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Industrial Waste: Out of the Landfill and into the Economy

For island nations such as the Philippines, industrial waste is an expensive and environmentally challenging problem. The Philippine Business for the Environment (PBE), a non-profit organization dedicated to helping businesses balance economic growth with environmental responsibility, has taken a leading role in addressing this issue by developing an industrial waste exchange network (IWEX) to improve recovery, exchange, and recycling of wastes. Active in four locations throughout the Philippines and maintaining a database of over 400 companies, IWEX matches industrial waste generators with buyers and recyclers leading to a win-win situation for all - waste generators save on disposal costs, buyers get low-cost or even free raw materials, and most importantly, less industrial waste ends up in landfills.

The IWEX network evolved from a US-AEP study tour experience in late 2001. Participants visited American waste exchange facilities, including a site in Tallahassee, Florida, where waste exchange programs have reduced disposal costs by more than $6 million annually. "Many U.S. programs are government-supported, but we wanted to set up a program that would be sustainable without outside financial assistance," said study tour participant and Executive Director of the PBE, Lisa Antonio.

IWEX hosts annual Earth Day events focusing on collecting waste generated by industrial facilities, hotels, government agencies, and schools.

At its annual Earth Day event, PBE buying stations redeem car batteries, computers, electronic equipment, aluminum cans, plastic bottles, and paper for cash. Events like these showcase recycling and raise public awareness of the value of recyclables. For example, 265 seven-year-old trees would have to be processed to generate the 15,000 kilos of paper the events collected. The 1,100 computers collected yielded 1,600 grams of precious metals and 13,440 kilos of base metals. "These events have a multiplier effect, generating contracts between buyers and sellers of waste, creating jobs and investment in the recycling industry, and reducing the expense of both importing used materials and exporting waste," said Antonio. *[Continued on Page 2]*

International Team Addresses Leather Waste Problem in Vietnam

Funded by a US-AEP grant, an international team of scientists and engineers recently developed a recycling technology to address a growing problem in Vietnam with scrap leather waste generated by the athletic footwear industry. Several chemicals utilized in the footwear manufacturing process are toxic and can potentially find their way into groundwater supplies over time. The new technology provides a mechanism for industry members to convert the approximately 440,000 lbs (200,000 kg) of scrap leather generated monthly in Vietnam into an environmentally friendly gelatin liquid used for fertilizer applications and a white sludge that can be used as a pottery colorant. Approximately 90% of leather scraps are convertible using this procedure.

The development and commercialization of the technology involved a three-step process: Phase I characterized scrap leather with an emphasis on recycling and conversion to value-added protein materials; Phase II resulted in the formation of a technology transfer partnership with the faculty of the University of Technology Vietnam; and Phase III was aimed at refining the laboratory process to *[Continued on Page 2]*

Sri Lankan Program Reduces Ambient Air Lead Levels

With the enactment of the Clean Air 2000 Action Plan in 1992, the Sri Lankan Government moved to reduce emissions levels and to promote the increased use of unleaded fuel. Since then, US-AEP has been actively engaged is assisting these efforts – sponsoring air quality and emissions studies as well as an emissions testing and inspection study tour for Sri Lankan government officials.

The passage of the Sri Lankan Government's 100 Days Program, which accelerated the phase out schedule originally outlined in the Clean Air 2000 Action Plan, prompted Ceylon Petroleum Corporation to discontinue sales of leaded fuel island-wide as of June 2002. The Program also laid the groundwork for an ambitious plan to monitor air quality and to introduce emissions testing for vehicles.

Leaded gasoline had been a growing source of ambient air pollution in Sri Lanka's urban areas. Poor vehicle maintenance practices, lack of vehicle testing programs, and the import of diesel vehicles have contributed to increased air pollution. However, a US-AEP-sponsored study conducted in Colombo from July 2002 to February 2003 showed that ambient air lead levels have dropped significantly since phasing out leaded fuel when compared to historical data.

Enforcing Air Quality Standards and Improved Fuel Quality

With assistance from US-AEP and the World Bank, the Air Quality Management Center (AIRMAC) *[Continued on Page 2]*

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"All these wastes remain in the economic loop and not in the landfill."

Recyclers received 1 Philippine Peso per Kg for corrugated cartons, 5 Pesos for white paper, and 2.50 Pesos for newsprint.

US-AEP and PBE have worked together for more than 10 years to establish a Clean Technology and Environmental Management information center and to serve as an intermediary and catalyst between business, government, and the community. In launching the IWEX network, PBE continues its tradition of introducing innovative practices to promote sustainable economic growth and development.

International Team *[Continued from Page 1]*

neutralize toxic chemicals. Short-term technical assistance on cleaner production techniques was also provided to members of the Vietnam Leather Industry Association through the Environment and Civil Society Partnership Program, which is administered by The Asia Foundation, to promote the transfer of the technology.

A retrofitted washing machine was used to demonstrate the recycling process to shoe and leather industry executives at a recent "best practices" workshop.

The project culminated in a "best practices" laboratory demonstration and workshop in Ho Chi Minh City, Vietnam. The principal investigators, Dr. Dennis C. Shelly of Texas Tech University's Leather Research Institute, Karel Kolomaznik of Tomas Bata Univeristy (Czech Republic), and Dr. Nguyen Van Phuoc of the University of Technology in Vietnam, presented their findings to over 50 colleagues in the shoe and leather industries from Ho Chi Minh City. The prototype equipment used in the demonstration was donated to the University of Technology Vietnam to train students in leather-industry related environmental technology.

"The team is eager to see this advance in Vietnam on an industrial scale. It is our intention to help make these best practices in leather recycling possible and visible to the global sports leather and manufacturing industry, starting with NIKE," said Nathan Sage, US-AEP's Country Program Manager in Vietnam. The Vietnamese footwear manufacturing industry is expanding rapidly and is a key sector driving economic development. Over 400,000 people are employed by footwear manufacturers with this number expected to rise significantly over the next few years. If commercialization is feasible, it is expected that NIKE will roll-out this recycling technology in Vietnam, Thailand, Indonesia and China. As Mr. Sage points out, "The implications of this recycling initiative are huge, reaching far beyond Vietnam."

Sri Lankan Program *[Continued from Page 1]*

was formed in November 2001 under the Ministry of Environment and Natural Resources. AIRMAC will play a leading role in implementing a nationwide emission standards program in January 2004 and developing a Clean Air 2005 Action Plan to further reduce vehicle emissions and improve fuel quality. AIRMAC has also been involved in regional best practices exchanges to address this issue.

In 2003, the Ministry of Environment will establish 200 vehicle-testing centers throughout the country. Annual mobile emission certificates will be mandatory for all motor vehicles beginning in January 2004. In addition, Sri Lanka is considering banning the importation of vehicles equipped with two stroke engines.

US-AEP recently sponsored a fleet characterization study to measure emissions. Results of this study will help in deciding priority vehicle types, makes and years of manufacture to implement the emission standards in January 2004. Understanding fleet characteristics is necessary to implement vehicle testing with minimum social and economic impediments for vehicle owners, and to avoid a potential political backlash on the Air Quality Program.

Results from a US-AEP sponsored fleet characterization study will be used by the Sri Lankan Government to implement a vehicle inspection and certification program.

Regional Cooperation

In 2001, a US-AEP exchange program to Thailand and Manila for officials in the Motor Traffic Commissioners Department resulted in the drafting of Sri Lankan emissions and fuel standards, which were subsequently finalized in 2003. US-AEP also sponsored Sri Lankan delegates to participate in a series of five workshops on air quality improvement organized by the Asian Development Bank in 2002. An exposure tour to Thailand to meet with high-level policy makers in the Thai Pollution Control Department has been proposed for September 2003. Since 1997, the Thai Pollution Control Department has provided training to private vehicle service stations and other government agencies on emissions testing and inspection. The visit will provide the delegates with a basis for implementing a similar inspection and air quality monitoring system in Sri Lanka.

CALENDAR OF EVENTS

September

10-12th **Water Asia 2003** - New Delhi, India

18-20th **Asian Forum on Corporate Social Responsibility 2003** Bangkok, Thailand

22-24th **Mayors Asia Pacific Environmental Summit (MAPES)** Honolulu, HI U.S.A.