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## APPENDIX B

# **Binational Set of Indicators for the Border 2012 Program (Draft)**

### **Objective**

This list is intended to stimulate discussion and consideration among the various workgroups regarding the appropriateness of the indicators for measuring program progress and assessing environmental and health changes in the region's conditions. It is important to note that this list of potential indicators, given further refinement, will eventually become the official Binational Set of Indicators for the Border 2012 program.

### **Description**

This list evolved from an initial inventory of the indicators utilized by different initiatives to measure the environmental and health conditions of the US-Mexico border region. This process included a literature review of national and international indicators, followed by the selection of those indicators that align to the goals and objectives of the Border 2012 program. Even though many of the indicators have been identified or utilized in the past by other organizations, only those indicators that are relevant to the objectives of Border 2012 were included in this listing.

### **Note:**

The majority of the proposed indicators are base-forming measures that should contribute to the development of more complex, integral indicators. The spatial-temporal scale of the indicators will be defined according to the available data and the internal workgroup discussions. Initially, the indicators for the Border 2012 Program will focus on the Program goals and priorities. However, this does not exclude the integration of other indicators that the workgroups consider necessary for the proper assessment of the environmental and public health conditions of the border region and the actions implemented for its improvement.

### **Collaboration and Feedback**

The development of a Binational Set of Indicators for the Border 2012 program is an ongoing process that requires the input of all Border 2012 participants. It is necessary that all workgroups review the proposed indicators and comment on their possibilities or limitations and suggest different or better indicators. Along with this feedback, workgroups should provide information about the availability of data for the calculation of these indicators. Likewise, knowing about the projects and action items that each group is implementing is useful during indicator development.

## **Goal 1: Reduce water contamination**

Baseline: *Using projects completed by January 2003 as the baseline and separating projects by type (potable water treatment/distribution system and wastewater collection/treatment), the program will compare the number of BECC-certified projects each year to that baseline.*

### **Environmental Indicators**

- *Number and percent of homes connected to potable water supply by county or municipality compared to total number of homes*
- *Number and percent of homes connected to wastewater collection by county or municipality compared to total number of home*
- *Number, capacity and location of wastewater treatment plants in the border region*
- *Quality of surface waters by water bodies (physical, chemical and biological parameters)*

Water quality parameters of to be assessed (US-MX): Dissolved Oxygen (DO), Nutrients (Ammonia, Nitrates, and Ortho-Phosphates), Conductivity/Total Dissolved Solids, Total Suspended Solids, and Fecal Coliform, pH, Chemical Oxygen Demand (COD), Biochemical Oxygen demand (BOD), Temperature, Chlorophyll-a, Chlorides, and Sulfates, depending on data availability

- *Classification by the type of use of the surface water bodies*
- *Number of days of beach advisories per year, using 2003 as a baseline*
- *Percent of water lost in the distribution system of potable water systems*

**Goal 4: Improve environmental health. Objective 2: By 2006, evaluate various measures of gastrointestinal illness that might be tracked to assess changes that may result from actions to improve water quality in border communities.**

- *Incidence of gastro-intestinal diseases at the county level (cholera, cryptosporidiosis, escherichia coli, 0157:H7, hepatitis A, salmonellosis, shigellosis, and typhoid fever)*
- *Annual diarrhea morbidity and mortality in children under 5 years old*

### **Program Indicators**

- *Number of environmental infrastructure projects certified by location, indicating number of households connected to these projects.*
- *Development of a binational database, with location information, of water quality in the shared and transboundary surface waters, including a trend analysis from 1993-2003 for a certain set of parameters (see below)*
- *Identification of water bodies exceeding state or federal standards*

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- *Number and evaluation of projects to improve water quality in those water bodies.*
- *Number and location of monitoring systems for evaluating coastal water quality*
- *Kilometers of beach characterized*
- *Report on actions taken to implement a monitoring system for evaluating coastal water quality at the international border beaches*
- *Report on actions to adopt beach water quality standards*
- *Development of further activities related to beach water quality improvements*
- *Investments in public water distribution systems for the border cities*
- *Projects to evaluate and improve the efficiency of water systems in the border cities*
- *Number and description of pilot projects that study the relationship between water quality and gastrointestinal health in border communities*

## Goal 2: Reduce air contamination

### Environmental Indicators

- *Number of days per year with AQI or IMECA equal or greater than 100 by city*
- *Number of days per year the ambient air quality standards were exceeded for pollutants by city*
- *Annual average and annual maximum hourly air concentrations of pollutants by city*

Pollutants to be assessed (US-MX): Ozone, PM10, CO, NOx, and SO<sub>2</sub>

- *Number of people living in areas where monitored air quality was above the level of the US or Mexican standards in 20XX*

**Goal 4: Improve environmental health. Objective 1: By 2006, evaluate various measures of respiratory health in children that might be tracked to assess changes that may result from actions to improve air quality in border communities.**

- *Asthma prevalence or incidence in children under 18 years of age (where prevalence is measured by hospital visits and incidence is measured by hospitalization rates).*
- *Incidence of morbidity due to acute respiratory infections in children under 18 years old*

### Program Indicators

- *Actions implemented to fulfill the interim objectives*
- *Number and description of pilot projects that study the relationship between air quality and respiratory health in children in border communities*

<b>Goal 3: Reduce land contamination</b>
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**N.B.:** The Waste Policy Forum and regional task forces are in the process of developing the indicators for Goal 3, Objectives 1 through 4. Once available, they will be incorporated into the Binational Set of Border 2012 Indicators. The indicators included here constitute an initial proposal for discussion purposes only.

With basis on the Program objectives and indicators used in previous works, potential indicators for this goal are:

- *Number and capacity of solid waste disposal facilities*
- *Annual quantity and percent of solid waste disposed in landfills*
- *Recycling, storage and treatment infrastructure for hazardous waste in the border region*
- *Projects to improve the institutional capacity and infrastructure for waste management*
- *Programs implemented to minimize waste*
- *Percent of hazardous waste shipments with cradle to grave tracking*
- *Evaluation of the hazardous waste tracking systems in the US and México*
- *Percent cleanup at the three of the largest tire piles*
- *Number of waste tires recycled or reused*
- *Actions and programs developed for clean up of the abandoned waste tire piles*
- *Inventory the waste tire piles by location and amount of abandoned tires*
- *Abandoned and illegal hazardous waste sites in the border region*
- *Number and location of sites for clean-up and restoration in the border region*
- *Projects implemented for the productive use of abandoned sites contaminated with hazardous waste or materials*

## Goal 4: Improve environmental health

**N.B.:** The indicators presented for Goal 4, Objectives 1 and 2 (air and water) constitute an initial proposal that should be used for discussion purposes only. The EHWG is in the process of developing final indicators for these objectives. Once available, they will be incorporated into the Binational Set of Border 2012 Indicators.

With basis on the Program objectives and indicators used in previous works, potential indicators for Objectives 3 and 4 of this goal are:

### Environmental Indicators

- *Yearly number of reported pesticide-related poisonings by county*

### Program Indicator

- *Results of the pilot program on the harmonization of a binational system for reporting acute pesticide poisonings*
- *Number of farm workers trained on pesticide risks and safe handling*
- *Number of border schools with integrated pest management programs*
- *Number of organizations dedicated to exchanging pesticide related information at the border region*
- *Actions to promote the safe handling of pesticides*
- *Progress in the establishment of distance-learning, post graduate degree program on environmental health*
- *Number of students enrolled in the environmental health related distance-learning, post-graduate degree program*
- *Number of health care providers trained*
- *Actions for strengthening binational environmental health training efforts*

<p><b>Goal 5: Reduce exposure to accidental chemical releases and/or acts of terrorism</b></p>
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**Environmental Indicators**

- *Number of emergency advisory / notification system drills/exercises conducted per year*
- *Number of US-Mexico border incident notifications received by the National Response Center NRC per year*
- *Number of US-Mexico border incident notifications received by Mexico's National Response Center CENACOM per year*

**N.B.:** Regional Emergency Response task forces are in the process of developing indicators for Goal 5, Objectives 2 and 3. Once available, they will be incorporated into the Binational Set of Border 2012 Indicators.

With basis on the Program objectives and indicators used in previous works, potential indicators for this goal are:

**Program Indicators**

- *Number of binational Hazardous Material Prevention and Emergency Response Plans and status (signed by both countries, pending)*
- *Number of sister city with updated joint contingency plans*
- *Number sister city joint contingency plans (JCPs) being exercised per year*
- *Number of binational preparedness and prevention training exercises conducted in sister cities*
- *Number of ER Task Force meetings conducted along the border per year*
- *Number of regional binational trainings and workshops conducted*
- *Number of Risk Analysis reports conducted along the border*

**Goal 6: Improve environmental performance through compliance, enforcement, pollution prevention, and promotion of environmental stewardship**

**Environmental Indicators**

- *Number and percent of industries implementing an Environmental Management System (EMS)*
- *Number and percent of industries that participate in voluntary assessment programs*
- *Number and type of regulated facilities located in the border region*

**Program Indicators**

- *Actions to foment the implementation of voluntary compliance programs along the border*
- *Systematic analysis of pollution sources and regulatory status*
- *Ranked list of sources based on risk and potential for regulatory violations*
- *Number of violating facilities returned to compliance*
- *Number of citizen complaints and percent addressed*
- *Number of compliance monitoring efforts in the border region*
- *Number of enforcement actions taken, including penalties collected, pounds of pollution reduced, and supplemental environmental projects.*