

Clean Technologies

Administered by ARD, PROARCA/SIGMA (*Sistemas de Gestión para el Medio Ambiente*), or Clean Technologies, is one of four components of a Central American environmental program, *Programa Ambiental Regional para Centroamérica* (PROARCA). The program, financed by the US Agency for International Development (USAID), supports the efforts of the *Comisión Centroamericana de Ambiente y Desarrollo* (CCAD). One of the objectives of PROARCA is to assist in the improved environmental management of the Mesoamerican Biological Corridor (CBM in Spanish).

Deforestation, inadequate solid waste management, inappropriate use of agrochemicals, and releases of municipal and industrial wastewater upstream affect ecosystems, biodiversity, and human health downstream. PROARCA/SIGMA's objective is to assist municipalities and private sector entities in the region to improve their environmental management practices. A second objective is to increase the use of less polluting technologies to reduce the direct and indirect negative effects on water resources within the



During 2003, PROARCA/SIGMA published municipal and private sector manuals and guides to promote regionally best practices in clean production. All publications are available on the PROARCA website: www.proarca.org

SIGMA principal achievements in its second implementation year (2002-2003)

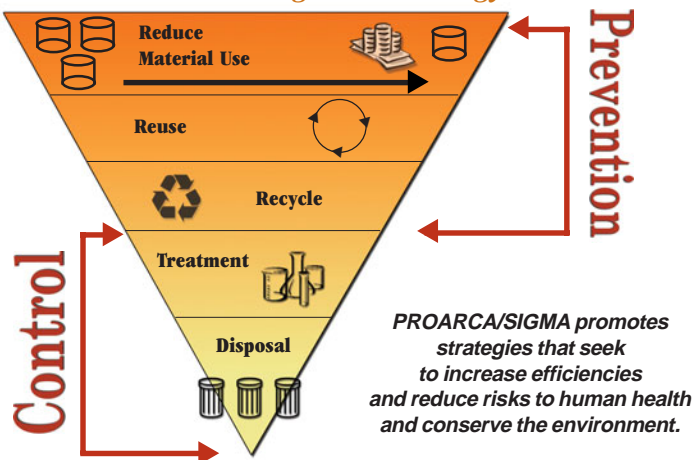
Municipal Sector

- Published practical guides to improve the technical skills of municipal administrators in Central America, which include the Guide for Municipal Solid Waste Management (March 2003) and the Guide to Manage Municipal Wastewater Management (June 2003).
- Assisted 7 municipalities in the upper watershed of Río Coco in Nicaragua to develop solid waste management action plans.
- Completed construction of a pilot wastewater treatment plant in La Unión, El Salvador, with accompanying sustainability plan to reduce contamination in the Gulf of Fonseca.
- Conducted training in wastewater and solid waste management, design and operation of waste water treatment systems, environmental action planning, and environmental management in protected areas.

Private Sector

- Assisted USAID in the design of a Development Credit Authority project and negotiated with selected banks in the Region their participation to finance clean production initiatives for the private sector.
- Prepared guides and case studies on operational best practices in clean production for coffee processing, dairies, slaughterhouses, and shrimp packing plants.
- Supported Clean Production Centers in Costa Rica (April 2003) and El Salvador (November 2003) to study potential markets for industrial waste, which will be replicated by the Guatemalan Clean Production Center in 2004.
- Conducted training in clean production methodologies, life cycle cost analysis, energy efficiencies in industry, and rational use of pesticides.

Environmental Management Strategy





Left, one of the six industries that participated in clean production dairy project in Olancho, Honduras. One of the objectives of the project is to minimize the negative impact of dairy wastes on the Guayape and Patuca Rivers, which are part of the River Plátano, Honduras Biosphere.



PROARCA/SIGMA is supporting three shrimp packing plants located in the Gulf of Fonseca to develop clean production practices.



CARE/Nicaragua

SIGMA Partner, CARE/Nicaragua, assisted 7 Nicaraguan municipalities to prepare solid waste management action plans. These communities influence the watersheds that drain into the Costa Mosquitia, a key zone in the Mesoamerican Biological Corridor. The first photo depicts a clean-up day in the Municipality of Pueblo Nuevo. The second photo shows the closing of an illegal garbage dump in Palacaguina.

Mesoamerican Biological Corridor and, specifically, on the four trans-boundary areas targeted under PROARCA II: Gulf of Honduras (Belize, Guatemala, and Honduras), Mosquitia Coast (Honduras and Nicaragua), Gulf of Fonseca, and *La Amistad-Cahuita Río Cañas* (Costa Rica and Panama).

SIGMA is focusing its efforts in institutional capacity building, assistance in securing financing, and individual technical assistance working at three levels to:

- 1 Support local organizations to plan, implement, and evaluate systems, processes, and less polluting technologies, that can be applied or replicated regionally.
- 2 Establish partnerships with national organizations to share lessons learned and assist in developing capacity-building initiatives.
- 3 Coordinate with regional organizations to disseminate information on best practices, applications for less polluting technologies, and environmental management models with regional applications.

PROARCA/SIGMA

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CCAD-USAID project, administered by ARD

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Representative activities planned for third-year work plan (2003-2004)

Municipal Sector

- Provide training and technical support to municipalities to prepare and present projects for financing by banks.
- In cooperation with the private sector, develop pilot projects in solid waste management, with a focus on composting and recycling.
- Finalize construction of the wastewater treatment plant in Livingston, Guatemala, to benefit 170 families, which will assist in the conservation of the Gulf of Honduras.
- Conduct training in preparation of projects for financing, solid waste management, environmental management of slaughterhouse waste, and wastewater management.

Private Sector

- Offer technical assistance through the clean production centers in the region to prepare investment plans for clean production initiatives to be financed through a regional Development Credit Authority with national banks participating and increase the number of banks participating in the financial model.
- Create a dissemination program to promote clean production and environmental management in the private sector.
- Continue in the development of demonstration activities in clean production in coffee, tourism, and shrimp, as well as possible expansion to tanneries.
- Conduct training in environmental management accounting, energy efficiency in industries, rational use of pesticides, and effluent and emissions monitoring.

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