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GOAL 6: REDUCTION OF GLOBAL AND CROSS-BORDER ENVIRONMENTAL RISKS

The United States will lead other nations in successful multilateral efforts to reduce significant risks to human health and ecosystems from climate change, stratospheric ozone depletion, and other hazards of international concern.

OVERVIEW

Today, many serious environmental risks transcend political boundaries. As a result, protecting human health and the environment in the United States requires multinational cooperation. For instance, some ecosystems essential to the health and welfare of U.S. citizens, such as the Great Lakes, are shared with neighboring countries and can only be preserved through joint action. Other environmental risks, including those related to climate change and ozone depletion, are global in scope, thus requiring international action in order to protect the health and welfare of U.S. citizens as well as that of the rest of the planet.

In addition to safeguarding human health and the environment, EPA's international programs provide important political and economic benefits. A significant portion of EPA's international work fulfills legally binding treaties, conventions, and other international statutory mandates. The sharing of regulatory and environmental technological expertise helps developing nations as well as the United States and other industrialized nations achieve development consistent with a healthy future for all. Moreover, the implementation of effective environmental management and regulatory approaches throughout the world ensures that U.S. companies are not at a competitive disadvantage in comparison with companies in other nations, which may choose rapid, inexpensive development at the expense of the environment.

FY 1999 PERFORMANCE

To address today's international environmental challenges, EPA established in its Strategic Plan five guiding objectives for work toward this goal over the next five years:

- Protect shared ecosystems through joint action with other nations.
- Reduce greenhouse gas emissions in order to address the risks of climate change.
- Prevent further destruction of the ozone layer and facilitate its recovery.
- Protect human and environmental health from circulating toxic chemicals.
- Build worldwide capacity for environmental protection efforts.

With the help of its international and domestic partners, EPA made progress toward all of these objectives in FY 1999.

Protecting Border Environments

EPA strives to protect the health of citizens who live near borders with other nations by working with those nations to address cross-boundary threats. By 2005, EPA's objective is to reduce transboundary threats to human health and shared ecosystems in North America, including marine and Arctic environments, consistent with bilateral and multilateral treaty obligations in these areas and with the trust responsibility to Tribes.

U.S.-Mexico Border

In recent years, the U.S.-Mexico border region has experienced dramatic increases in industrialization and population growth. This growth has overwhelmed wastewater systems and other environmental infrastructure along both sides of the U.S.-Mexico border and placed additional pressures on the border's natural resources. Building on a 1983 Agreement for the Protection and Improvement of the Environment in the Border Area, EPA is working with other Federal agencies

and Mexican counterparts to address environmental problems and to provide the foundation for long-term sustainable growth. In FY 1999, EPA focused on air quality problems, chemical emergency response, and providing greater numbers of citizens with safe drinking water. To better understand air quality problems, EPA established air emission inventories and monitoring networks. A key indicator of success for this program was the implementation of joint contingency plans for chemical emergencies between sister cities in the United States and Mexico.

Working closely with the Border Environment Cooperation Commission and the North American Development Bank (NADBank), EPA has leveraged \$162 million of appropriated funds into \$602 million worth of environmental infrastructure projects on both sides of the border, benefitting approximately seven million border residents. *In FY 1999, EPA exceeded its goal of one and certified nine projects as eligible for construction and NADBank financing (APG 38).* The significant success of this goal is the result of efforts by parties on both sides of the border to ensure that border residents have adequate water and wastewater treatment facilities. EPA also exceeded its cumulative total as well, and 28 projects have been certified as eligible for construction and NADBank financing. Of these 28 projects, 21 have been funded by NADBank, 16 are under construction, and two have been completed. Through this program, the Mexican city of Juarez, with a population of 1.5 million people, will for the first time have the capacity to treat its wastewater prior to discharging it into the Rio Grande River. Overall, more than six million citizens now have access to safe drinking water as a result of projects completed along the U.S.-Mexico border.

Great Lakes

EPA and its partners have identified 80 comprehensive, basin-wide indicators (<http://www.epa.gov/glnpo/solec/98>) to better assess environmental progress and challenges in the Great Lakes. Representative data are now available for 19 of these indicators. They show that PCB concentrations in top predator fish are either still

slowly decreasing or potentially leveling off at concentrations suspected to cause health problems. In FY 1999, the U.S./Canadian Integrated Atmospheric Deposition Network published information showing that concentrations of some toxic chemicals in the air are decreasing over the past decade but may not disappear completely until the middle of the next century. Also in FY 1999, biological monitoring by EPA's Great Lakes Program and its partners revealed ecosystem impacts attributable to new invasive species. FY 1999 research determined the potential for *Cercopagis*, an invasive zooplankton discovered in Lake Ontario in 1998, to disperse throughout the Great Lakes, harming plankton and fish communities. FY 1999 research also suggests threats to biological communities from invasive round goby fish.

In FY 1999, EPA's Lake Michigan Mass Balance Study, one of the largest and most detailed investigations of its kind, provided State and Federal environmental managers with toxics and nutrient loadings data for different components of the Lake Michigan ecosystem. Managers can now determine the relative pollutant contributions from the atmosphere, lake tributaries, and sediments. This information helps determine the most effective long-term steps for further reducing toxics levels so that Lake Michigan fish will eventually be safe to eat.

EPA's Great Lakes Program identified contaminated sediments as the largest major source of contaminants to the Great Lakes food chain. Contaminated sediments cause impairments to over 2,000 miles (20 percent) of shoreline, including each of the 43 Areas of Concern, and contribute to the fish consumption advisories that remain in place throughout the Great Lakes and many inland lakes. On the U.S. side of the border, sediments have been assessed at 26 Great Lakes locations, and over 1,300,000 cubic yards of contaminated sediments have been remediated over the past three years. Sediment remediation is not yet complete at any U.S. Area of Concern. More information on sediments in the Great Lakes is available at <http://www.epa.gov/glnpo/sediments.html>.

Arctic Environment

High level radioactive contamination is a major threat to human health and ecosystems in the Arctic. Because Northwestern Russia has little infrastructure for handling radioactive waste from decommissioned nuclear submarines, spent nuclear fuel (SNF) from the former Soviet Union has been dumped in the ocean. Today, the accumulation of SNF, stored under unsafe conditions in floating barges and other aging vessels, poses both direct and indirect threats to the environment. The Arctic Military Environmental Cooperation (AMEC) project is a fast-track effort, sponsored in part by EPA, to design and construct a transportable cask for safe interim storage of SNF from Russian nuclear submarines scheduled for dismantlement. In FY 1999, AMEC constructed a cask prototype, which is now being certified for use. By 2005, once the cask has been produced in mass quantity and put into use, it is expected that 25 percent or more of the high-risk uncontained fuel will be safely secured. An estimated 25 percent reduction in the human health and environmental risks associated with the decommissioned sources is expected to result.

Wider Caribbean Marine Environment

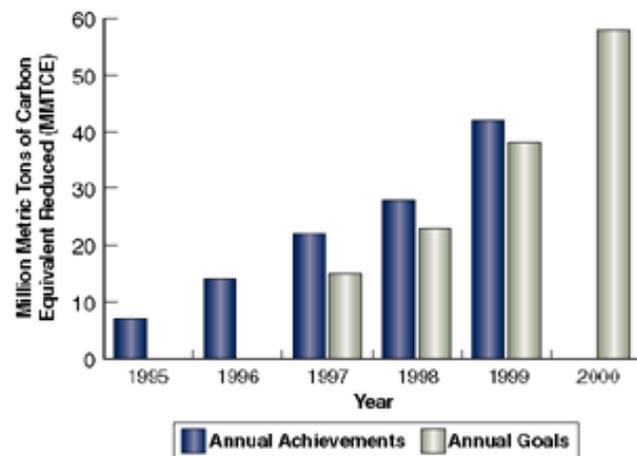
EPA's efforts to protect the marine environment yielded two notable achievements in FY 1999. First, working with the Department of State, NOAA, and other Federal agencies, the Agency completed a regional agreement that establishes common effluent standards for domestic wastewater discharges into the Wider Caribbean (Gulf of Mexico, Caribbean Sea, and Straights of Florida). This agreement represents the first international treaty establishing effluent standards specific to selected pollution sources and the unique sensitivity of various receiving waters. Second, in cooperation with other Federal agencies, EPA proposed draft text for treaty negotiations to phase out the use of tributyltin (TBT) as a marine antifoulant and to establish standards for future action on other marine antifouling systems. The use of TBT for marine antifouling purposes has been documented as the principal source of TBT in coastal and estuarine waters, where the chemical has been shown to cause deformities in shellfish and other benthic organisms.

These two agreements provide the transboundary foundation necessary for addressing current and future sources of marine pollution in coastal waters.

Global Climate Change

EPA works to protect the planet by exploring the ramifications of climate change, including threats and opportunities facing both the nation and the planet. By 2000 and beyond, EPA's objective is to reduce U.S. greenhouse gas emissions to levels consistent with international commitments under the 1992 Framework Convention on Climate Change, building on initial efforts under the Administration's 1993 Climate Change Action Plan.

Goals and Accomplishments of the Climate Change Technology Initiative (CCTI)



The core of EPA's climate change efforts are government/industry partnership programs designed to overcome barriers limiting investments by consumers, businesses, and other organizations in cleaner or more efficient technologies. As documented by numerous studies, energy-efficient technologies provide a sizable opportunity for limiting emissions of greenhouse gases, improving local air quality while simultaneously saving money for both businesses and consumers. EPA's climate change efforts have shown similar results by meeting emission reduction goals and demonstrating cost-effectiveness. *In FY 1999, EPA set a goal for reducing annual greenhouse gas emissions by a total of 35 million metric tons in carbon equivalent (MMTCE) through partnerships with businesses, schools, State and local governments, and other*

organizations (APG 39). While final data covering all of FY 1999 will not be available until Spring 2000, current estimates indicate that EPA may exceed this goal by about 15 percent.

Cars, trucks, aircraft, and other components of the nation's transportation system emit about one third of total U.S. greenhouse gas emissions. Greenhouse gas emissions associated with transportation are growing rapidly as Americans drive more and as the popularity of less efficient sport-utility and other larger vehicles continues to increase. To address emissions from automobiles, EPA has partnered with other agencies and domestic auto manufacturers in the "Partnership for a New Generation of Vehicles" (PNGV). PNGV is an effort to develop attractive, affordable cars that meet all applicable safety and environmental standards and achieve up to three times the fuel efficiency of today's cars. The program aims to produce a prototype mid-sized family car capable of 80 miles per gallon with a two-thirds reduction in carbon emissions by 2004. In FY 1999, EPA's PNGV work reached a milestone by demonstrating technology for a mid-size family sedan that achieves 61 miles per gallon, has low emissions, and is safe, practical, and affordable. EPA expects progress on development of the technology to accelerate over the next several years because much of the work to date has focused on program design and start up.

Research Contributions

EPA participates in a multi-agency effort known as the Global Change Research Program (GCRP) to evaluate the potential consequences of global change. The long-term goal of the GCRP is to understand and articulate, in terms that are meaningful for decision-makers and other stakeholders, the potential consequences of global environmental change for human health and ecosystems in the United States. The global environmental changes covered by this research program include climate change and variability, ultraviolet radiation, and human dimensions of global change, such as land-use change.

EPA is also committed to fulfilling its obligations as a participant in the interagency U.S.

Global Change Research Program (USGCRP). As part of this effort, EPA is contributing to the First USGCRP National Assessment of the "Potential Consequences of Climate Variability and Change for the United States," which includes 19 regional assessments and six sectoral assessments. EPA is responsible for one sectoral and three regional assessments. These assessments focus on evaluating the impacts of global change on human health, ecosystems, and economic systems at regional, State, and local scales. The assessment process is dedicated to meeting the information needs of stakeholders by providing the best scientific information in a form that is useful, understandable, and timely. The assessments also examine possible adaptation opportunities in order to reduce the risks, or take advantage of the opportunities, presented by climate variability and change. ***EPA completed the Mid-Atlantic and Great Lakes regional assessments as well as the Human Health sectoral assessment on schedule in FY 1999, but the Gulf Coast regional assessment is behind schedule due to difficulties obtaining a high-quality project proposal able to pass rigorous scientific peer review (APG 40).*** A university proposal has been accepted, and the Gulf Coast Assessment is underway. The delay has not impacted EPA's contribution to the USGCRP National Synthesis Report.

Other global change research focused on ultra violet (UV) monitoring. ***In FY 1999, EPA made additional monitoring progress by completing installation of all 21 UV monitoring sites. To learn more about the extent of the UV radiation problem, EPA established the UV monitoring network, which includes 14 sites in National Park Service areas throughout the continental United States (and the Virgin Islands and Hawaii) as well as seven sites in urban areas (APG 51).***

Restoring the Ozone Layer

EPA helps protect citizens from the dangers of a depleted ozone layer by reducing ozone-depleting substances and educating citizens about healthy sun practices. EPA's objective is that by 2005, ozone concentrations in the stratosphere will have stopped declining and begun the process of recovery.

The stratospheric ozone layer protects life on earth from harmful UV radiation. Scientific evidence amassed over the past 25 years indicates that the use of chlorofluorocarbons (CFCs) and other halogenated chemicals has caused destruction of the stratospheric ozone layer. In FY 1999, EPA actions, including the phase-out of domestic production of ozone-depleting substances (ODS), furthered the nation's commitment to halting the destruction of the ozone layer. *Based on results in the first three quarters of FY 1999, EPA was on track to meet its goal of ensuring that domestic consumption of class II hydro chlorofluorocarbons (HCFCs) was restricted to below 208,400 metric tonnes, and domestic exempted production and import of newly produced class I CFCs and halons were restricted to below 130,000 metric tonnes. (APG 41).* Calculations for the total data in FY 1999 will be available in Spring 2000.

FACILITATING OZONE-DEPLETING SUBSTANCES (ODS) PHASE-OUT IN DEVELOPING COUNTRIES

Parties to the Montreal Protocol established a Multilateral Fund to provide aid to developing countries for ODS phase-out programs. In FY 1999, the United States contributed a total of \$45.8 million to the Multilateral Fund, \$11.3 million of which came from EPA funding. The U.S. contributions funded phase-out programs in more than 50 countries. The focus of the Fund in FY 1999 was to shut down existing CFC production facilities in developing countries and to reduce illegal trade in ozone-depleting substances.

A particular focus of attention in FY 1999 was the ODS methyl bromide. The first step of the phase-out schedule for methyl bromide, in accordance with the Montreal Protocol, is a 25 percent reduction in the production and consumption of methyl bromide from the 1991 baseline in FY 1999 and maintaining that level through FY 2000. The 25 percent reduction was achieved in FY 1999, and proposed regulations for additional phase-down steps in 2001, 2003, and 2005 are expected in early 2000. As a fumigant for quarantine and pre-shipment treatment of

vegetables, fruits, and other commodities, methyl bromide provides an important level of protection against the invasion of foreign pests and diseases. Since this protection is increasingly important in a period of expanding international trade, EPA, USDA, and other government agencies are actively researching alternatives to methyl bromide.

Even after these and other program goals are met, the long lifetime and stability of ODSs means that the public will continue to face higher levels of radiation than existed prior to the depletion of the ozone layer. In fact, according to current atmospheric research, the ozone layer will not recover until the mid-21st century. During FY 1999, EPA initiated the SunWise Program to promote behavioral changes with a goal of protecting children from skin cancer, cataracts, and other long-term UV-related health effects. The SunWise program expanded from 25 schools in 12 States to over 140 schools in 36 States, reaching approximately 10,000 students.

Circulating Chemicals

EPA strives to protect citizens and ecosystems from chemical dangers in the air, water, and soil that often originate in faraway places yet pose a threat to the United States. EPA's objective is to reduce the risks to U.S. human health and ecosystems from selected toxics (including pesticides) that circulate in the environment at global and regional scales. EPA's aim is to meet this goal by 2005 in a manner consistent with international obligations (from various treaties and agreements, both current and nearing completion), the need to level up public health environmental standards, and to expand toxics release reporting.

EPA's FY 1999 actions to protect U.S. human health and ecosystems from circulating toxics addressed priority chemical groups and individual chemicals, like mercury, as well as issues significant to chemical risks in general, such as the availability of effects data.

Persistent organic pollutants (POPs) are toxic, degrade very slowly, and accumulate in the tissue of humans and other organisms. POPs also disperse easily in the atmosphere, often traveling long

distances. *In FY 1999, EPA obtained substantial international agreement on criteria for selecting chemicals for a new global POPs convention; however, no agreement has yet been reached on capacity-building to support the treaty's implementation (APG 42).* Capacity-building, as it relates to funding and technical assistance commitments for developing countries, is likely to provide one of the toughest challenges for the treaty negotiations at the March and December 2000 sessions. EPA would have preferred to fully conclude negotiations on these two matters in FY 1999, but the treaty will be a success so long as they are resolved no later than the final negotiating session in December 2000. Once implemented, the global treaty is expected to eliminate or reduce the worldwide production of 12 hazardous chemicals and define the scientific criteria for selecting additional POPs to be addressed under the convention.

In FY 1999, EPA continued to participate in efforts to complete the much-needed testing of high production volume (HPV) chemicals and the dissemination of HPV chemical effects data. HPV chemicals are industrial chemicals that are produced in or imported to the United States in quantities over one million pounds per year and for which basic toxicity information is limited or unavailable. EPA is helping to complete the necessary testing through its domestic HPV Challenge program and through the Organization for Economic Cooperation and Development's (OECD's) Screening Information Data Sets program. In FYs 1998 and 1999, EPA participated in OECD decision meetings that completed the assessment of over 60 HPV chemicals. Such efforts represent important progress toward the objective of ensuring that basic test data are available for the majority of HPV chemicals by 2005.

The 1992 United Nations Conference on Environment and Development endorsed the development of a globally harmonized system of chemical hazard classification and labeling by the end of 2000. Harmonization facilitates international trade by reducing the burden on chemical companies, which must often perform separate, sometimes only slightly different tests to comply

with various national standards. A harmonized classification and labeling system improves safety and environmental protection by standardizing the toxicity information available on a chemical. In FY 1999, the OECD, working with EPA and its international counterparts, achieved consensus on classification criteria for eight health and environmental endpoints.

The Agency's 1997 Mercury Study Report to Congress provides a baseline for domestic emissions of mercury, as well as emission reductions expected from the promulgation of Maximum Achievable Control Technology (MACT) standards for different industrial sectors. Few other countries have adequate inventories of their own mercury emissions, however, and while EPA is able to estimate the percentage of domestic mercury deposition resulting from the influx of foreign mercury emissions, the Agency currently cannot specify with precision which countries or regions account for this influx. In FY 1999, EPA established monitoring systems at three sites (Ohio River Valley; Barrow, Alaska; and the Florida Everglades) to track long-range transboundary transport of mercury into the United States and will conduct modeling to identify and assess international sources and pathways of mercury transport.

Working with its international partners, EPA has met its goal to reduce global usage of leaded gasoline to below 1993 levels, thus lessening the risk that lead poisoning poses to children's neurological development. Research conducted in FY 1999 shows a reduction of leaded gasoline usage worldwide from 249 million metric tons (out of a total of 745 million metric tons) in 1993 to 166 million metric tons (out of a total of 805 million metric tons) in 1997. Unleaded gasoline currently accounts for 78 percent of all gasoline sold worldwide, and this figure is expected to increase to over 84 percent by 2003. To support the development of international lead phase-out plans, EPA recently completed its Implementer's Guide to Phase-Out Lead in Gasoline. EPA also is planning workshops to aid 25 countries that are experiencing technical difficulties meeting their phase-out commitments.

Cleaner and Cheaper Practices

EPA works to protect the global environment by helping other nations develop environmental standards and methods and by protecting the right of all nations to engage in environmentally sound trade practices. By 2005, EPA's objective is to increase the application of cleaner and more cost-effective environmental practices and technologies in the United States and abroad through international cooperation.

In FY 1999, EPA carried out a number of important activities that contribute toward achievement of the objective:

- *Delivered 16 (of 30 planned) international training modules in eight countries. The remaining 14 modules were not completed due to host country difficulties (i.e., political and economic unrest, U.S. government sanctions, and inability to provide resource share).*
- *Implemented six technology assistance and dissemination projects, including development of three new electronic Technical Information Packages (TIPs) covering the areas of solid waste, hazardous waste, and air quality management.*
- *Implemented six (of a projected five) cooperative policy development projects, including securing 15 new partners to join as members of the International Cooperative for Cleaner Production and designing member regional sites for the Asia-Pacific Roundtable for Cleaner Production and the Cleaner Production Roundtable of the Americas; and developing and delivering "Environmental Information On-Line: A Guide for International Users" to key partners overseas.*
- *Disseminated information products on U.S. environmental technologies and techniques to 2,500 foreign customers, including 1,500 international visitors representing over 110 countries, and thousands of other foreign parties through an Agency website and other means (APG 43).*

EPA made substantial progress during FY 1999 in strengthening technical, administrative, and other frameworks in support of "cleaner, cheaper" environmental protection in targeted countries and regions.

Partner countries have used the materials and skills gained through these exchanges to enact or strengthen environmental laws, regulations, and standards; develop monitoring and enforcement capabilities; and implement environmental protection programs both domestically and internationally. By exchanging information and sharing costs of environmental research and regulation, EPA's international policy also helped to strengthen environmental protection programs in the United States.

GERMAN ENVIRONMENTALISTS PARTNER WITH BALTIMORE, MARYLAND

Urban environmental practitioners from Germany met with their counterparts from Baltimore to collaborate, as part of a two-year transatlantic environmental exchange program, on Brownfield revitalization, smart growth, and urban ecological issues. As a result, the group presented a series of recommendations to the Office of the Mayor and the City Transportation Director in Baltimore, which included improved public transportation shelters with maps and time charts, a new bike path linking the Frederick Olmstead Park system, and suggestions for a pedestrian zone adjacent to the Inner Harbor.

One example of a successful program with partner countries was EPA's international initiative on "Microbiologically Safe Drinking Water for Children's Health," launched in FY 1999. Using El Salvador, Nicaragua, and Honduras as pilot countries for Central American implementation, EPA evaluated needs and developed joint action plans for source water protection, enhancement of laboratory capabilities, and treatment plant optimization. EPA also launched a cooperative program with China, focusing on air pollution, climate change, and public health.

In FY 1999, EPA also made progress in developing and implementing international agreements on programs that integrate international trade, investment, and environmental policies to harmonize environmental standards with major trading partners. The North American Free Trade

Agreement (NAFTA) is the most significant piece of trade legislation thus far that stresses the establishment and maintenance of high environmental standards. In FY 1999, EPA accomplished its goals for management of two areas of the North American Commission for Environmental Cooperation (CEC), a NAFTA side-agreement. First, the North American Regional Action Plan (NARAP) for mercury was developed and approved. In addition, a more comprehensive action plan on mercury (Phase 2) was drafted in August 1999 and is currently under public review for completion by April 2000. Also in FY 1999, the CEC issued *Taking Stock, 1996 Trilateral Pollutant Release Transfer Registry*. This registry gives citizens in the United States, Mexico, and Canada access to information about pollutant releases and transfers at a North American scale, creating an informational basis for tri-national cooperation to further reduce North American pollution.

PROGRAM EVALUATION

EPA laid the groundwork during FY 1999 for substantially improving the way it designs, implements, and measures the effectiveness of international capacity-building programs. A cross-Agency task force carried out an assessment that (1) reviewed ongoing international capacity-building programs within the Agency; (2) established a set of best practice guidelines related to program development and implementation, including a checklist of criteria for evaluating Agency engagement and guidelines related to project selection, design, implementation, monitoring, and evaluation; (3) developed a hierarchy for establishing performance goals under GPRA; and (4) developed a generic set of environmental and programmatic indicators for use by EPA program managers in establishing annual performance goals and measures under GPRA. EPA's international capacity-building annual performance goals and measures for FY 2001 reflect this work.

CONCLUSIONS AND CHALLENGES

EPA has long been recognized worldwide as a leading source of environmental regulatory and management expertise. The Agency has made much

progress in efforts to advance protection of the global commons. Numerous treaties, binding conventions, and other partnerships are now underway and helping to advance sustainable environmental growth across the world. Continued progress will rely greatly on the ability to achieve agreement on key global negotiations and on the ability to sustain financial and political support for this work.

Despite the significant accomplishments of EPA's programs to date, there remain considerable opportunities and significant challenges to future efforts. For example, cooperation with other countries, to ensure that businesses are responsible actors and all people are protected as trade is liberalized, is an essential and difficult process. On the Mexico border, jointly addressing common issues between agencies in the two nations has been a major challenge, especially as Mexican States and local governments in the border region generally have not had the authority or resources to address border issues. In the area of climate change, further pollution reductions and savings from energy efficiency programs and greater use of cost-effective renewable energy are possible. Technologies are being developed and already available that can cut energy use significantly.

KEY MILESTONES FOR THE FUTURE

EPA has set a number of key milestones for the future in the international arena. Some of these major milestones are in the areas of the Mexico border and climate change.

- By 2005, an additional 1.5 million residents along the U.S.-Mexico Border, including Tribes, will be served by adequate drinking water and wastewater treatment systems.
- Within the domain of climate change, EPA established a goal to reduce greenhouse gases by 98 mmtce by 2005. Key milestones for this goal include reducing greenhouse gas emissions by more than 60 MMTCE in 2001, by more than 68 MMTCE in 2002, by more than 76 MMTCE in 2003, and by more than 85 MMTCE in 2005.