S. EPA Air Quality System (AQS) Database http://www.epa.gov/air/data/aqsdb.html This database is accessible by the public upon request.</p> <p>Border Air Quality Database. http://www.epa.gov/ttn/catc/cica/airq_e.html</p>	
<i>References (additional information)</i>	Air Policy Forum http://www.epa.gov/border2012/org.htm#forums	
<i>Limitations of the indicator</i>	The indicator does not indicate actual air pollutant concentrations nor the degree to which the standard was exceeded.	

Ozone Concentrations in the Border Region Figure 8		Type of Indicator State
		Goal and Objective: 2.1
Description of the INDICATOR		
<i>Definition</i>	Ozone ambient air concentrations in the border region by geographic monitoring areas, 2001-2005.	
<i>Importance of the indicator/purpose</i>	This indicator documents ozone air pollution trends based on direct measurements of pollutant concentrations in the ambient air from monitoring stations in the geographic areas presented. This information is useful for purposes of assessing whether air pollution is increasing or decreasing over time.	
<i>Units of measure</i>	ppm. Average of the 4 th highest value of ozone over three years within a geographic monitoring area.	
<i>Concepts and definitions</i>	<p>Ozone (O₃) – Ozone is a photochemical oxidant and the major component of smog formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) in the presence of sunlight. These pollutants are emitted by transportation and industrial sources. O₃ is reactive and damages lung tissue, reduces lung function, and increases sensitivity to other irritants.</p> <p>Parts per million (ppm) Design Value (DV)</p> <p>Monitoring area may also be referred to as a geographic area. Monitor or monitoring site may also be referred to as a site or a location.</p>	
<i>Coverage</i>	Yearly 2001 - 2005. Five geographic monitoring areas: Tijuana/San Diego, Mexicali/Imperial Valley, Nogales/Nogales, Ciudad Juarez/El Paso, Lower Rio Grande Valley. Monitors are located on both sides of the border except in the Lower Rio Grande Valley area. Air data is also available, but not included in this indicator, for outlying sites in between the geographic areas. (Figure 9-1).	
<i>Calculation</i>	<p>8-hour ozone design values (DV) were calculated for each monitoring area.</p> <p>To determine the monitors within each area, run the CICA Border Air Quality Data “Monitor Values Report” for the areas of interest. (The location of air monitoring sites within these areas is depicted in Figure 9-2 for Tijuana/San Diego, Figure 9-3 for the Mexicali/Imperial Valley, Figure 9-4 for Nogales/Nogales, Figure 9-5 for Ciudad Juarez/El Paso, and Figure 9-6 for Lower Rio Grande Valley.) Since three years of data are necessary for each data value, run three reports. For example, for 2001 run reports for 1999, 2000 and 2001 and select all monitors with three consecutive years of data. Repeat the process for each year of interest to determine monitors considered. (Note: monitors are not common across the entire five year trend.)</p> <p>Using Air Quality System (AQS) AMP 450 QuickLook Report for Ozone, obtain three years of data for each monitor in the geographic area. For example, if interested in 2001 values, obtain data for 1999, 2000, and 2001. Identify the column “4th Max 8-hour Value” concentration in ppm and divide the sum by three. This is the DV for the monitoring site. Repeat this process for each monitor. Compare the values across all monitors within a geographic monitoring area and plot the highest value of the area for the year of interest. The process is repeated for each year of interest (2001, 2002, 2003, 2004, and 2005) and for the geographic area of interest. These values are listed in Table 11-1. (Note: data flagged by the State and concurred by the regional office were excluded)</p>	
<i>Sources of information</i>	<p>Data were provided by EPA based on a search of the U.S. EPA Air Quality System (AQS) Database. http://www.epa.gov/ttn/airs/airsaqs/sysoverview.htm. This database is accessible by the public upon request.</p> <p>Border Air Quality Database. http://www.epa.gov/ttn/catc/cica/airq_e.html.</p>	
<i>References (additional information)</i>	Air Policy Forum http://www.epa.gov/border2012/org.htm#forums	
<i>Limitations of the indicator</i>	None identified.	

Particulate Matter (PM₁₀) Concentrations in the Border Region Figure 9		Type of Indicator State
		Goal and Objective: 2.1
Description of the INDICATOR		
<i>Definition</i>	PM ₁₀ ambient air concentrations in the border region by geographic monitoring areas, 2001-2005.	
<i>Importance of the indicator/purpose</i>	This indicator documents PM ₁₀ air pollution trends based on direct measurements of pollutant concentrations in the ambient air from monitoring stations in the geographic areas presented. This information is useful for purposes of assessing whether air pollution is increasing or decreasing over time.	
<i>Units of measure</i>	µg/m ³ The three year average of annual mean concentrations of PM ₁₀ at highest monitoring site in a geographic monitoring area.	
<i>Concepts and definitions</i>	<p>Particulate Matter (PM) -- Particulate matter (PM) with an aerodynamic diameter of 10 microns or less (PM₁₀) consists of ground geologic material entrained into the air by agricultural processes, unpaved roadways, and quarry and cement manufacturing. Fine PM (diameter of 2.5 microns or less) or PM_{2.5} consists of sulfates, nitrates, other gases, soot and finer ground geologic materials. Exposure to PM is a major human health concern including effects on breathing, aggravation of respiratory and cardiovascular disease and premature death.</p> <p>Design Value (DV) Air Quality System (AQS)</p>	
<i>Coverage</i>	Yearly from 2001 to 2005. Five geographic monitoring areas: Tijuana/San Diego, Mexicali/Imperial Valley, Nogales/Nogales, Ciudad Juarez/El Paso, Lower Rio Grande Valley. Monitors are located on both sides of the border except in the Lower Rio Grande Valley area. (Figure 9-1).	
<i>Calculation</i>	<p>PM₁₀ annual Design Values (DVs) were calculated for each monitoring area.</p> <p>To determine the monitors within each area, run the CICA Border Air Quality Data "Monitor Values Report" for the areas of interest. (The location of air monitoring sites within these areas is depicted in Figure 9-2 for Tijuana/San Diego, Figure 9-3 for the Mexicali/Imperial Valley, Figure 9-4 for Nogales/Nogales, Figure 9-5 for Ciudad Juarez/El Paso, and Figure 9-6 for Lower Rio Grande Valley.) Since three years of data are necessary for each data value, run three reports. For example, for 2001 run reports for 1999, 2000 and 2001 and select all monitors with three consecutive years of data. Repeat the process for each year of interest to determine monitors considered. (Note: monitors are not common across the entire five year trend.)</p> <p>Using Air Quality System (AQS) AMP 450 QuickLook Report for PM₁₀, for a given monitor, sum the column "WTD ARITH MEAN" (weighted arithmetic mean) concentration for the year of interest and the two prior years. (For example, if the year of interest is 2001, sum the "WTD ARITH MEAN" concentrations for 1999, 2000, and 2001). Divide the sum by three. This is the DV for the monitor and year of interest. Repeat this process for all monitors in the geographic monitoring area and for each year of interest. Compare the DVs across all monitors within a geographic monitoring area and plot the highest value of the area for the year of interest. Repeat this process for each year of interest (2001, 2002, 2003, 2004, and 2005) and plot these values. These values are listed in Table 11-1. (Note: data flagged by the State and concurred by the regional office were excluded.)</p>	
<i>Sources of information</i>	<p>Data were provided by EPA based on a search of the U.S. EPA Air Quality System (AQS) Database. http://www.epa.gov/ttn/airs/airsaqs/sysoverview.htm This database is accessible by the public upon request.</p> <p>Border Air Quality Database. http://www.epa.gov/ttn/catc/cica/airq_e.html.</p>	
<i>References (additional information)</i>	Air Policy Forum http://www.epa.gov/border2012/org.htm#forums	
<i>Limitations of the indicator</i>	None identified.	

Prevalence of Physician Diagnosed Asthma in Calexico/Mexicali Figure 10		Type of indicator Effect
		Goal and Objective: 4.1
Description of the INDICATOR		
<i>Definition</i>	Prevalence of physician diagnosed asthma (2001) in children (6-7 and 13-14 years) in a limited study for one sister city pair: Calexico, CA and Mexicali, B.C., 2001	
<i>Importance of the indicator/purpose</i>	While air quality standards provide a platform to understand current air quality conditions, it is important to understand the <u>possible</u> impact of air pollution on human health. Long-term exposure to elevated air pollution is associated with diminished lung function and cardiovascular disease. Vulnerable groups (children, the sick and elderly) are more likely to suffer ill effects. A number of epidemiologic studies have linked changes in air pollutant concentrations with increased risk of pneumonia, respiratory infections, and exacerbation of asthma. For example, evidence indicates that exposure to vehicle emissions aggravates or triggers asthmatic symptoms and airway reactivity.	
<i>Units of measure</i>	Percentage	
<i>Concepts and definitions</i>	Prevalence - the proportion of persons in a given population that has a particular disease at a point or interval of time. (Prevalence = number of cases (or affected individuals) / number of people in the population).	
<i>Coverage</i>	2001. Calexico, CA and Mexicali, B.C. Small sample study of school aged children 6-7 and 13-14 year olds with a total sample size of 37 children.	
<i>Calculation</i>	Plot data as presented from study results.	
<i>Sources of information</i>	Department of Health and Human Services. 2001. <i>U.S.-Mexico Border Environmental Health Surveillance Demonstrations Phase Two</i> . September 2001. http://www.epa.gov/ehwg/projects_publications/usmexico_asthma_surveillance_demonstration.html	
<i>References (additional information)</i>	For more information on U.S.-Mexico air quality see http://www.epa.gov/usmexicoborder/org.htm#air For Environmental Health information see http://www.epa.gov/ehwg/projects_publications.html .	
<i>Limitations of the indicator</i>	Asthma is a complex disease and multiple factors are implicated in the development and exasperation of this disease, thus at this time it is not possible to directly relate air pollution to the onset of asthma. Despite a surplus of information regarding asthma prevalence, data are not reported in a standardized format. Reporting mechanisms and disease definitions vary considerably between border states and countries, limiting the ability to make comparisons. The data presented in this study includes a very small sample size, and may not be representative of the larger population.	

Land

Estimated Abandoned Waste Tire Piles in the Border Region Figure 11		Type of indicator State - Response
		Goal and Objective: 3.3
Description of the INDICATOR		
<i>Definition</i>	Estimated Abandoned Waste Tire Piles in the Border Region Percent removed and original number of tires at the site, 2004 -2005	
<i>Importance of the indicator/purpose</i>	Throughout the border region, millions of scrap tires have accumulated in several waste tire piles. Composed of tires from both Mexico and the U.S., the piles tend to result from a robust market for partially used tires. Tire piles create ideal breeding grounds for mosquitoes, rodents, and other vectors of disease, which leads to a potential increase in the incidence of malaria, dengue fever, and encephalitis such as West Nile Virus. Further, tire pile fires are difficult to extinguish and can burn for months, emitting noxious fumes and generating liquid wastes that contaminate soil, groundwater, and surface water.	
<i>Units of measure</i>	Percent of tires removed (estimated) / Original number of tires at site	
<i>Concepts and definitions</i>	The goal of Border 2012 is to clean up three of the largest sites that contain abandoned waste tires in the U.S.-Mexico border region by 2010. The three priority tire piles are: <ul style="list-style-type: none"> • INNOR located in Mexicali, BC • El Centinela located in Mexicali, BC • Ciudad Juarez located in Ciudad Juarez, Chihuahua 	
<i>Data collection period</i>	2004 to 2005	
<i>Calculation</i>	Calculate the percent of tires removed by dividing the estimated quantity of tires removed by the estimated original number of tires at the site. Plot geographically the percent removed and original number of tires.	
<i>Sources of information</i>	Data were provided by SEMARNAT. Subsecretaria de Fomento y Normatividad Ambiental. 2006. (Table 13-1)	
<i>References (additional information)</i>	<p>Blackman, A. and A. Palma. 2002. <i>Scrap Tires in Ciudad Juarez and El Paso: Ranking the Risks. Discussion Paper 02-46</i>. Resources for the Future. Washington DC. http://www.rff.org/Documents/RFF-DP-02-46.pdf</p> <p>Lin, C., J.D. Miller and J.R. Parga. 200X. <i>Disposal Alternatives for Waste Tires in the Border Region</i>. http://www.scerp.org/projs/01rpts/P2-01-2.pdf</p> <p>U.S. EPA. 2005. <i>Summary Report for the Tire Removal at the INNOR Site, Mexicali, Mexico</i>. Prepared for the U.S. EPA Region 9 by Tetra Tech. EM Inc. July 29, 2005.</p> <p>SECRETARIA DE MEDIO AMBIENTE Y RECURSOS NATURALES. DIARIO OFICIAL. Miércoles 8 de octubre de 2003. page 10.</p>	
<i>Limitations of the indicator</i>	<p>The exact number of tires at some locations is difficult to estimate.</p> <p>This indicator does not take into capture the number of tires being cleaned up from smaller tire piles in the border region.</p>	

Amount of Pesticide Use in the Border Region Figure 12		Type of indicator Pressures
		Goal and Objective: 4.3
Description of the INDICATOR		
<i>Definition</i>	Geographic distribution of pesticide use in the U.S.-Mexico border region, 2000-2003	
<i>Importance of the indicator/purpose</i>	Communities along the border are confronted with a host of environmental problems, including pollution from agricultural activities. Border residents may suffer health problems related to environmental factors including the improper management of toxics, hazardous and solid wastes, and pesticides. Pesticide exposure can cause a variety of occupational illnesses in farm workers, including eye injuries, cancer, respiratory illnesses and dermatitis.	
<i>Units of measure</i>	Units of measure were not reported in the source document. It is believed to represent pounds of use by county or municipality.	
<i>Concepts and definitions</i>	--	
<i>Data collection period</i>	2000-2003. U.S.-Mexico border region	
<i>Calculation</i>	None – graphical presentation from PAHO report. According to the report, data presented for California and Arizona are authentic numbers based on the full-use reporting systems under the California Department of Pesticides Regulation (CDPR) and the Arizona Department of Agriculture. New Mexico, Texas, and Mexico do not require full disclosure of pesticide use and thus their numbers are based on estimates.	
<i>Sources of information</i>	Pan American Health Organization (PAHO). 2005 April. Final Report Inventory of Agricultural Pesticides Used In The United States - Mexico Border Region. U.S.-Mexico Border Field Office.	
<i>References (additional information)</i>	--	
<i>Limitations of the indicator</i>	The map may not be completely representative of pesticide use as data were difficult to collect due to reporting practices. Data were not available for Texas and most Mexican states and were estimated.	

Number of Farmworkers Trained in Safe Pesticide Use in the U.S. Side of the Border Region		Type of indicator
Figure 13		Response - State
		Goal and Objective: 4.3
Description of the INDICATOR		
<i>Definition</i>	Number of farmworkers trained in safe pesticide use in the U.S. side of the border region by state, 2000-2003	
<i>Importance of the indicator/purpose</i>	Pesticide exposure can cause a variety of occupational illnesses in farm workers, including eye injuries, cancer, respiratory illnesses and dermatitis. Proper training in pesticide handling and use results in the protection of workers and their families from potential exposures and adverse health effects.	
<i>Units of measure</i>	Number of workers trained	
<i>Concepts and definitions</i>		
<i>Coverage</i>	2003 – 2005. U.S. side of the border region by state	
<i>Calculation</i>	<p>Plot by state and by year and totals for years on the U.S. side of the border.</p> <p>Number of farm workers trained on the risks and safe handling of pesticides are estimated based on attendance at training sessions provided by various organizations within states along the U.S.-Mexico border region</p> <p>Association of Farmworker Opportunity Programs (AFOP) under the AmeriCorps Program offers trainings at several sites within the border region in California, Arizona, and New Mexico. Attendees were asked to sign-in on rosters and these numbers were provided directly by AmeriCorps as listed in Table 15-2.</p> <p>For 2004, funding was lost for the AmeriCorps Program. For this year only, data for California were supplemented with data provided by the Proteus organization This group provides trainings in Tulare, Kings, Fresno, and Kern counties which are not located in the border region. However, as mentioned above it is unknown where the people who receive trainings actually work and a percentage may return to work in the border region.</p> <p>Data on the numbers of farm workers trained in Texas were available through the Texas Department of Agriculture. For 2002-2005 these numbers are presented in Table 15-3 by year and county. This data were generated by manual counts of sign-in sheets from each training session.</p>	
<i>Sources of information</i>	<p>Association of Farmworker Opportunity Programs (AFOP). AmeriCorps Program.</p> <p>Proteus organization. http://www.proteusinc.org</p> <p>Texas Department of Agriculture.</p>	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>	In most cases, it cannot be confirmed if the people receiving training return to work specifically in the border region.	

Cumulative Number of Farmworkers Trained in Safe Pesticide Use in the Border Region		Type of indicator
Figure 14		Response - State
		Goal and Objective: 4.3
Description of the INDICATOR		
<i>Definition</i>	Cumulative total number of farmworkers trained in safe pesticide use in the U.S.-Mexico border region, 2003-2005	
<i>Importance of the indicator/purpose</i>	Proper training in pesticide handling and use results in the protection of workers and their families from potential exposures and adverse health effects. The Border 2012 program has a goal to train 36,000 farmers.	
<i>Units of measure</i>	Number of workers trained	
<i>Concepts and definitions</i>		
<i>Coverage</i>	2003-2005. U.S.-Mexico border region	
<i>Calculation</i>	<p>The total number of workers trained in Mexico in 2004 (from Table 15-1) was added to the total in the U.S. side of the border (Tables 15-2 and 15-3) to calculate a cumulative total number of farmworkers trained.</p> <p>Pesticide trainings offered throughout Mexico are part of the “Train the Trainer” courses sponsored by Programa Nacional Contra Los Riesgos Por el Uso De Plaguicidas. Data provided by the California Department of Pesticide Regulation.</p> <p>2003: 12,535 (Table 15-2) + 491 (Table 15-3) = 13,026 Cumulative total = 13,026</p> <p>2004: 4,057 (Table 15-2) + 709 (Table 15-3) + 923 (Table 15-1) = 5,689 Cumulative total = 18,715</p> <p>2005: 8,026 (Table 15-2) + 942 (Table 15-3) = 8,968 Cumulative total = 27,683</p>	
<i>Sources of information</i>	<p>California Department of Pesticide Regulation. “Train the Trainer” sponsored by Programa Nacional Contra Los Riesgos Por el Uso De Plaguicidas.</p> <p>Association of Farmworker Opportunity Programs (AFOP). AmeriCorps Program.</p> <p>Proteus organization. http://www.proteusinc.org.</p> <p>Texas Department of Agriculture.</p>	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>	In most cases, it cannot be confirmed if the people receiving training return to work specifically in the border region.	

Emergency Preparedness and Response

Number of Incident Notifications in the U.S. Side of the Border Region Received by NRC Figure 15		Type of indicator: Response - State
		Goal and Objective: 5.1
<i>Description</i>	Number of incident notifications received by NRC for U.S. counties within U.S.-Mexico border region, 2001-2005	
<i>Importance of the indicator/purpose</i>	<p>Preparing for a potential environmental emergency improves the probability of adequately responding to incidents and protecting the environment and public from exposure to harmful contaminants and serious environmental or health impacts.</p> <p>A notification system was established as part of the JCP. Any actual or threatened spill, release, fire or explosion that has the potential to affect the other country is reported to either the National Response Center (NRC) in the U.S. (www.nrc.uscg.mil) and/or the National Communications Center (CENACOM) in Mexico. Both centers run 24 hours a day, 7 days a week.</p>	
<i>Units of measure</i>	Total number per year across all border counties within a state	
<i>Concepts and definitions</i>	<p><u>National Response Center (NRC)</u> – NRC receives U.S. notifications of oil and chemical spills. Information on the number and details of incidents reported to NRC are available from the NRC database for the years 1982 to 2005. The types of incidents reported to NRC are classified by type as described in Table 17-1.</p> <p>Incidents classified as continuous release, railroad, fixed and storage tank were included in the indicator graphic.</p>	
<i>Coverage</i>	2001 – 2005. Incidents on the U.S. side of the border region.	
<i>Calculation</i>	<p>From the National Response Center (NRC) download data for years of interest as excel files, which summarize all incidents reported for one year for the entire United States. Sort records by state and county within the state. Extract all records for border counties and count the number of incidents classified as continuous release, railroad, fixed, or storage tank. The incident data extracted for California is listed in Table 17-2, for Arizona in Table 17-3, for New Mexico in Table 17-4 and for Texas in 17-5. Table 17-6 summarizes the number of notifications received by NRC across all U.S. border states for 2001-2005.</p>	
<i>Sources of information</i>	National Response Center (NRC). (www.nrc.uscg.mil)	
<i>Sources of further information</i>		
<i>Limitations of the indicator</i>		

Number of Incident Notifications in the Mexican Side of the Border Region Received by COATEA		Type of indicator: Response - State
Figure 16		Goal and Objective: 5.1
<i>Description</i>	Number of incident notifications received by COATEA within the Mexican side of the border region, 2001-2005.	
<i>Importance of the indicator/purpose</i>	<p>Preparing for a potential environmental emergency improves the probability of adequately responding to incidents and protecting the environment and public from exposure to harmful contaminants and serious environmental or health impacts.</p> <p>A notification system was established as part of the JCP. Any actual or threatened spill, release, fire or explosion that has the potential to affect the other country is reported to either the National Response Center (NRC) in the U.S. (www.nrc.uscg.mil) and/or the National Communications Center (CENACOM) in Mexico. Both centers run 24 hours a day, 7 days a week. In Mexico, the Center for Environmental Emergencies (COATEA), SEMARNAT's emergency office within the Procuraduria Federal de Protección al Ambiente (PROFEPA) also receives notifications and runs from 9-6 pm Monday-Friday. In the near future, COATEA will also be in full operation (24/7).</p>	
<i>Units of measure</i>	Total number per year by border state	
<i>Concepts and definitions</i>		
<i>Coverage</i>	2001 - 2005. Incidents on the Mexican side of the border region.	
<i>Calculation</i>	Data were provided by PROFEPA from COAETA and are listed in Table 18-1.	
<i>Sources of information</i>	COATEA (Centro de Orientación para la Atención de Emergencias Ambientales). PROFEPA, 2005. Dirección General de Inspección de Fuentes de Comunicación.	
<i>Sources of further information</i>		
<i>Limitations of the indicator</i>	The types of incidents reported to COAETA were not provided. Data were not available from CENACOM.	

Progression of Signed Sister City Plans Figure 17		Type of indicator: Response
		Goal and Objective: 5.1
<i>Description</i>	Number of sister city joint contingency plans signed by both countries and updated between 1998 to 2005	
<i>Importance of the indicator/purpose</i>	<p>Chemical emergencies do not respect international boundaries. The United States (U.S.) and Mexico have long recognized the need for close cooperation in preparing for and preventing hazardous substance releases along the U.S. / Mexico Border Area. In 1983, in La Paz, Baja California, the United States Environmental Protection Agency (EPA) and Mexico's Secretaria de Medio Ambiente, Recursos Naturales y Pesca (SEMARNAT) signed the Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Area, otherwise known as the "La Paz Agreement" or the "1983 Border Environmental Agreement."</p> <p>Annex II of the La Paz Agreement addressed requirements for responses to emergencies and created a Joint Response Team (JRT). The JRT is chaired by EPA and SEMARNAT. The JRT made of Federal, State, and Local partnerships from both the United States and Mexico, recommended that Sister City contingency plans be created at the local government level. Binational Sister City Plans provide the mechanism for locals to address issues or concerns, and allow appropriate recommendations in decisions that will affect both communities along the border. Fourteen sister city pairs were originally identified by the JCP along the U.S.-Mexico border. At a later date an additional sister city pair was added for Rio Bravo/Weslaco.</p>	
<i>Units of measure</i>	Number of plans written / exercised (one plan denotes unit of one (1) each.)	
<i>Concepts and definitions</i>	<p><u>La Paz Agreement</u> - The binational environmental plan between the U.S. & Mexico designed for cooperation between the two countries to prevent, reduce, and eliminate sources of air, water, and land pollution in the zone extending 100 kilometers (62.5 miles) along each side of the international boundary.</p> <p><u>Joint Contingency Plan (JCP)</u> - The JCP is the federal mechanism for chemical emergency advisory / notification and cooperation between the U.S. and Mexico in response to a polluting incident that may pose a significant threat to both parties or that affects one party to such an extent as to justify warning the other party or for asking assistance.</p> <p><u>Sister City Contingency Plans (SCP)</u> - Binational Sister City Plans provide the mechanism for local governments to address emergency advisory / notification and cooperation between the U.S. and Mexico and allows appropriate recommendations in decisions that will affect both communities along the border.</p> <p><u>Exercises</u> - A simulation conducted to improve coordination, communication, and facilitation of contingency planning.</p>	
<i>Coverage</i>	1998-2005. U.S.-Mexico border region	
<i>Calculation</i>	For each year, sum the number of signed SCPs for that year and previous years. Exclude double counting SCP updates.	
<i>Sources of information</i>	<p>Data provided by EPA's Emergency Preparedness and Response Border-Wide Workgroup (BWWG). SCPs available at this site: http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/ip-bilateral.htm#mexicoborder;</p> <p>PROFEPA, 2005. Dirección General de Inspección de Fuentes de Comunicación</p>	
<i>Sources of further information</i>	<p>EPA's Bi-Lateral Programs including Mexico: http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/ip-bilateral.htm</p> <p>McAllen / Reynosa Binational Exercise of 2005: http://www.epaosc.net/site_profile.asp?site_id=961</p> <p>EPA's Emergency Preparedness and Response Border-Wide Workgroup (BWWG): http://www.epa.gov/usmexicoborder/epr_bwwg.htm</p>	
<i>Limitations of the indicator</i>	The number of SCPs reflects the number of binational plans participated by EPA-SEMARNAT; does not reflect other local, state, or federal binational plans.	

Enforcement and Compliance

Regulated Facilities in the U.S. Side of the Border Region Figure 18		Type of indicator State
		Goal and Objective: 6.2
Description of the INDICATOR		
<i>Definition</i>	Graphical representation of the number of regulated U.S. facilities within 100 km of the U.S.-Mexico Border by permit number and type	
<i>Importance of the indicator/purpose</i>	<p>The geographical representation serves as a base for determining the pollution sources that present the highest risks to human health and the environment.</p> <p>Environmental laws exist on both sides of the border to regulate issues such as chemical production, pollutant discharge to air and surface waters, and the generation, transportation, storage, and treatment of hazardous wastes. These environmental regulations are complex, but have a simple aim of protecting human health and the environment. On both sides of the border these laws and their implementing regulations are enforced by federal governments with many authorities delegated to States and in some cases municipalities.</p>	
<i>Concepts and definitions</i>	<u>Regulated facility</u> – Facility that is regulated by one or more permits	
<i>Units of measure</i>	Number of regulated facilities by state and by total number of permits/type	
<i>Coverage</i>	November 2005. Portions of the U.S. side of the border region	
<i>Calculation</i>	<p>Extract the facilities linked with a permit by Facility Registry System (FRS) identification number from EPA's Integrated Data for Enforcement Analysis (IDEA) System. Then determine which facilities fall within the 100 kilometers of the U.S.-Mexico border, based on latitude and longitude, city, state, county and/or ZIP code. Count the number of facilities in the border region in each state and calculate a percentage of the total number by state. Percentages are reported in the text.</p> <p>Regulated facilities identified in Arizona, California, New Mexico and Texas border regions are listed in Tables 20-1, 20-2, 20-3, and 20-4, respectively. Regulated facilities included in the total number reported in the text of the report, but for which location information were not provided in the tables (blank) are listed in Table 20-4. A total of facilities by state are listed in Table 20-5.</p> <p>Plot the location of facilities geographically on a map with different symbols for number of permits.</p>	
<i>Source(s) of information</i>	The data were originally submitted to the States and/or EPA in permit applications or generator notices and were extracted for the border area based on a search of EPA's Integrated Data for Enforcement Analysis (IDEA) System including EPA's Air Facility System (AFS); Permit Compliance System (PCS); and Resource Conservation and Recovery Act Information System (RCRAInfo). November 2005 Refresh.	
<i>References (Additional information)</i>	http://www.epa.gov/compliance/data/systems/index.html	
<i>Limitations of the indicator</i>	<p>Approximately 2,900 facilities (often inactive and/or "minors") from the search of the IDEA system were found without substantial information to determine exact location. Due to the poor quality of data these data were excluded from the analysis.</p> <p>Facility identification depends on reported latitude and longitude, city, state, county and/or ZIP code. Issues have been known to exist with the quality of data within these fields (such as: fields not always populated; containing contradicting data; containing spelling errors; or information presented in non consistent formats (St. Thomas versus Saint Thomas). Additional assignment of location information could have been conducted based on city, but was excluded from the analysis due to the high level of effort involved.</p>	

Number of Enforcement Actions in the U.S. Side of the Border Region Figure 19		Type of indicator Response
		Goal and Objective: 6.3
Description of the INDICATOR		
<i>Definition</i>	Number of enforcement actions in U.S.-Mexico border region by U.S. border state by year from 2001 to 2004	
<i>Importance of the indicator/purpose</i>	When a facility violates environmental law, the regulating agency may impose actions to enforce compliance and may also impose monetary penalties and/or criminal sanctions. Enforcement actions cannot be imposed unless a violation has occurred and has been detected by the regulatory agency. There is, however, not always a clear connection between a facility polluting the environment and compliance with the law as facilities may legally pollute under the conditions of a permit and violations may not always result in releases.	
<i>Units of measure</i>	Number of enforcement actions	
<i>Concepts and definitions</i>	<u>Formal enforcement actions</u> (U.S.) - may be administrative, civil judicial or criminal actions.	
<i>Coverage</i>	2001 to 2004	
<i>Calculation</i>	Take the number of enforcement actions reported for facilities within the U.S. side of the border region reported by state and plot for each year. Also report total number across all states for each year.	
<i>Sources of information</i>	The data were submitted to EPA by state and federal enforcement programs as part of their routine reporting. They were extracted for the border region based on a search of EPA's Integrated Data for Enforcement Analysis (IDEA) System including EPA's Air Facility System (AFS); Permit Compliance System (PCS); Resource Conservation and Recovery Act Information System (RCRAInfo). November 2005 Refresh. The search results reported by Abt Associates are summarized in Table 21-1.	
<i>References (Additional information)</i>	http://www.epa.gov/compliance/data/systems/index.html	
<i>Limitations of the indicator</i>	The number provided for enforcement actions does not include criminal enforcement actions.	

Inspection Results for Facilities in the Mexican Side of the Border Region Figure 22		Type of indicator Response
		Goal and Objective: 6.3
Description of the INDICATOR		
<i>Definition</i>	The cumulative result of inspections for facilities in the Mexican Side of the Border Region from 2001 to 2004. Classified as in compliance, non-serious violation or serious violations.	
<i>Importance of the indicator/purpose</i>	Increasing compliance along the border region is a priority of the program.	
<i>Concepts and definitions</i>		
<i>Units of measure</i>	Number of different types of compliance (in compliance, non-serious violations and serious violations)	
<i>Coverage</i>	2001 -2004. Mexican side of the border region by state	
<i>Calculation</i>	Take the number of three different types of compliance actions listed (in compliance, non-serious violations and serious violations) and plot by Mexican state and year.	
<i>Source(s) of information</i>	The data were reported by PROFEPA as listed in Table 22-1. PROFEPA, Secretaria de Medio Ambiente, Recursos Naturales y Pesca. Subprocuraduria de Auditoria Ambiental.	
<i>References (Additional information)</i>	--	
<i>Limitations of the indicator</i>	--	

Pollution Reduction from Federal Enforcement Actions in the U.S. Side of the Border Region		Type of indicator
Figure 23		Response
		Goal and Objective: 6.3
Description of the INDICATOR		
<i>Definition</i>	Amount of pollution reduction from federal enforcement actions in the U.S. side of the border region by year for 2003 to 2005	
<i>Importance of the indicator/purpose</i>	In order to protect human health and the environment and to enforce environmental laws, regulatory agencies may enforce actions that result in pollution reduction activities by regulated facilities.	
<i>Units of measure</i>	Millions of pounds per year	
<i>Concepts and definitions</i>	<u>Pollution Reduction</u> - function of the number and type of enforcement actions.	
<i>Coverage</i>	2003 -2005. U.S. side of the border region. Federal level.	
<i>Calculation</i>	Compare enforcement actions in the border states that show amounts of Pollution Reductions to the facilities determined to be in the border region. Summarize the reported pounds of pollution reduced in the border region for each state and plot by year. Also, total the amount across all states and report the total on the graph by year.	
<i>Sources of information</i>	The data were reported to EPA's Office of Enforcement and Compliance Assurance's Integrated Compliance Information System (ICIS) by EPA's Regional Offices as part of their annual reporting	
<i>References (additional information)</i>		
<i>Limitations of the indicator</i>	Pollution reduction amounts are from Federal actions only.	

Number of State and Federal Inspections of Facilities in the Border Region Figure 22		Type of indicator Response
		Goal and Objective: 6.3
Description of the INDICATOR		
<i>Definition</i>	Number of state and federal inspections of facilities in the U.S.-Mexico border region by state and year from 2001 to 2004.	
<i>Importance of the indicator/purpose</i>	Regulatory agencies may conduct inspections to verify a facility's compliance status, while companies may also conduct their own audits to ensure environmental compliance and to improve pollution prevention. Border 2012 aims to continue increasing the number of facilities implementing voluntary compliance or self-audits.	
<i>Units of measure</i>	Number per year	
<i>Concepts and definitions</i>		
<i>Coverage</i>	Yearly from 2001 to 2004 for U.S. data Cumulative from 2002 to 2004 for Mexican data	
<i>Calculation</i>	Take the reported number of inspections by state and plot in tabular form by state and by year.	
<i>Sources of information</i>	The data were submitted to EPA by state and federal enforcement programs as part of their routine reporting. They were extracted for the border region based on a search of EPA's Integrated Data for Enforcement Analysis (IDEA) System including EPA's Air Facility System (AFS); Permit Compliance System (PCS); Resource Conservation and Recovery Act Information System (RCRAInfo). November 2005 Refresh. The search results reported by Abt Associates are summarized in Table 21-1. The Mexican data were reported by PROFEPA in May 2005.	
<i>References (additional information)</i>	http://www.epa.gov/compliance/data/systems/index.html	
<i>Limitations of the indicator</i>	Due to the different regulatory policies and legal systems between the U.S. and Mexican governments, the information on enforcement actions, compliance, pollution reduction, inspections, and penalties as presented cannot be directly compared.	

Penalties in Number and Dollar Value in the U.S. Side of the Border Region		Type of indicator
Figure 25		Response
		Goal and Objective: 6.3
Description of the INDICATOR		
<i>Definition</i>	Number of penalties and total U.S. dollar amounts by year for all U.S. side of the border region, 2001-2004.	
<i>Importance of the indicator/purpose</i>		
<i>Units of measure</i>	Number of penalties and total dollar amount of penalties.	
<i>Concepts and definitions</i>	Penalties - Monetary assessments paid by a regulated entity in response to a violation or noncompliance. Not all enforcement actions require a penalty and may require other remedies. Penalties act as deterrence to violating the law, and an incentive for staying in compliance with the environmental statutes and regulations. Penalties are designed to recover the economic benefit of noncompliance as well as to account for the seriousness of the violation.	
<i>Coverage</i>	2001 to 2004. U.S. side of the border region.	
<i>Calculation</i>	Take the reported pounds of pollution reduced for each state and plot by year. Also total the amount across all states and report the total on the graph by year.	
<i>Sources of information</i>	The data were submitted to EPA by state and federal enforcement programs as part of their routine reporting. They were extracted for the border region based on a search of EPA's Integrated Data for Enforcement Analysis (IDEA) System including EPA's Air Facility System (AFS); Permit Compliance System (PCS); Resource Conservation and Recovery Act Information System (RCRAInfo). November 2005 Refresh. The search results reported by Abt Associates are summarized in Table 21-1.	
<i>References (additional information)</i>	The data were submitted to EPA by state and federal enforcement programs as part of their routine reporting. They were extracted for the border region based on a search of EPA's Integrated Data for Enforcement Analysis (IDEA) System including EPA's Air Facility System (AFS); Permit Compliance System (PCS); Resource Conservation and Recovery Act Information System (RCRAInfo). November 2005 Refresh. The search results reported by Abt Associates are summarized in Table 21-1.	
<i>Limitations of the indicator</i>		