Border 2012 U.S.-Mexico Environmental Program

Improving Air Quality in Arizona-Sonora

August 2008

THE PURPOSE OF THIS INFORMATION BULLETIN is to provide residents of the Arizona-Sonora border region with news and updates on the Border 2012 U.S.-Mexico Environmental Program. This edition focuses on projects of the Ambos Nogales Air Task Force, which is part of the Arizona-Sonora Regional Workgroup. Activities under this workgroup strive to accomplish Border 2012's mission of protecting the environment and public health in the U.S.-Mexico border region, consistent with the principles of sustainable development. For more information on the Border 2012 Program please visit **www.epa.gov/Border2012**.

Diesel Emission Reductions through Retrofitting: Improving Air Quality within the Ambos Nogales Region

VEHICLE EMISSIONS HAVE LONG BEEN IDENTIFIED as one of the main sources of ambient air pollution within the Ambos Nogales Cocospera air basin. Recently, Arizona has focused its efforts to reduce these emissions through the retrofitting of older diesel engines with air pollution control devices.

To assist with these efforts, the Arizona Department of Environmental Quality (ADEQ) was awarded funds by the U.S. Environmental Protection Agency (EPA) for two projects in the Ambos Nogales region to retrofit diesel powered school buses and commercial trucks with two EPA approved retrofit technologies: diesel oxidation catalysts (DOC) and diesel particulate filters (DPF).

Both control devices break down pollutants such as particulate matter (PM), hydrocarbons (HC), nitrogen oxides (NOx) and carbon monoxide (CO) before they are released into the atmosphere.

The Rio Rico School District Bus Fleet

The difference between the two types of technology is the type of fuel used. DOCs can be installed on new or used commercial vehicles and buses using regular diesel fuel, whereas DPFs can only be used in conjunction with ultra-low sulfur diesel (ULSD) fuel as well as other cleaner fuels like biodiesel and emulsified diesel.

The installation of DOCs is expected to reduce PM emissions from these vehicles by 20 to 30 percent and reduce CO and HC emissions by 50 percent. Vehicles retrofitted with DPFs are expected to reduce PM emissions by 90 percent and NOx emissions by 5 to 10 percent. To date, ADEQ has retrofitted 32 school buses in the region—29 with DOCs and 3 with DPFs—and plans to retrofit an additional 10 school buses and 50 hauling trucks.

As a result, these projects will help to reach the goals of the Border 2012 Binational Environmental Program by improving air quality and human health along the Arizona-Sonora border.

Project stakeholders at El Instituto Tecnologico de Nogales biodiesel laboratory

Biodiesel Demonstration Project Builds Binational Capacity in Ambos Nogales

THOSE OF US WHO LIVE ALONG THE BORDER know that in addition to sharing a culture, we share the same environment and find that the existing problems within the areas of air, water, waste and health are all interrelated.

Nogales, Sonora, is served by a binational wastewater conveyance system that forwards waste to Nogales, Arizona. Analysis has shown that the improper disposal of waste vegetable oil and grease has generated challenges for treatment plant management; including sewer clogs and overflows.

In addition to wastewater, the Ambos Nogales air basin also suffers from poor air quality; national ambient air quality standards are regularly exceeded in both Nogales, Arizona and Nogales, Sonora. Particulate matter is the primary cause of those violations, and diesel vehicle emissions are a major source in the region.

To address these multimedia issues, the Arizona-Sonora Air, Water, Waste and Environmental Health Task Forces, developed a project to build biodiesel production and distribution capacity within the Ambos Nogales region. The demonstration project, which began last year, intends to reclaim waste vegetable oil and grease from local restaurants and maquiladoras, convert it into biodiesel, and demonstrate the use of the fuel in school and public sector safety vehicles. Currently, the project has begun the production of biodiesel within local communities and is now evaluating its continuing use in the Ambos Nogales region.

Biodiesel is an EPA-approved alternative, renewable fuel, which meets the American Society of Testing and Material (ASTM) standard and is the only alternative fuel to have completed the rigorous Health Effects testing requirements of the Clean Air Act. Biodiesel may be blended with petroleum-based diesels and used directly in diesel engines. The use of this renewable fuel will benefit air quality in the region because the combustion of biodiesel releases less particulate matter, carbon monoxide and hydrocarbons than its petroleum diesel counterpart. In addition, through creating a market for used vegetable oil, less oil and grease will be disposed of through the municipal sewer system and landfills.

This project will promote the use of cleaner burning renewable fuels in the Ambos Nogales region and is an example of extensive binational collaboration among several public and private sector institutions in both Sonora and Arizona. ■

Urban Road Paving Program in Nogales, Sonora, to Reduce Particulate Matter Pollution

A COMMON TREND SHARED BORDER-WIDE is the high demand for an improved transportation infrastructure. The abundance of unpaved urban roadways presents both economic and public health concerns on both sides of the border.

In Nogales, Sonora, the city's unpaved roadways are the main sources of an annual 8,896 tons of suspended particle (PM10) emissions. The movement of private vehicles and public transportation, coupled with the area's frequent windy conditions, result in the suspension of these fine dust particles in the air that are a potential source of respiratory illnesses (allergies, asthma, etc.) primarily among children and young adults.

To address this issue, the city of Nogales, Sonora has secured an infrastructure loan for $8.83 million from the North American Development Bank (NADB) to fund the city's Comprehensive Paving and Air Quality Program. The program aims to pave more than 3.2 million square feet of public streets with reinforced waterproof concrete and asphalt in 30 of its subdivisions. Priority will be given to roadways used for public transport.

"With its accelerated economic and industrial development and a population growth rate more than double the national average, Nogales, Sonora, needs as much support as possible to move basic infrastructure projects off the ground and keep up with current and future demand for services," stated Héctor Camacho, Deputy Managing Director of the North American Development Bank (NADB).

An unpaved road in Nogales, Sonora

Paving dirt roads will reduce air pollution from suspended dust particles in the Cocospera air basin shared by Nogales, Sonora, and Nogales, Arizona, thus improving the overall health conditions for residents. In addition, paving streets will increase public safety by facilitating the access of police, firefighters and ambulances to these cities. ■

Contacts

Arizona/Sonora Task Force Co-Chairs

Edna A. Mendoza
Arizona Department of Environmental Quality
eam@azdeq.gov

Martín Cruz
Comisión de Ecología y Desarrollo Sustentable del Estado de Sonora (CEDES)
martin.cruz@cedes.gob.mx

U.S. EPA Border Air Coordinator

Christine Vineyard
Vineyard.Christine@epa.gov

Websites

U.S. EPA Border 2012 Program
www.epa.gov/Border2012

Arizona Department of Environmental Quality (ADEQ)
www.azdeq.gov

Secretariat For Environment And Natural Resources (SEMARNAT)
www.semarnat.gob.mx

Commission Of Ecology And Sustainable Development (CEDES)
www.cedes.gob.mx

Border Environment Cooperation Comission (BECC)
www.cocef.org

North American Development Bank (NADB)
www.nadbank.org