

**The United States of America**

**National Report**

**Transport, Chemicals, Waste Management, Mining, and**

**Sustainable Consumption and Production**

**Submitted to the**

**United Nations' Department of Economic and Social Affairs**

**Commission on Sustainable Development 18/19**

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This U.S. National Report is structured differently than a typical report. Given the breadth of U.S. knowledge, information and assistance programs – built on a strong foundation of research, education, training and information systems – this document compiles samples of information that can be electronically accessed about sustainability programs and activities. The report is organized around CSD 18/19 themes, and is formatted so that readers can easily find detailed information about U.S. domestic and international sustainability resources. It is designed to be used by both policy makers and implementers to strengthen sustainable development programs and on the ground implementation activities. It includes a representative sample of the many sustainable development activities and programs in which the U.S. Government is involved. The wealth of comparable programs undertaken by Major Group stakeholders complement and further enrich the U.S. experience.

Our site:

<http://www.state.gov/g/oes/sus/index.htm>

[http://www.un.org/esa/dsd/dsd\\_aofw\\_ni/ni\\_natiinfo\\_usa.shtml](http://www.un.org/esa/dsd/dsd_aofw_ni/ni_natiinfo_usa.shtml)

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## LIST OF KEY ABBREVIATIONS

### Transportation Chapter

#### International Organizations/Agreements

IMO	International Maritime Organization
MARPOL	International Convention for the Prevention of Pollution from Ships
OECD	Organisation for Economic Co-operation and Development
EST	Environmentally Sustainable Transport-OECD
PCFV	Partnership for Clean Fuels and Vehicles

#### U.S. Statutes

ARRA	American Recovery and Reinvestment Act of 2009
EISA	Energy Independence and Securities Act
EPCA	Energy Policy and Conservation Act
ISTEA	Intermodal Surface Transportation Efficiency Act
PRIIA	Passenger Rail Investment and Improvement Act of 2008
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act- A Legacy for Users

#### U.S. Federal Agencies Referenced

DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
HUD	U.S. Department of Housing and Urban Development
NASA	U.S. National Aeronautics and Space Administration

#### States/State Agencies Referenced

CA	California
CARB	California Air Resources Board
MN	Minnesota
MO	Missouri
WI	Wisconsin

#### U.S. Department of Transportation

AASHTO	American Association of State Highway and Transportation Officials
ACCRI	Aviation Climate Change Research Initiative
AIRE	Atlantic Interoperability Initiative to Reduce Emissions
AMPO	Association of Metropolitan Planning Organizations
Amtrak	National Railroad Passenger Corporation
ASPIRE	Asia-South Pacific Initiative to Reduce Emissions
ASTM	American Society for Testing and Materials
CAAFI	Civil Aviation Alternative Fuels Initiative
CAFE	Corporate Average Fuel Economy Program

### Chemicals Chapter

ACAP	Arctic Contaminants Action program
ACToR	Aggregated Computational Toxicology Resource
CAFTA-DR	Central America Free Trade Agreement – and Dominican Republic
CARE	Community Action for a Renewed Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CIEN	Chemical Information Exchange Network
CMS	Chemical Management Services
DfE	Design for the Environment Program

DSSTox	Distributed Structure-Searchable Toxicity Database
EPEAT	Electronic Product Environmental Assessment Tool
EPCRA	Emergency Planning & Community Right-to-Know Act
FEC	Federal Electric Challenge
FFDCA	Federal Food, Drug and Cosmetic Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FQPA	Food Quality Protection Act
GLBTS	Great lakes Binational Toxics Strategy
GSN	Green Suppliers Network
IRIS	Integrated Risk Information System
LRTAP	Convention on Long-range Transboundary Air Pollution
NEPA	National Environmental Policy Act
NMSP	Nanoscale Materials Stewardship Program
ODSs	Ozone Depleting Substances
OPPT	EPA's Office of Pollution Prevention and Toxics
P2Rx	Pollution Prevention Resource Exchange
PFOA Stewardship	Perfluorooctanoic acid stewardship
PPA	Pollution Prevention Act
RCRA	Resource Conservation and Recovery Act
RSEI	Risk-Screening Environmental Indicators
SAICM	Strategic Approach to International Chemicals Management
SAR	Structure Activity Relationships
TRI	Toxics Release Inventory
TSCA	Toxic Substances Control Act

#### **Waste Management Chapter**

CPG	Comprehensive Procurement Guidelines
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CRT	Cathode Ray Tube
EPP	Environmentally Preferable Purchasing
LCA	Life Cycle Analysis
LMOP	Landfill Methane Outreach Program
NAFTA	North American Free Trade Agreement
NPEP	National Partnership for Environmental Priorities
NVMSRP	National Vehicle Mercury Switch Recovery Program
OECD	Organization for Economic Cooperation and Development
RCC	Resource Conservation Challenge
RCRA	Resource Conservation and Recovery Act
SMM	Sustainable Materials Management

#### **Mining chapter**

AML	Abandoned Mine Lands – Bureau of land management
ARRI	Appalachian Regional Reforestation Initiative
BLM	Bureau of Land Management – Department of the Interior
CAFTA	Central America Free Trade Agreement
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CWA	Clean Water Act – Environmental Protection Agency
FMD	Federal Mining Dialogue

GEF	Global Environment Facility
MMS	Minerals management Service – Department of the Interior
MSHA	Mine Safety and health Administration – Department of labor
NPS	National Park Service – Department of the Interior
OSM	Office of Surface Mining – Department of Interior
PRADD	Property Rights and Alluvial Diamond Development
RCRA	Resource Conservation and Recovery Act
USACE	United States Army Corp of Engineers
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USFS	United States Forest Service – Department of Agriculture
USGS	Department of Interior’s United States Geological Survey

**Sustainable Development and Consumption Chapter**

CWSRF	Clean Water State Revolving Fund
DfE	Design for the environment
EMS	Environmental management system
EPEAT	Electronic Product Environmental Assessment Tool
EPP	Environmentally Preferable Purchasing
FEC	Federal Electric Challenge
HUD	U.S. Department of Housing and Urban Development
LCA	Life cycle assessment
LID	Low Impact Development
P2Rx	Pollution Prevention Resource Exchange

## I. INTRODUCTION

The 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, the 2002 World Summit on Sustainable Development in Johannesburg and the recent sessions of the Commission on Sustainable Development (CSD) have each focused attention on the sustainability of the world's natural resources and highlighted the need to link and balance environmental stewardship, economic development, and social development. The CSD 18/19--2010-2011 Cycle on chemicals, transport, mining, waste management, and sustainable consumption and production marks an exciting, challenging time to consider agriculture, rural development, and the environment, globally and in the United States.

Against this dynamic backdrop, **CSD 18/19** presents an opportunity for the United States to highlight some of its most important initiatives, programs and information sources relating to the themes of the meeting. In the following report, major Agency programs - both domestic and international - that address problems of **chemicals, transport, mining, waste management, and sustainable consumption and production are highlighted**. The United States Government also wants to emphasize the important role of our significant partnerships: with the nongovernmental sector (non-profit, commercial, academic/science community), with local governments, and with our international partners. This Report is meant to be indicative rather than exhaustive and directs the reader to websites where more comprehensive accounts are available.

Much of the success enjoyed by the United States has been grounded in the thriving network of partnerships – domestic and international, governmental and non-governmental - that help to clearly define needs, formulate priority approaches to meeting those needs, discovering new and better ways of responding to them, and then making broad use of new tools. Indeed, most all of the programs and activities listed in this report depend upon an array of international, national, regional, state and/or local partnerships for success.

The U.S. government is working to confront climate change and reduce the transportation sector's greenhouse gas emissions while improving the sustainability of the U.S. transportation system. While some of these initiatives are coordinated independently by U.S. agencies, several initiatives are partnerships between U.S. agencies, between U.S. agencies and private or academic partners, or between U.S. agencies and foreign countries. These initiatives hold great potential to increase sustainability and provide knowledge and lessons that will enhance sustainability around the world. In the area of transportation, the United States considers the following issues to be of strategic importance to the development of a sustainable transportation system:

- Investment in mass transit infrastructure
- Investment in passenger rail infrastructure
- Increasing motor fuel economy
- Initiating smart growth programs

- Clean diesel engines and fuels

The United States is actively engaged in chemicals management, both at the domestic and international levels as the safe and effective management of chemicals helps ensure protection of the environment and public health. Several major regulatory and voluntary initiatives are underway domestically, including our active efforts to evaluate and register new chemicals and pesticides. In the area of chemicals, the United States considers the following issues to be of strategic importance to the development of sustainable chemical management:

- Initiating regulatory risk management actions on chemicals of concern
- Reviewing the risk posed by new industrial chemicals
- Managing and reducing risks caused by pesticides
- Increasing public access to information about chemicals

The United States is working to reduce the inefficient and wasteful use of materials. By acting less wastefully and considering system-wide impacts in the design, marketing, reuse, recycling, and disposal of products, life-cycle materials assessment represents an important change in how we think about waste and chemicals management. The President's [Executive Order 13514](#), Federal Leadership in Environmental, Energy, and Economic Performance, emphasizes the importance of sustainability. This order requires U.S. Federal agencies achieve a 50% recycling target by 2015. The following issues are of strategic importance to the United States in the development of a sustainable waste management system:

- Manage materials and products on a life-cycle basis
- Build the nation's capacity to manage materials
- Accelerate the public dialogue necessary to create a green, resilient, competitive and sustainable economy in the future

The U.S total domestic mining production amounted to 5.9 billion metric tons (Gt) in 2007. Overall, 97% of nonfuel mineral materials was mined and quarried using surface methods, and 3% was mined underground. Most mining activities took place in: Nevada, Arizona, Florida, Minnesota, Utah, California, Texas, Michigan, Pennsylvania, and Georgia. These 10 States accounted for 63% of the tonnage removed in the production of nonfuel mineral materials mined in the United States. U.S. coal production in 2008 reached a record level of 1,171.5 million short tons, with 389.8 million short tons from the Appalachia Region, 146.7 million short tons from the Interior Region, and 633.6 million short tons from the Western Region. In 2008, U.S. coal consumption declined in every coal-consuming sector. With such a large and active industry, the U.S. mining sector has increased its focus on sustainable mining practices in the 21<sup>st</sup> century. Special initiatives throughout the country have brought together the public, industry, and government to find innovative ways to ensure mineral extraction and processing activities have minimal



environmental impacts and are sustainable. U.S laws and regulatory agencies provide a framework and baseline for increased sustainability focus for mining activities.

The regulatory and technical aspects of the U.S. mining industry are complex, with overlapping laws, regulatory agencies, and state and federal roles for the different types of mining. Each mine faces a somewhat unique set of regulatory requirements, depending upon state statute or regulation; whether it is on state, federal, tribal, or private land; local regulations; the kind of mining and metal recovery operation proposed; and the specific environmental considerations unique to the site. Mining activities in the U.S. are regulated by various entities with states playing a key role in oversight. The U.S. Army Corps of Engineers (USACE); U.S. Department of Interior's Bureau of Land Management (BLM), National Park Service (NPS), Office of Surface Mining (OSM), U.S. Geological Survey (USGS); U.S. Agriculture's Forest Service (USFS); U.S. Department of Labor's (DOL) Mine Safety and Health Administration (MSHA); Environmental Protection Agency's (EPA) Office of Water and the Office of Solid Waste and Emergency Response all play a role in influencing environmental outcomes at mine sites where they have ownership or jurisdiction. The overlapping laws and agencies provide an intricate network of oversight of mining activities, from exploration and permitting through closure and site reuse.

There is growing worldwide pressure on natural resources, environmental carrying capacities, and material prices. As a result, there is growing interest in increasing efficiency in use of resources and reducing environmental impacts and waste. There is also greater awareness of the need to be better stewards of the environment and to reach a more sustainable level of production and consumption in order to become more competitive.

Stewardship is an ethic and a behavior that move us along a path toward sustainable production and consumption. In the United States, there are many efforts in place in the public, private, and non-profit sectors to foster stewardship and progress toward sustainability. However, these efforts are often not connected within or across organizations.

The United States has been making steady progress integrating more sustainable practices of consumption and production throughout society. The Federal Agencies do this by forming partnerships with other stakeholders such as industry, non-governmental organizations, consumer groups and local communities. Demonstrating a commitment to lead by example, President Obama signed an [Executive Order](#) on October 5, 2009 that sets sustainability goals for Federal agencies and focuses on making improvements in their environmental, energy and economic performance. The Executive Order requires Federal agencies to set a 2020 greenhouse gas emissions reduction target within 90 days; increase energy efficiency; reduce fleet petroleum consumption; conserve water; reduce waste; support sustainable communities; and leverage Federal purchasing power to promote environmentally-responsible products and technologies.

The Executive Order also requires agencies to develop guidance for sustainable Federal building locations in alignment with the Livability Principles put forward by the Department of Housing and Urban Development, the Department of Transportation and the Environmental Protection Agency. Implementation of the Executive Order will focus on integrating achievement of sustainability goals with

agency mission and strategic planning to optimize performance and minimize implementation costs. Each agency will develop and carry out an integrated Strategic Sustainability Performance Plan that prioritizes the agency's actions toward the goals of the Executive order based on lifecycle return on investments.

The United States considers the following issues to be of strategic importance in achieving these sustainability goals:

- Technological development
- Changes in behavior – adopting sustainable lifestyles and reducing consumption
- Product information
- Green purchasing programs

The United States looks forward to learning and sharing as part of the CSD 18/19 process in terms of **case studies, lessons learned, and potential new partnerships.**

## **II. TRANSPORT OVERVIEW**

Transportation is expected to be a major driving force behind a growing world demand for energy over the next twenty years. It is the largest end-use of energy in developed countries and the fastest growing end-use in most developing countries. At the same time, adequate, efficient and effective transport systems are critical to sustainability on many fronts, including access to markets, employment, education, health care and other basic services critical to poverty alleviation. Clean and energy efficient transportation contributes to sustainability of health, environment and energy resources. In addition to energy usage and air quality impacts, transportation has significant implications for climate change, a major priority of the Obama Administration. The President is committed to aggressive action to reduce the impacts of climate change and ensure that the U.S. is a leader in the global effort to reduce greenhouse gas emissions. Currently, transportation accounts for about 30 percent of total U.S. greenhouse gas emissions.

The U.S. government is working to confront climate change and reduce the transportation sector's greenhouse gas emissions, while meeting demands for an expanded accessible and efficient transportation system. While some of these initiatives are coordinated independently by individual U.S. agencies, others are being carried out by new or pre-existing partnerships between U.S. agencies and private or academic partners, or between U.S. agencies and foreign countries. These initiatives hold great potential to increase sustainability and provide knowledge and lessons that will enhance sustainability around the world.

## **II.1. Domestically-Focused Agencies and Programs**

### **II.1.A. Interagency**

**American Recovery and Reinvestment Act of 2009 (ARRA)** (<http://www.recovery.gov/?q=content/act>):

As part of the \$150 billion investment in new infrastructure, ARRA enacted the largest increase in funding of our nation's roads, bridges and mass transit systems since the creation of the national highway system in the 1950s.

**DOT-HUD-EPA Interagency Partnership for Sustainable Communities** (<http://www.epa.gov/dced/2009-0616-epahuddot.htm>) : On June 16, 2009, the U.S. Department of Transportation (DOT), the U.S.

Department of Housing and Urban Development (HUD), and the U.S. Environmental Protection Agency (EPA) joined together to help improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide. Through a set of guiding livability principles and a partnership agreement that will guide the agencies' efforts, this partnership will coordinate federal housing, transportation and other infrastructure investments to protect the environment, promote equitable development and help to address climate change.

### **II.1.B. U.S. Department of Transportation**

The U.S. Department of Transportation recognizes the importance of sustainability in the U.S. transportation system and has made environmental sustainability a central goal of its policies and programs. Several agencies within DOT carry out programs that are relevant to CSD 18/19 topics. These agencies and programs include:

#### **DOT/Office of Safety, Energy, and Environment**

(<http://ostpxweb.dot.gov/policy/safetyenv.htm#environment>): The Office has primary responsibility for developing and reviewing transportation legislation and regulations and coordinating national transportation policy initiatives relating to environmental and energy matters. The Office reviews and analyzes the environmental implications of domestic transportation policy to provide a basis for advising management actions and decisions. Major policy areas of the Office include climate change, sustainability and quality of life, environmental stewardship and streamlining, alternative fuels, species and habitat protection and the National Environmental Policy Act, among others.

**DOT/Climate Change Center** (<http://climate.dot.gov>): The Climate Change Center provides a unifying structure for DOT's actions and policies that address climate change issues within a multi-modal context. The Center is the focal point in DOT for information sharing and technical expertise on transportation and climate change. Through coordination of ongoing and new research within the operating administrations, policy analysis, partnerships and outreach, the Center encourages multi-modal approaches to increase transportation energy efficiency and reduce transportation-related greenhouse gas emissions, as well as to reduce the impacts of climate change on transportation.

#### **DOT/Maritime Administration (MARAD)/Environment and Safety**

([http://www.marad.dot.gov/environment\\_safety\\_landing\\_page/environment\\_and\\_safety\\_landing\\_page](http://www.marad.dot.gov/environment_safety_landing_page/environment_and_safety_landing_page).

[htm](#)): The maritime industry must comply with a broad array of requirements in the areas of air and water quality, hazardous waste disposal, protection of marine mammals and fisheries , and prevention of the spread of aquatic invasive species. The industry’s mobile nature necessitates that standards be set at the international and national level. Safety standards must also be set at an international level, and MARAD plays a key role in asserting the need for consistent, uniform international laws and policies. MARAD also works with the shipbuilding industry to find technological solutions to environmental problems associated with the construction and design of ships and encourages cooperative research programs in regional and international bodies that are working to solve these problems. MARAD is currently leading an effort with U.S. universities, research institutions and government agencies to establish independent U.S. ballast water treatment technology testing facilities that would certify ballast water systems to International Maritime Organization standards.

**DOT/Federal Transit Administration (FTA):** FTA is dedicated to building the capacity of public transportation and ensuring that world-class public transportation systems provide access and mobility for all Americans—including urban and suburban commuters, rural workers and their families, persons with disabilities, older adults, Native Americans living on tribal lands and visitors to national parks and public lands. Over the past 25 years, FTA has successfully leveraged state and local funding to revitalize, expand and enhance urban and rural public transportation systems throughout the country, making public transportation available to far more Americans than ever before. As a result, public rail, bus, trolley, ferry and other transit services have reached greater levels of safety, reliability, availability, and accessibility.

FTA has invested billions of dollars in major capital transportation projects that serve the nation’s metropolitan areas. It has also provided rigorous oversight to help manage quality, cost and risk on these complex projects. In many of the nation’s largest cities, public transportation now carries roughly one-third of all work trips destined for central business districts and is an essential link between these districts and other destinations. Since 1984, the number of cities with publicly funded passenger rail service has more than doubled. The size of the nation’s transit bus fleet has grown by more than 25%, and nearly every bus in the U.S. is accessible to people with disabilities and senior citizens. Since the mid-1990s, the nation’s overall public transportation ridership has grown by more than one-third.

FTA’s efforts have also benefited smaller communities. A decade ago, two of every five residents in rural and small urban communities did not have access to public transportation. Since then, FTA has been instrumental in bringing new public transportation options to dozens of these communities. Tribal areas also benefit from FTA investments that afford greater accessibility and mobility options. FTA programs that support sustainable transportation include:

- **Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER)**

([http://www.fta.dot.gov/index\\_9440\\_9920.html](http://www.fta.dot.gov/index_9440_9920.html)): The Recovery Act has provided \$8.4 billion in funding for transit. These funds will support projects in bus and rail car manufacturing, operation and maintenance; fixed guideway improvements; and work that supports the operation of high efficiency buses, among other sustainable transport efforts. \$100 million of these funds is

specifically directed towards a new program, TIGGER, to support transit agencies in pursuing cutting-edge technologies to reduce their energy usage and greenhouse gas emissions.

- **Mobility Management Resources**

([http://www.fta.dot.gov/planning/metro/planning\\_environment\\_2366.html](http://www.fta.dot.gov/planning/metro/planning_environment_2366.html)): FTA spearheads a partnership with nine federal departments to develop and deliver community based transportation services. This pioneering “mobility management” approach has brought together public and private operators of vanpool, rideshare, bus and other services to ensure that persons with disabilities, older Americans and individuals without automobiles can readily access sustainable public transportation where and when they need it most.

- **New Starts-Small Starts Program**

([http://www.fta.dot.gov/planning/planning\\_environment\\_5221.html](http://www.fta.dot.gov/planning/planning_environment_5221.html)): This discretionary program supports locally planned, implemented and operated major transit capital investments, including fixed guideway transit systems and substantial corridor-based systems such as commuter rail, light rail, heavy rail, bus rapid transit, streetcars and ferries. Before a local project sponsor can receive grant funding for construction, each project is evaluated based on the following criteria: mobility improvements, environmental benefits, cost effectiveness, operating efficiencies, transit supportive land use, economic development and local financial commitment. Project sponsors also need to complete necessary environmental and planning studies, demonstrate consistency with regional transportation plans, and obtain the capacity to construct and finance a major transit project.

## **DOT/Federal Railroad Administration (FRA)**

- **Passenger Rail Investment and Improvement Act of 2008**

(<http://www.fra.dot.gov/downloads/PRIIA%20Overview%20031009.pdf>): The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) reauthorizes the National Railroad Passenger Corporation (Amtrak) and strengthens the US passenger rail network by tasking Amtrak, FRA, states and other stakeholders to improve service, operations and facilities. PRIIA focuses on the development of high-speed rail corridors and on intercity passenger rail, including Amtrak’s long-distance routes and the Northeast Corridor (NEC), as well as state-sponsored corridors throughout the U.S.

- **Recovery Act – High Speed Rail**

(<http://www.fra.dot.gov/Downloads/Final%20FRA%20HSR%20Strat%20Plan.pdf>): The Recovery Act addresses America’s transportation challenges by launching a new and efficient high-speed passenger rail network in 100-600 mile **corridors** that connect communities across America. FRA has published a **Strategic Plan** that outlines the vision for High Speed Rail that would transform the nation’s transportation system. The plan calls for rebuilding existing rail infrastructure while developing a comprehensive high-speed intercity passenger rail network through a long-term commitment at both the federal and state levels.

## DOT/Federal Highway Administration (FHWA)

- **Office of Planning Environment and Realty** (<http://www.fhwa.dot.gov/environment/>): The Office of Planning, Environment and Realty (HEP) hosts FHWA's Sustainable Transport and Climate Change Team. This new team addresses a broad range of issues related to transportation, climate change and sustainability. The Climate Change Team provides leadership and policy development on climate change mitigation, climate change adaptation and sustainability issues. The Team works with other federal agencies on research and education initiatives and provides outreach, education and technical assistance to FHWA offices, departments of transportation and other stakeholders.
- **Bicycle and Pedestrian Program** (<http://www.fhwa.dot.gov/environment/bikeped/index.htm>): The Bicycle & Pedestrian Program of FHWA's Office of Human and Natural Environment promotes bicycle and pedestrian transportation use, safety and accessibility. The Program issues guidance and is responsible for ensuring that requirements in legislation are understood and met by states and other implementing agencies. FHWA also sponsors resources such as the Pedestrian and Bicycle Information Center (<http://www.pedbikeinfo.org>) to provide information on a variety of engineering, education and enforcement topics.
- **Congestion Mitigation and Air Quality Improvement Program (CMAQ)** (<http://www.fhwa.dot.gov/environment/cmaqpgs/>): Created by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, CMAQ was designed to realign the focus of transportation toward a more inclusive, environmentally sensitive and multimodal approach. CMAQ helps areas meet and maintain air quality standards and improves the health and environmental sustainability of communities through activities such as transit, bicycle and pedestrian infrastructure and diesel vehicle retrofit projects. CMAQ projects typically reduce motor vehicle emissions by encouraging changes in travel behavior that reduce vehicle miles traveled (VMT), by improving traffic flow or by implementing technologies to reduce the rate of emissions. The program also supports innovative solutions to transportation and air quality challenges, including intermodal freight partnerships, public-private partnerships and transportation demand management programs for state and local governments.
- **Nonmotorized Transportation Pilot Program** (<http://www.fhwa.dot.gov/environment/bikeped/nntp.htm>): This program's goal is to demonstrate how walking and bicycling infrastructure improvements can increase mode share for walking and bicycling. Four communities (Columbia, MO; Marin County, CA; Minneapolis, MN; and Sheboygan County, WI) are each receiving \$25 million to improve walking and bicycling networks.
- **Surface Transportation Environment and Planning Cooperative Research Program (STEP)** (<http://www.fhwa.dot.gov/HEP/STEP/index.htm>): The goal of this cooperative research program is to improve understanding of the complex relationship between surface transportation, planning and the environment. STEP funds can be awarded to state and governments, metropolitan planning organizations, universities, federal agencies or the private sector for

purposes that include bicycle and pedestrian health, environmental streamlining and stewardship, congestion and air quality.

- **Transportation Enhancement (TE) Activities** (<http://www.fhwa.dot.gov/environment/te/>): TE activities are set-asides for projects that expand transportation choices and enhance the transportation experience for communities through specified categories that include bicycle and pedestrian activities, scenic and historic highway programs and historic preservation. FHWA also funds the National Transportation Enhancements Clearinghouse to provide technical assistance and information on transportation enhancements to the public.
- **Travel Model Improvement Program (TMIP)** (<http://tmip.fhwa.dot.gov/>): TMIP is a partnership between FHWA, FTA, the Office of the Secretary of Transportation, and the Environmental Protection Agency. The program helps planning agencies improve their techniques for informing decision makers on how growth in population and employment, investments in transportation infrastructure and development patterns are likely to affect air quality, travel, congestion and quality of life. TMIP works cooperatively with the Metropolitan Capacity Building Program (MCB), the Association of Metropolitan Planning Organizations (AMPO), and the American Association of State Highway and Transportation Officials (AASHTO). TMIP maintains a clearing house of documents of potential interest to planners at <http://tmip.fhwa.dot.gov/resources/clearinghouse/>.
- **Transportation, Community and System Preservation (TCSP) Program** (<http://www.fhwa.dot.gov/tcsp/>): TCSP is a comprehensive initiative of research and grants to investigate the relationships between transportation, community and system preservation plans and practices and to identify private sector initiatives to improve these relationships. States, metropolitan planning organizations and local and tribal governments are eligible for discretionary grants to carry out projects that integrate transportation, community and system preservation plans and practices. Eligible projects improve the efficiency of the transportation system; reduce environmental impacts of transportation; reduce the need for costly future infrastructure investments; ensure efficient access to jobs, services and trade centers; and/or examine community development patterns and investments that support TCSP goals.

#### **DOT/Federal Aviation Administration (FAA)**

- **Office of Environment and Energy** ([http://www.faa.gov/about/office\\_org/headquarters\\_offices/aep/research/](http://www.faa.gov/about/office_org/headquarters_offices/aep/research/)): The Office of Environment and Energy develops, recommends and coordinates national aviation policy relating to environmental and energy matters, which includes noise and emissions. The Office's Research and Development (R&D) Program supports FAA's Flight (strategic) Plan ([http://www.faa.gov/about/plans\\_reports/media/flight\\_plan\\_2009-2013.pdf](http://www.faa.gov/about/plans_reports/media/flight_plan_2009-2013.pdf)). It also provides scientific understanding, develops new technologies, fuels and operations and provides analyses to support achieving the Next Generation Air Transportation System and its goal of environmental protection that allows for sustained growth.

- **Aviation Climate Change Research Initiative (ACCRI)**  
[\(http://www.faa.gov/about/office\\_org/headquarters\\_offices/aep/aviation\\_climate/\)](http://www.faa.gov/about/office_org/headquarters_offices/aep/aviation_climate/): Launched in partnership with the National Aeronautics and Space Administration (NASA) and other US agencies, ACCRI seeks to improve our scientific understanding and modeling capabilities regarding climate change and aviation. In 2008, ACCRI issued a report on research priorities to address the climate impacts of aviation, “A Report on the Way Forward: A Review of Research Gaps and Priorities.”
- **Partnership for Air Transportation Noise & Emissions Reductions (PARTNER)**  
<http://web.mit.edu/aeroastro/partner/index.html>): PARTNER is a leading aviation cooperative research organization and Center of Excellence co-sponsored by the FAA, National Aeronautics and Space Administration (NASA), and Transport Canada. PARTNER fosters breakthrough technological, operational, policy and workforce advances for the betterment of mobility, economy, national security and the environment. Among other things, PARTNER is producing critical life-cycle greenhouse gas analyses of various sustainable alternative fuels for aviation.
- **Continuous Low Energy, Emissions, and Noise (CLEEN)**  
[http://www.faa.gov/about/office\\_org/headquarters\\_offices/ato/publications/oep/version1/solutionsets/sse/#esum](http://www.faa.gov/about/office_org/headquarters_offices/ato/publications/oep/version1/solutionsets/sse/#esum).): Enhancements to engines and airframe technology have been the source of most improvement in aviation’s environmental performance during the last three decades. The recently launched CLEEN Program was developed to encourage the development of promising environmental improvements in aircraft technology. CLEEN is focused on reducing current levels of aircraft noise, emissions that degrade air quality, greenhouse gas emissions and energy use by spurring the maturation of technologies into product design and manufacturing.
- **Next Generation Air Transportation System (NextGen)**  
[http://www.faa.gov/news/fact\\_sheets/news\\_story.cfm?newsid=8145](http://www.faa.gov/news/fact_sheets/news_story.cfm?newsid=8145).): NextGen seeks to accelerate the implementation of operational improvements to reduce the fuel burn of aircraft. NextGen has saved more than 2.7 million metric tons of carbon emissions annually in the US by establishing Reduced Vertical Separation Minimum (RVSM) in the high altitude structure in 2005. It is also accelerating the implementation of Required Area Navigation (RNAV), Required Navigation Performance (RNP) and other terminal procedures to further improve the system’s fuel efficiency. NextGen is focused on the testing and deployment of procedures such as continuous descent arrival (CDA), which keeps aircraft at more fuel efficient altitudes longer and utilizes an idle descent profile to touchdown, reducing noise and fuel burn and improving air quality. Demonstrations of CDA at Atlanta have shown that air carriers can eliminate from 0.34 to 0.45 metric ton of carbon dioxide per arrival. Demonstrations of more efficient air traffic procedures under the Atlantic Interoperability Initiative to Reduce Emissions (AIRE) and the Asia-South Pacific Initiative to Reduce Emissions (ASPIRE) have garnered carbon dioxide reductions on a per-flight basis of around 1.4 metric tons and 10.7 metric tons, respectively.
- **Civil Aviation Alternative Fuels Initiative (CAAFI)** (<http://www.caafi.org/>): CAAFI seeks to advance and deploy alternative aviation fuels that reduce emissions locally and globally. CAAFI’s partners include airlines, manufacturers, airports, petroleum firms and other federal agencies. FAA and these partners are implementing a road map to facilitate the use of alternative fuels for



commercial aviation. Through the work of CAAFI, American Society for Testing and Materials (ASTM) International approved use of a 50 percent generic blend of conventional jet fuel and jet fuel derived via the Fischer-Tropsh (F-T) process. The blend is generic in that the F-T process could use biomass, coal or gas as its feedstock. This approval sets the basis for the future approval of a wide range of alternative aviation fuels, including renewable biofuels.

**DOT/University Transportation Centers (UTCs)** (<http://utc.dot.gov/>): Managed by DOT's Research and Administrative Technology Administration (RITA), UTCs advance transportation technology and expertise through education, research and technology transfer at university-based centers of excellence. UTCs conduct research on surface transportation issues regarding environmental and energy matters.

**Corporate Average Fuel Economy Program (CAFE):** In 1975, Congress enacted the Energy Policy and Conservation Act (EPCA), mandating a regulatory program for motor vehicle fuel economy to meet the energy independence and security, environmental and foreign policy facets of the need to conserve energy. DOT's National Highway Traffic Safety Administration (NHTSA) has been setting CAFE standards per EPCA since the enactment of the statute. Fuel economy gains since 1975, due both to the standards and market factors, have resulted in savings of billions of barrels of oil and in the avoidance of billions of metric tons of carbon dioxide (CO<sub>2</sub>) emissions. In December 2007, Congress enacted the Energy Independence and Securities Act (EISA), amending EPCA to require, among other things, attribute-based standards for passenger cars and light trucks. The most recent CAFE rulemaking action was the issuance of standards governing model years 2011 cars and trucks, which raised CAFE standards for cars from 27.5 miles per gallon (mpg) to 30.2 mpg (294 g/mi of tailpipe emissions of CO<sub>2</sub>) and for trucks from 23.5 to 24.1 mpg (369 g/mi of tailpipe emissions of CO<sub>2</sub>).

On May 19, 2009, President Obama announced a National Fuel Efficiency Policy aimed at increasing fuel economy and reducing greenhouse gas pollution for all new cars and trucks sold in the U.S., while also providing a predictable regulatory framework for the automotive industry. The policy seeks to set harmonized federal standards to regulate both fuel economy and greenhouse gas emissions while preserving the legal authorities of DOT, EPA and the State of California. The program covers model years 2012 to 2016 and ultimately requires an average fuel economy standard of 35.5 mpg in 2016. Building on the 2011 standard set in March 2009, this represents an average increase of 5 percent per year from 2012 to 2016. On September 15, 2009, DOT and EPA issued a joint proposed rule establishing a national program that would improve motor vehicle fuel economy and reduce greenhouse gas emissions.

### **II.1.C. U.S. Environmental Protection Agency (EPA)**

The United States Environmental Protection Agency's commitment to sustainability is born out by its mission to protect human health and the environment. Through its evolution toward increasingly innovative approaches to environmental protection, EPA is making sustainability the next level of environmental protection, drawing on advances in science and technology, application of diverse government regulations and policies, and promotion of green business practices.

## **EPA/Emissions Standards for Mobile Sources under Clean Air Act**

<http://www.epa.gov/air/caa/title2.html>

## **EPA/Office of Transportation and Air Quality (OTAQ)**

(<http://www.epa.gov/otag/>) protects public health and the environment by regulating air pollution from motor vehicles, engines, other mobile sources and the fuels used to operate them, and by encouraging travel choices that minimize emissions. These "mobile sources" include cars and light trucks, heavy trucks and buses, nonroad recreational vehicles (such as dirt bikes and snowmobiles), farm and construction machines, lawn and garden equipment, marine engines, aircraft, and locomotives. Additionally, OTAQ has developed Partnership programs under which voluntary actions can be taken to reduce emissions, save energy and utilize best practices.

## **EPA/Clean Diesel Regulations**

EPA has finalized regulations that will dramatically cut emissions from new diesel-powered engines.

These include the 2008 Locomotive and Marine Diesel Rule

(<http://www.epa.gov/otag/regs/nonroad/420f08004.htm>), the 2007 Heavy-Duty Highway Engine Rule

(<http://epa.gov/otag/highway-diesel/regs/2007-heavy-duty-highway.htm>), and the Clean Air Nonroad

Diesel Rule (<http://www.epa.gov/nonroad-diesel/2004fr.htm>).

## **EPA/Ultra-Low-Sulfur Diesel Fuel**

Information on the U.S. ultra-low sulfur diesel fuel program is available at [www.clean-diesel.org](http://www.clean-diesel.org).

## **National Clean Diesel Campaign (NCDC)**

([www.epa.gov/cleandiesel](http://www.epa.gov/cleandiesel)) To meet the challenge of reducing harmful exhaust from diesel engines, the U.S. Environmental Protection Agency (EPA) established the National clean Diesel Campaign (NCDC).

Under the NCDC, the EPA has promulgated and is now implementing clean fuel and vehicle emission regulations that will lead to dramatic emission reductions in new diesel-powered engines. These include the heavy-duty highway engine, non-road diesel, and marine diesel rules.

- **The Clean Agriculture USA Program**

(<http://www.epa.gov/otag/diesel/agriculture/index.htm>) is an innovative program that works through collaborative partnerships across the country to bring cost-effective diesel emission-reduction initiatives into the field. The program works with state and local governments, fleet managers, equipment owner and operators, and farmers to lower the emissions of particulate matter and nitrogen oxides from existing diesel engines. Specifically, EPA encourages technology provides technical support, funds demonstration projects, identifies funding opportunities, and offers education and outreach.

- **The Clean Construction USA Program** (<http://www.epa.gov/otag/diesel/construction/index.htm>)

promotes the reduction of diesel emissions from construction equipment and vehicles by encouraging contractors, owners, and operators of construction equipment to properly maintain their equipment, reduce idling, retrofit diesel engines with verified technologies, replace older

equipment, use cleaner fuels, and repower equipment (i.e. replace older engines with newer, cleaner engines).

- **The Clean Ports USA Program**

(<http://www.epa.gov/otaq/diesel/ports/index.htm>) is an incentive-based program designed to reduce emissions from existing diesel engines and nonroad equipment at ports. It encourages port authorities, fleet owners, drayage truckers, and rail and locomotive owner/operators to voluntarily implement emission reduction strategies.

- **The Clean School Bus USA Program**

(<http://www.epa.gov/otaq/schoolbus/index.htm>) The Program's goals are to reduce children's exposure to diesel exhaust and the amount of air pollution created by diesel school buses. The Program brings together partners from business, education, transportation, and public-health organizations to work toward encouraging policies and practices to eliminate unnecessary public school bus idling, upgrade ("retrofit") buses that will remain in the fleet with better emission-control technologies and/or fueling them with cleaner fuels, and replace the oldest buses in the fleet with new, less-polluting buses.

- **Regional Diesel Collaboratives**

U.S. EPA has partnered with leaders from state and local governments, the private sector, and environmental/health groups across the U.S. to form seven regional diesel collaboratives with the aim of leveraging resources and expertise to reduce diesel emissions from in-use vehicles. These collaboratives keep track of past, current, and upcoming diesel retrofit programs/demonstration projects in their respective regions. Below are links to the seven diesel collaboratives in the U.S.:

- Blue Skyways Collaborative (Central corridor of the Midwest): [www.blueskyways.org](http://www.blueskyways.org)
- Mid-Atlantic Diesel Collaborative: [www.dieselmidatlantic.org](http://www.dieselmidatlantic.org)
- Midwest Clean Diesel Initiative: [www.epa.gov/midwestcleandiesel/](http://www.epa.gov/midwestcleandiesel/)
- Northeast Diesel Collaborative: [www.northeastdiesel.org](http://www.northeastdiesel.org)
- Rocky Mountain Clean Diesel Collaborative: [www.epa.gov/region8/air/rmcdc.html](http://www.epa.gov/region8/air/rmcdc.html)
- Southeast Diesel Collaborative: [www.southeastdiesel.org](http://www.southeastdiesel.org)
- West Coast Diesel Collaborative: [www.westcoastdiesel.org](http://www.westcoastdiesel.org)

**The National Clean Diesel Emissions Reduction Program (DERA)**

(<http://epa.gov/otaq/diesel/grantfund.html>) enables EPA to offer funding assistance for diesel emission reduction projects through the following four components:

- **National Clean Diesel Funding Assistance** program contains the majority of the funding dedicated to deployment of EPA-verified and certified technologies through competitive grants.

- National Clean Diesel **Emerging** Technologies Program fosters the deployment of innovative technologies through a national grant competition. To qualify as an emerging technology, a manufacturer must have an EPA approved application and test plan for verification.
- Smartway Clean Diesel **Finance** Program allows EPA to issue competitive grants to establish national low-cost revolving loans or other financing programs that will provide funding to fleets to reduce diesel emissions.
- **State** clean Diesel Grant Program makes funds directly available to States in establishing new diesel emission reduction programs.

In February of 2009, President Barack Obama signed the American Recovery and Reinvestment Act which provided approximately \$ 300 million in additional funding for DERA. Specific information on DERA funding and projects that have been awarded grants can be found at [www.epa.gov/otaq/diesel/projects.htm](http://www.epa.gov/otaq/diesel/projects.htm)

In July 2005, the U.S. EPA released a report on diesel retrofit technology application and program implementation experience in the U.S. since 2000. The report, *Diesel Retrofit Technology and Program Experience*, identifies over 220 retrofit projects throughout the U.S. The report is designed to serve both as a reference tool on diesel retrofit technologies and programs in the U.S. and to document valuable lessons learned from the projects. This report, as well as other documents on clean diesel programs, technologies, emission reductions strategies, and cost-effectiveness, is available on EPA's website at: [www.epa.gov/cleandiesel/publications.htm](http://www.epa.gov/cleandiesel/publications.htm).

### **Verified Diesel Retrofit Technologies**

Retrofit technologies verified for emission performance and durability by the U.S. EPA and California Air Resources Board (CARB) are listed in the following websites: U.S. EPA-verified retrofit technologies ([www.epa.gov/otaq/retrofit/verif-list.htm](http://www.epa.gov/otaq/retrofit/verif-list.htm)) and CARB-verified retrofit technologies ([www.arb.ca.gov/diesel/verdev/vt/cvt.htm](http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm))

### **EPA/SmartWay<sup>SM</sup>**

([www.epa.gov/smartway](http://www.epa.gov/smartway)) EPA's SmartWay Transport Partnership works with transportation technology and freight industry partners (shippers, carriers, logistics companies) to accelerate the deployment of fuel saving, low emission technologies and operational best practices across the global freight supply chain. The SmartWay program began in February 2004 and now has over 2,500 partners, including many of the world's largest multinational retailers, manufacturers and transportation providers, such as Wal-Mart, Fed-Ex, UPS, Nike, IKEA and others. SmartWay partners in the U.S. commit to logistics efficiency improvements which achieve fuel savings, as well as CO<sub>2</sub>, NO<sub>x</sub>, and PM reductions. Based on data collected, SmartWay Partners reduced over 1 million metric tons of carbon equivalent (MMTCE) emissions for 2009.

SmartWay has established a benchmark for clean, efficient freight goods movement globally. Twelve nations participated in an International SmartWay Summit in 2008. As a result, a SmartWay “Green Truck” project is underway in China, financed by the World Bank. An expanded “Green Freight” project is being planned for the Guangdong province this year.

France and Australia have modeled freight sustainability programs after SmartWay while the European Union and Mexico are evaluating SmartWay as a model for freight transport efficiency programs being developed there. To respond to growing international interest, SmartWay is developing a multi-modal supply chain carbon accounting system which may be used to quantify the carbon inventory of a company’s global freight supply chain.

### **EPA/Green Vehicle Guide**

(<http://www.epa.gov/greenvehicles/Index.do;jsessionid=9df45d640230bc191bd18a56c7e4b9e9a7b14ef28fd20e506c3f7abceb56d717>) web site provides information about the emission levels and fuel economy of cars and light trucks by model year. Based on those characteristics, the guide then rates how “green” each vehicle is both overall and within its class. Future model years will be added to the guide as the data become available. The guide includes an emission rating system, in which one can enter the year, make and model of the vehicle they are considering, along with the state in which the car would be operated. The guide then provides a score based on emissions levels and fuel efficiency.

### **EPA/EcoCAR**

(<http://www.ecocarchallenge.org/>) is a consortium of government, industry and academic leaders that work with students to build the environmental vehicles of the future. EPA’s Office of Transportation and Air Quality will serve as a major sponsor of the EcoCAR NeXt CHALLENGE competition, providing technical advising and mentoring in the areas of greenhouse gas and tailpipe emissions.

### **EPA/Smart Growth Program**

(<http://www.epa.gov/dced/index.htm>) helps communities improve their development practices and get the type of development they want. This program works with local, state, and national experts to discover and encourage successful, environmentally sensitive development strategies. EPA offers many tools and resources to help communities learn about and implement smart growth approaches ([http://www.epa.gov/dced/sg\\_implementation.htm](http://www.epa.gov/dced/sg_implementation.htm)). Policies and regulations vary from community to community and state to state. Many federal policies, particularly those related to the environment, transportation, and housing, affect how communities develop, but the federal government generally does not directly regulate development. The federal government can help states and municipalities better understand the impacts of development patterns, but development decisions are predominately under state and community jurisdiction.

Two publications (*Getting to Smart Growth*, Volume 1 and 2), prepared by the International City/County Management Association (ICMA) and the Smart Growth Network with support from EPA, describe concrete techniques of putting smart growth principles into practice. English and Spanish versions are available ([http://www.epa.gov/dced/getting\\_to\\_sg2.htm](http://www.epa.gov/dced/getting_to_sg2.htm)). Lastly, **The Smart Growth Network** (SGN) (<http://www.smartgrowth.org>) is a partnership of government, business and civic organizations that support smart growth – growth in and around urban areas that takes into account all land uses and

priorities. Since its creation in late 1996, the Network has become a storehouse of knowledge about smart growth principles, facilitating the sharing of best practices and acting as a catalyst for implementation of ideas.

### **Related EPA Funding**

- The State Clean Diesel Grant Program (<http://www.epa.gov/otaq/diesel/prgstate.htm>) allocates funding to states to implements state grant and loan programs
- The SmartWay Innovative Financing Program (<http://www.epa.gov/otaq/smartway/transport/what-smartway/financing.htm>) provides information on state incentive programs and several lenders who offer loans to help finance technologies that improve freight fuel economy.
- EPA's Environmental Financial Tools (<http://www.epa.gov/efinpage/efinfin.htm>) include links to sources of financing such as the Environmental Finance Program (EFP) and EPA Programs and Offices.
- A Guidebook of Financial Tools (<http://www.epa.gov/efinpage/guidebook.htm>) provides an overview and analysis on how to pay for environmental programs.
- Environmental Financial Advisory Board (EFAB) Report on Innovative Finance Programs for Air Pollution Reduction (12 pp, 6K, November 2007) provides recommendations for financing programs that reduce emissions from mobile sources.

## **II.2. Internationally-Focused Agencies and Programs**

### **II.2.A Organisation for Economic Co-operation and Development (OECD) Environmentally Sustainable Transport (EST)**

([http://www.oecd.org/department/0,3355,en\\_2649\\_34363\\_1\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/department/0,3355,en_2649_34363_1_1_1_1_1,00.html)) EST is a new approach to transport policy development using a backcasting methodology. Current work focuses on developing implementation strategies and identifying best practices for EST in OECD regions

### **II.2.B U.S. Environmental Protection Agency**

#### **U.S. EPA Clean Diesel Demonstration Programs**

To demonstrate the benefits of using diesel retrofit technologies and ultra-low sulfur diesel fuel in other countries, the U.S. EPA initiated demonstration projects during 2005 through 2007 in Beijing, China; Bangkok, Thailand; Mexico City, Mexico; Pune, India; and Santiago, Chile. Links to information on these demonstration projects are provided below:

- Beijing, China: [www.epa.gov/OMS/retrofit/china2.htm](http://www.epa.gov/OMS/retrofit/china2.htm)
- Bangkok, Thailand: [www.cleanairnet.org/baq2004/1527/article-59239.html](http://www.cleanairnet.org/baq2004/1527/article-59239.html)
- Mexico City, Mexico: [www.embarq.org/en/project/mexico-city-diesel-retrofit](http://www.embarq.org/en/project/mexico-city-diesel-retrofit)
- Pune, India: [newdelhi.usembassy.gov/pr040506.html](http://newdelhi.usembassy.gov/pr040506.html), <http://urbanairpune.org/clean.html> or <http://epa.gov/international/air/india.htm>

- Santiago, Chile: [http://www.unep.org/pcfv/PDF/TruckFilterProgramme\\_Chile.pdf](http://www.unep.org/pcfv/PDF/TruckFilterProgramme_Chile.pdf)

Additional information on these demonstration programs, as well as other international diesel retrofit projects, is available on EPA's website ([www.epa.gov/international/air/transport.htm#idrp](http://www.epa.gov/international/air/transport.htm#idrp)).

There are several other successful diesel retrofit programs and demonstration projects currently ongoing in other parts of the world as well, including:

#### *Asia*

- Hong Kong: [www.epd.gov.hk/epd/english/environmentinhk/air/prob\\_solutions/cleaning\\_air\\_atroad.html](http://www.epd.gov.hk/epd/english/environmentinhk/air/prob_solutions/cleaning_air_atroad.html)
- South Korea: [eng.me.go.kr/docs/news/press\\_view.html?seq=264](http://eng.me.go.kr/docs/news/press_view.html?seq=264)
- Tokyo, Japan: [www.dieselnet.com/standards/jp/tokyofit.html](http://www.dieselnet.com/standards/jp/tokyofit.html)

#### *Europe*

- London: [www.tfl.gov.uk/roadusers/lez/default.aspx](http://www.tfl.gov.uk/roadusers/lez/default.aspx)
- Sweden: [www.dieselnet.com/standards/se/zones.html](http://www.dieselnet.com/standards/se/zones.html)
- Switzerland: [www.bafu.admin.ch/luft/00596/00597/00609/index.html?lang=en](http://www.bafu.admin.ch/luft/00596/00597/00609/index.html?lang=en)
- (The Association for Emissions Control by Catalyst (AECC) maintains a website that summarizes diesel retrofit programs in Europe: [www.dieselretrofit.eu](http://www.dieselretrofit.eu))

#### *North America*

- British Columbia, Canada: [www.bcairsmart.ca/transportation/heavyduty.html](http://www.bcairsmart.ca/transportation/heavyduty.html)
- Ontario, Canada: [www.ec.gc.ca/cleanair-airpur/CAOL/canus/great\\_lakes/c3\\_e.cfm](http://www.ec.gc.ca/cleanair-airpur/CAOL/canus/great_lakes/c3_e.cfm)

## **Marine Vessels**

### **Reducing Air Pollution from Ocean-Going Vessels Internationally**

Emissions from the transportation sector present significant challenges to the quality of the air we breathe. EPA is working to address air pollution from this sector. Our goals include reducing the emissions of greenhouse gases (GHG), in particular CO<sub>2</sub>, from the transportation sector. We also aim to reduce global anthropogenic NO<sub>x</sub>, SO<sub>x</sub> and particulate matter (PM) emissions, which have health and ecosystem consequences and can be transported large distances from their sources.

The maritime transport industry – which includes ocean-going cargo vessels, coastal vessels, cruise ships, among others -- is responsible for moving the bulk of the world's trade. Seventy-five percent of internationally-traded goods are carried by ocean-going vessels. (The World Shipping Council, [www.worldshipping.org/liner\\_shipping\\_co2emissions\\_policy\\_september.pdf](http://www.worldshipping.org/liner_shipping_co2emissions_policy_september.pdf).)

Shipping via ocean-going vessels is comparatively efficient and low-cost, and many types of cargo simply cannot be transported economically by other transport modes. However, the sheer scale of this global industry, combined with the low quality fuel and relative lack of emissions controls on the diesel engines normally used for maritime shipping, leads to significant emissions. As part of this program, EPA is conducting several activities. For example, in 2009 EPA initiated a fuel switching project involving maritime carriers and several ports in the U.S. and Mexico, to demonstrate air quality improvements possible from this practice.

On July 17, 2009, the joint proposal from the United States and Canada to amend MARPOL Annex VI to designate specific areas of our coastal waters as an Emission Control Area (ECA) was accepted in principle at the International Maritime Organization (IMO). France has joined the ECA proposal on behalf of its island territories of Saint-Pierre and Miquelon, which form an archipelago off the coast of Newfoundland. The proposal (<http://www.epa.gov/oms/oceanvessels.htm#emissioncontrol>) will circulate among member states for six months. In March 2010, member states who are parties to International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI will vote to adopt an amendment designating the North American ECA. Designation of this ECA will deliver substantial public health benefits to many people living in the U.S., Canada and French territories, as well as to marine and terrestrial ecosystems.

### **Partnership for Clean Fuels and Vehicles**

U.S.EPA is a founding and supporting member of the Partnership for Clean Fuels and Vehicles (PCFV), a public-private global initiative of more than 110 countries, hosted by the United Nations Environment Program, to promote cleaner fuels and vehicles in developing and transition countries. PCFV is a key initiative in light of the rapid evolution of transportation demand in developing countries, the exponential increase in personal vehicle ownership and the significant impacts of transportation on urban air quality and greenhouse gas emissions. The PCFV promotes the global elimination of lead in gasoline; the phase down of sulfur in diesel fuel to 50 parts per million (ppm), which in turn enables the adoption of cleaner vehicle standards and technologies. Since 2005, PCFV has assisted 47 countries in gaining access to low sulfur fuels (improving the air for more than 1.1 billion people), and has been instrumental in achieving the phase-out of leaded gasoline in more than 180 countries, affecting more than 6.2 billion people. For more information, see [www.unep.org/pcf](http://www.unep.org/pcf) and [www.epa.gov/international/air/pcf.html](http://www.epa.gov/international/air/pcf.html)

## **III. CHEMICALS OVERVIEW**

The United States is actively engaged in chemicals management, both at the domestic and international levels as the safe and effective management of chemicals helps ensure protection of the environment and public health. Several major regulatory and voluntary initiatives are underway domestically, including our active efforts to evaluate and register new chemicals and pesticides. The United States is also a strong supporter of UNEP's Strategic Approach to International Chemicals Management (SAICM), an international framework to promote the goal that by 2020 chemicals are produced and used in ways that minimize significant adverse impacts on human health and the environment. We look forward to working through the CSD to further enhance the role and efforts of SAICM and to share information on U.S. programs and practices.

### **III.1. DOMESTICALLY-FOCUSED AGENCIES AND PROGRAMS**

[EPA Office of Prevention, Pesticides, and Toxic Substances](#) protects public health and the environment from potential risks of pesticides and toxic chemicals. The EPA's [Office of Pollution Prevention and Toxics \(OPPT\)](#) manages programs to evaluate new and existing chemicals and their [risks](#), takes appropriate action, finds ways to prevent or reduce pollution, and implements stewardship programs to encourage



companies to reduce and prevent pollution. The EPA [Office of Pesticide Programs \(OPP\)](#) registers pesticides for use in the US and establishes maximum residue levels for pesticides on food, coordinates issues ranging from worker protection to prevention of misuse of pesticides, and participates in partnerships, such as the [Pesticide Environmental Stewardship Program](#).

The following description of United States programs is organized by the five objectives of the [Strategic Approach to International Chemicals Management](#) (SAICM): risk reduction, knowledge and information, governance, capacity-building and technical cooperation, and illegal international traffic.

### **III.1.a. Risk reduction:**

#### **Managing and Reducing Risks to Industrial Chemicals**

**Reviewing New Industrial Chemicals.** Through the [New Chemicals Program](#), EPA manages the potential risk from chemicals new to the marketplace by setting conditions, up to and including a ban on production or import, on the manufacture, processing, use and disposal of a new chemical before it enters into commerce or on a “significant new use” of an existing or new chemical. Certain genetically modified microorganisms are also considered “new chemical” under TSCA. Anyone who plans to manufacture or import a new chemical substance for a non exempt commercial purpose is required to provide EPA with notice before initiating the activity. Notice is also required before beginning any activity that EPA has designated as a “significant new use”. These notices must contain information on the specific chemical identity, use, anticipated production volume, exposure and release information, and existing available test data.

**Nanoscale Materials.** EPA has received and reviewed numerous new chemical notices under TSCA for nanoscale materials including carbon nanotubes and fullerenes. Based on case-specific information, EPA has taken steps to control or limit exposures to these nanoscale materials, including: limiting the uses that have potential downstream exposures; requiring the use of personal protective equipment, such as impervious gloves and approved respirators [National Institutes of Occupational Safety and Health of the Centers \(NIOSH\) for Disease Control and Prevention \(CDC\)](#); and limiting environmental releases.

EPA has also required testing to generate health and environmental effects data in a number of cases, and has regulated the manufacture and use of certain new chemical nanoscale materials through administrative orders or Significant New Use Rules under TSCA. EPA has also allowed the manufacture of specific new chemical nanoscale materials under the terms of certain regulatory exemptions, but only in circumstances where exposures were very tightly controlled to protect against unreasonable risks (using, for example, the protective equipment and environmental release limitations discussed above). EPA has initiated rulemaking to require data submission for nanomaterials in current commerce in the US, and testing for several nanomaterials with significant data gaps.

#### **Managing Existing Chemicals**

EPA has announced a comprehensive approach to enhancing the current existing chemicals management program. The enhanced program includes the following activities:

- Initiating regulatory risk management actions on lead, mercury, formaldehyde, polychlorinated biphenyls (PCBs), glymes and nanoscale materials.
  - Developing action plans designed to target EPA risk management efforts on chemicals of concern. These action plans will be based on EPA's review of available hazard, exposure, and use information, and will outline the risks that each chemical may present and specific steps that EPA will take to address those concerns. The initial set of action plans were published on EPA's website for the following chemicals: brominated flame retardants (PBDEs, including penta, octa, and decabromodiphenyl ethers) in products; perfluorinated chemicals; certain phthalates; and short-chain chlorinated paraffins. EPA posted these action plans in December 2009 and will complete and post additional chemical action plans at four-month intervals.
  - Requiring information needed to understand chemical risks by: requiring that companies submit information to fill the remaining gaps in basic health and safety data on high production volume (HPV) chemicals; making the reporting of chemical use information more transparent, more current, more useful, and more useable by the public; and requiring additional reporting and testing of nanoscale chemical substances.
  - Increasing public access to information about chemicals
  - Engaging stakeholders in prioritizing chemicals for future risk management through public notices and public meetings.
- [PFOA Stewardship Program](#). Eight major companies committed voluntarily to reduce facility emissions and product content of perfluorooctanoic acid (PFOA) and related chemicals on a global basis by 95% no later than 2010, and to work toward eliminating emissions and product content of these chemicals by 2015. The voluntary stewardship program has also been complemented by regulatory actions that address significant new uses of perfluoroalkyl sulfonate (PFAS) and perfluorooctyl sulfonate (PFOS) chemicals.
  - [Mercury](#). Issued on July 2006, the [EPA Mercury Roadmap](#) describes progress in addressing mercury issues domestically and internationally, and outlines major ongoing and planned actions. The Roadmap focuses on **six areas**:
    - Addressing mercury releases to the environment
    - Addressing mercury uses in products and industrial processes
    - Managing commodity-grade mercury supplies
    - Communicating risks to the public
    - Addressing international mercury sources
    - Conducting mercury research and monitoring.

EPA intends to initiate rulemaking to phase out or ban the use of mercury in certain products, such as certain switches, relays, measuring devices and other products.

The [Mercury-Containing Products and Alternatives Database](#) compiles information on the manufacturers, sectors of use, product descriptions and quantity of mercury-containing products, as well as alternatives to the mercury-containing products.

- **Reducing Children's [Lead](#) Exposure.** Lead may cause a range of health effects, from behavioral problems and learning disabilities to seizures and death. Children under six years of age are most at risk. The primary sources of lead exposure for most children in the US are deteriorating lead-based paint, lead-contaminated dust, and lead-contaminated residential soil. In order to meet the 2010 United States' government goal of eliminating childhood lead poisoning as a major public health concern, EPA is focusing funding resources on populations that have rates of lead poisoning above the national average and on populations where sufficient screening has not yet occurred to determine rates of lead poisoning. In addition, in March 2008 EPA finalized its [Lead Renovation, Repair, and Painting rule](#) requiring persons engaged in renovation, repair, and painting activities in pre-1978 housing and child-occupied facilities to be trained and certified and to use lead-safe work practices for activities that disturb lead-based paint to reduce potential exposure to dangerous levels of lead. EPA has agreed to propose the strengthening of the lead paint work practice standards for renovation and remodeling to expand coverage, require clearance testing after certain renovation jobs, and address lead safe work practices for public and commercial buildings. In addition, EPA will initiate rulemaking assessing whether to ban or otherwise regulate the use of lead weights in tires.
- **Reducing Exposure to [Asbestos](#).** Asbestos is the common name for a group of naturally occurring mineral fibers with high tensile strength, the ability to be woven, and resistance to heat and most chemicals. Asbestos have been used in a wide range of manufactured goods, including construction materials, and automobile clutches and brakes. If asbestos fibers are released into the air when asbestos is disturbed or in poor condition, it can result in inhalation into the lungs. Asbestos exposure has been associated with a number of serious health problems and diseases, including asbestosis, lung cancer, and mesothelioma.

### **Managing and Reducing Risks to Pesticides**

**[Reviewing New Pesticides.](#)** EPA ensures that pesticides, when used according to label directions, can be used without posing unreasonable risks to the environment. This standard requires that EPA also conclude that human dietary exposures to pesticides are safe. Before selling or distributing a pesticide in the US a [registration](#) must be obtained from EPA. EPA requires more than 100 different scientific studies and tests from applicants. Where pesticides may be used on food or feed crops, EPA also sets tolerances for the amount of the pesticide that can remain in or on foods. EPA gives priority in its registration program to conventional chemical pesticides that meet reduced risk criteria: low-impact on human health, low toxicity to non-target organisms (birds, fish, and plants), low potential for groundwater contamination, lower use rates, low pest resistance potential, and compatibility with Integrated Pest Management. For [antimicrobial pesticides](#) that make public health claims and all other pesticides that

make public health claims, EPA requires special tests to ensure their efficacy to control disease-causing microbes. EPA also regulates [biopesticides](#), which are naturally occurring substances that control pests (biochemical pesticides), microorganisms that control pests (microbial pesticides), and pesticide substances produced by plants containing added genetic material (plant-incorporated protectants).

**[Reassessment and Risk Management of Currently Registered Pesticides](#)**. Under the Reregistration Program EPA reviews pesticides initially registered before November 1984 to ensure that they meet current scientific and regulatory standards. A website listing the [status of each pesticide in the Reregistration Program](#) includes decision documents, fact sheets and related documents. The Reregistration Program is nearing completion and EPA is now in the process of implementing the new Registration Review Program, which is designed to provide for the continual reevaluation of existing pesticides. Through [Registration Review](#) EPA reviews each registered pesticide every 15 years to make sure that as the ability to assess risks evolves and as policies and practices change, all pesticide products in the marketplace can still be used safely.

EPA is reviewing the safety of all existing [tolerances](#) (maximum limits for pesticide residues in food) and tolerance exemptions to ensure that they meet the more stringent safety standards. In 2007, EPA completed 9,721 tolerance reassessment decisions. In addition, EPA reviews the [labels of pesticide products](#) to ensure that it includes appropriate information about the proper handling and use of the product. EPA also ensures that the directions for use and the use restrictions on the label reflect EPA's conclusions of the supporting science and risk assessments for the pesticide. Also, EPA regulates [storage and disposal of pesticides](#) and their containers, and provides guidance to household consumers, farmers, registrants, retailers, and commercial applicators.

EPA places particular [emphasis on children](#) in making regulatory decisions about pesticides. Risk assessments include evaluations for children in various age groups, since children's eating and activity patterns change as they grow up.

#### **Pesticide Field Programs:**

- [Pesticide Environmental Stewardship Program](#) is a voluntary program that forms partnerships with pesticide users to reduce potential risks and implement pollution prevention strategies.
- [School Integrated Pest Management \(IPM\)](#) reduces pesticide risk and exposure to children by using common sense strategies to reduce sources of food, water and shelter for pests in school facilities.
- [Worker Protection Standards \(WPS\)](#) are designed to protect employees on farms, forests, nurseries, and greenhouses from occupational exposures to agricultural pesticides.
- [Certification and Training of Pesticide Applicators](#). Employers are responsible for training workers and handlers in the safe use of pesticides, ensuring that their employees understand the basic concepts of pesticide safety.
- [National Strategies for Health Care Providers Pesticide Initiative](#) is aimed at improving the training of health care providers in the recognition, diagnosis, treatment, and prevention of pesticide

poisonings among those who work with pesticides. The latest edition of EPA's handbook [Recognition and Management of Pesticide Poisonings](#) is available in English and Spanish.

### **Working to Prevent Pollution**

Pollution prevention (P2) reduces or eliminates waste at the source by modifying production processes, promoting the use of non-toxic or less-toxic substances, implementing conservation techniques, and re-using materials rather than putting them into the waste stream. For related and more activities in this area and with respect to relevant chemicals-related sector and supply-chain activities, see also the US submission to the chapters on Sustainable Production and Consumption (SPC) and Waste.

### **Chemical Risk Reduction through Pollution Prevention**

- [Sustainable Futures](#) is a partnership among EPA, the chemical industry, and other stakeholders, which offers models for quickly and cost effectively screening chemicals for hazards and/or risks early in the development process. Participation in the program can allow companies to more quickly commercialize environmentally preferable new chemicals and identify safer alternatives for existing chemicals. Participants in the [training sessions](#) also included government scientists from Australia, Europe (Poland, Germany, Slovakia, and the Netherlands) and Japan, and scientists from several consulting firms.
- [Design for the Environment \(DfE\) Program](#) works in partnership with a broad range of stakeholders focusing on industries that combine the potential for chemical risk reduction and improvements in energy efficiency with a strong motivation to make lasting, positive changes. Of note is the [Furniture Flame Retardancy Partnership](#), which fosters informed substitution by providing objective information about hazards associated with flame retardant chemicals, allowing furniture manufacturers to select safer substitutes for flame retardants.
- [Green Chemistry Program](#) promotes environmentally conscious design of chemical products and processes. It includes the annual Presidential Green Chemistry Challenge Awards, which recognizes the significant scientific, economic, human health, and environmental benefits that green chemistry technologies offer.
- [Green Engineering Program](#) is defined as the design, commercialization and use of processes and products that are feasible and economical while minimizing risks and the generation of pollution at the source. The goal of the program is to incorporate risk related concepts into chemical processes and products designed by academia and industry.
- [Chemical Management Services \(CMS\)](#) is a business model in which a customer purchases chemical services rather than just chemicals; and the service provider is compensated based on the quality and quantity of services provided to reduce chemical lifecycle costs, risks, and environmental impacts, not on the volume of chemical sold. Therefore the service provider and their customer achieve bottom line benefits through reduced chemical use, cost, and waste.

### **Sector-Focused Pollution Prevention Programs**

- **Sector Strategies Program** develops comprehensive strategies to improve environmental protection, energy efficiency, and resource management in major US manufacturing and business sectors. The [2008 Sector Performance Report](#) presents current data on the chemical manufacturing sector.
- **Green Building** is the practice of creating healthier and more resource efficient models of construction, renovation, operation, maintenance, and demolition of buildings. The many elements of green building include: energy, water, materials, waste and indoor environment. [EPA is also making its own buildings greener.](#)
- **Environmentally Sound Electronics Design and Lifecycle Management:**
  - [Electronic Product Environmental Assessment Tool \(EPEAT\)](#) helps purchasers buy environmentally preferable electronics by providing a list of registered products, participating manufacturers and guidance. [EPEAT](#) registered products meet an environmental performance standard for electronic products – IEEE 1680-2006. EPEAT products (computer desktops, laptops, and monitors) contain less toxic and hazardous substances, are easier to recycle, and are more energy efficient than conventional products serving the same purpose.
  - [Federal Electronics Challenge \(FEC\)](#) empowers the government agencies to manage their electronics in an environmentally sound manner during all three life-cycle phases - acquisition and procurement, operation and maintenance, and end-of-life management.
  - [Cathode Ray Tube \(CRT\) Rule:](#) In July 2006, the US streamlined the hazardous waste management requirements for CRTs and CRT glass destined for recycling to eliminate confusion about proper way to recycle or dispose this material, encouraging increased reuse and recycling of CRTs.
  - **Plug-In to eCycling Program** is a partnership between EPA and consumer electronics manufacturers, retailers, and service providers that offers opportunities to donate or recycle used electronics. The [Guidelines for Materials Management](#) ensures environmentally safe recycling of old electronics, and aims to promote and maintain adequate markets for the reuse and recycling of electronic equipment.

### **Community-Focused Programs**

- [Community Action for a Renewed Environment \(CARE\)](#) is a competitive grant program that allows a community to create a partnership to implement solutions to reduce releases of toxic pollutants and minimize people's exposure in their local environment.
- **III.1.b. Knowledge and Information:**

#### **Information Collection and Access**

- The [High Production Volume \(HPV\) Challenge Program](#) “challenges” companies to make health

and environmental effects data publicly available on chemicals produced or imported in the US in quantities of 1 million pounds or more per year. Under the program, companies have sponsored more than 2,250 HPV chemicals, including 860 chemicals sponsored through international efforts. This represents 93% of the total volume of chemicals in commerce in the US. The [High Production Volume Information System \(HPVIS\)](#) is a database that provides access to information on HPV chemicals. Currently, HPVIS contains information on 1,102 chemical substances, either as a single chemical or as a member of a chemical category.

- [Chemical Substance Inventory Update Reporting \(IUR\)](#). Since 1986, companies that manufacture or import chemicals may be required to periodically report information, such as the identity of the chemical, the amounts manufactured or processed, and certain details about their manufacture. This information is used to identify potential use and exposure scenarios. The 2006 data collected consisted of updated information for approximately 7,500 chemicals. For the first time, this information included: manufacturing information for inorganic chemicals; enhanced manufacturing information for organic chemicals (e.g., the physical form of the chemical and the number of potentially exposed workers); and additional screening-level exposure-related processing and use information for organic chemicals produced at 300,000 pounds or greater at a single site.
- [Nanoscale Materials Stewardship Program \(NMSP\)](#) was launched in January 2008 to help provide a firmer scientific foundation for regulatory decisions by encouraging submission and development of information, including risk management practices, for nanoscale materials. The NMSP contains a basic and an in-depth program. EPA released its [interim report on the NMSP in January 2009](#), solicited comments on the interim report and expects to issue a final report and program evaluation in early 2010.
- [ACToR \(Aggregated Computational Toxicology Resource\)](#) is a collection of more than 200 sources of publicly available data that are searchable by chemical name and by chemical structure. Data includes chemical structure, physico-chemical values, in vitro assay data and in vivo toxicology data. Chemicals include, but are not limited to, high and medium production volume industrial chemicals, pesticides (active and inert ingredients), and potential ground and drinking water contaminants. ACToR also contains the data being produced by the [ToxCast™](#) chemical screening prioritization program. The majority of chemicals in ACToR have chemical structures, which will facilitate studies of structure-function relationships.
- [Envirofacts](#) is a single point of access to EPA environmental data with information about environmental activities that may affect air, water, and land anywhere in the US.
- [Toxics Release Inventory \(TRI\) is the US pollutant release and transfer registry or PRTR](#). US EPA's TRI database is publicly available and contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. The Program is also working to ensure that the TRI data and information are useful and meaningful to the public and a variety of stakeholders both inside and outside the Agency.

- [EPA Air Toxics Web Site](#) provides information on the air toxic management program, including rules and implementation, air toxics assessment, urban and regional programs, education and outreach.
- [Clearinghouse for Inventory and Emissions Factors](#) includes information on EPA's emission inventories, emission factors, emissions modeling, and the emissions monitoring knowledge database.
- The [Toxicology and Environmental Health Information Program \(TEHIP\)](#) evolved from the Toxicology Information Program (TIP) that was established in 1967 at the National Library of Medicine (NLM) in response to recommendations made in the 1966 report "Handling of Toxicological Information," prepared by the President's Science Advisory Committee. The TIP objectives were to: (1) create automated toxicology data banks, and (2) provide toxicology information and data services. In the mid-1990's, the mission of TIP was expanded to include environmental health. TEHIP, by creating, organizing, and disseminating toxicology and environmental health information, now serves as a premier information portal for resources in these subject areas.

TEHIP maintains a comprehensive toxicology and environmental health website that includes access to resources produced by TEHIP and by other government agencies and organizations. This website includes links to databases, bibliographies, tutorials, and other scientific and consumer-oriented resources. TEHIP also is responsible for the Toxicology Data Network (TOXNET®), an integrated system of toxicology and environmental health databases that are available free of charge on the web.

- [Materials and Waste Exchanges](#) are markets for buying and selling reusable and recyclable commodities, diverting materials out of landfills. Some exchanges are coordinated by state and local governments; others are wholly private, for-profit businesses. In general, waste exchanges tend to handle hazardous materials and industrial process waste, while materials exchanges handle non-hazardous items.

### **Tools and Methods for Analyzing Chemical Properties and Exposure**

- Launched in 2007, [ToxCast™](#) develops a cost-effective approach for prioritizing the toxicity testing of large numbers of chemicals in a short period of time. Using data from state-of-the-art high throughput screening (HTS) bioassays developed in the pharmaceutical industry, ToxCast™ is building computational models to forecast the potential human toxicity of chemicals. These hazard predictions will provide EPA with science-based information to prioritize chemicals for more detailed toxicological evaluations, and lead to more efficient use of animal testing.
- **Structure Activity Relationships (SAR)** is a technique routinely used by EPA to estimate physical, chemical and toxicological properties of chemicals being reviewed based on the relationship between the structure of a molecule and its ability to affect a biological system.
  - [The EPI \(Estimation Program Interface\) Suite™](#) is a suite of physical/chemical property and environmental fate estimation models.



- [ECOSAR \(Ecological Structure Activity Relationships\)](#) is used to predict the toxicity of industrial chemicals to aquatic organisms such as fish, invertebrates, and algae. The program estimates a chemical's acute (short-term) toxicity and, when available, chronic (long-term) toxicity.
- [Distributed Structure-Searchable Toxicity \(DSSTox\) Database Network](#) provides a public website for searching standardized chemical structure files associated with toxicity data. The structure browser delivers a simple, easy-to-use structure-searching which allows for improved structure-activity and predictive toxicology capabilities.
- [Risk-Screening Environmental Indicators \(RSEI\)](#) is a screening tool that analyzes risk factors to put [Toxics Release Inventory \(TRI\)](#) release data into a chronic health context. RSEI is often used by government regulators, communities, journalists, industry and others to examine trends, identify important emissions situations for follow-up, support community-based projects and initially screen potential impacts of emissions.
- The tools found on EPA's [Fate, Exposure, and Risk Analysis](#) website are useful for evaluating the health risks and environmental effects of toxic air pollutants. Information is provided on EPA's Total Risk Integrated Methodology model, multimedia fate and transport modeling, human exposure modeling, and risk assessment methodologies.
- [Support Center for Regulatory Atmospheric Modeling](#) contains information on models and other techniques used to assess air quality and emission control strategies and to support regulatory decisions.
- EPA conducts [economic analyses](#) as part of its decision making process, such as strategic planning or priority setting, development of voluntary actions and regulations, and the measurement of results. Economic analyses include market studies, financial feasibility studies, and industry sector studies. More detailed economic analyses or [regulatory impact analyses](#) (RIAs) incorporate risk findings with valuation to assess benefits of regulatory actions being considered and compare these benefits to estimated costs.
- **Priority-Setting Scoring Tools** are designed to quickly prioritize concerns and are especially useful when trying to evaluate large numbers of chemicals. These tools include:
  - [PBT Profiler](#) predicts a chemical's potential to persist in the environment, bio-concentrate in animals, and be toxic, based on a chemical's structure. The PBT Profiler can also tell the user if the chemical belongs to a category that is known to present human health concerns as described in [EPA's Chemicals Category Report](#). The PBT Profiler was developed by EPA through a collaborative effort with the chemical industry and Environmental Defense to identify pollution prevention opportunities for chemicals without experimental data.
  - [Use Clusters Scoring System \(UCSS\)](#) screens clusters of chemicals that are used to perform a particular task; and provides an initial ranking of chemicals using human and environmental hazard and exposure data.

## **Pesticides Knowledge & Information**

- [Online Registration Kit](#) contains pertinent forms and information needed to register a pesticide product with EPA.
- The [Pesticide Product Label System](#) is a collection of images of pesticide labels which have been approved by EPA.
- **Pesticides publications.** EPA posts an alphabetical listing of the status of each pesticide in the [registration](#) and [reregistration](#) review processes. Also, EPA posts a collection [fact sheets](#) on health and safety, regulatory action, and specific pesticides. In addition, EPA provides printed information on pesticides through the [National Service Center for Environmental Publications](#).
- The [National Agriculture Center](#) provides information on how to comply with US pesticides laws.
- The [National Pesticide Information Center](#) provides objective, science-based information about pesticides to enable people to make informed decisions about pesticides and their use.
- Pesticide product registrants are required to [submit adverse effects information](#) about their products to the EPA.
- **Pesticide-Related Harmonized Test Guidelines.** US EPA recommends the pesticide registrant provide data from tests conducted according to [Harmonized Test Guidelines](#), to minimize variations among the testing procedures that must be performed. EPA publishes many [pesticide analytical methods and procedures](#), including residue analytical methods for food, feed, and animal commodities; [Standard Operating Procedures for antimicrobial testing methods](#); and [environmental chemistry methods](#) for soil and water are used to determine the fate of pesticides in the environment.

## **Risk Assessment Tools**

- [Risk Assessments](#) and [Integrated Risk Information System \(IRIS\)](#). EPA provides information on risk assessments, including tools, guidance and guidelines. IRIS is a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects.
- [Screening Level Risk Assessment Tools](#) are often used in the absence of appropriate monitoring data or to compliment exposure related data. These tools have the following characteristics: require minimal data entry, quickly screen exposure concerns, and create conservative estimates of exposure. Screening Level Tools include:
  - [Chemical Screening Tool for Exposures and Environmental Releases \(ChemSTEER\)](#) estimates occupational inhalation and dermal exposure to a chemical, as well as releases to air, water and land, during industrial and commercial manufacturing, processing, and use of the chemical.
  - [Exposure, Fate Assessment Screening Tool \(E-FAST\)](#) estimates the concentrations of chemicals released to air, surface water, landfills, and from consumer products.

- [Pesticide Inert Risk Assessment Tool \(PIRAT\)](#) estimates exposure and risk to pesticide inert ingredients that are used in a residential setting. This includes assessing both indoor and outdoor residential uses of pesticides. PIRAT will assess acute and chronic risks and will be able to assess adults and children separately.
- **High Tiered Risk Assessment Tools** can be tailored to the specific exposures and the specific environment in which exposures occur. These tools are used in detailed risk assessments and, when used appropriately, these can provide comprehensive exposure estimates with a greater level of accuracy. Higher tier tools have the following characteristics: provide detailed exposure assessment, require detailed data sources, and need to be used by knowledgeable scientists.
  - [Multi-Chamber Concentration and Exposure Model, \(MCCEM\) version 1.2](#) estimates average and peak indoor air concentrations of chemicals released from products or materials in houses, apartments, townhouses, or other residences; and inhalation exposures to these chemicals, calculated as single day doses, chronic average daily doses, or lifetime average daily doses.
  - [Wall Paint Exposure Assessment Model \(WPEM\)](#) estimates the potential exposure of consumers and workers to the chemicals emitted from wall paint which is applied using a roller or a brush.
  - [Swimmer Exposure Assessment Model \(SWIMODEL\)](#) estimates the human exposure doses to the pesticides and toxic pollutants in swimming pools for competitive and noncompetitive (recreational-type) swimmers.
- **Pesticides Exposure Databases and Models** define the intensity, frequency, and duration of a chemical's exposure within a given context, based on the use or release of the chemical and the activity patterns of those (human or ecological systems) exposed. Exposure databases provide data regarding chemical use, physiological or ecological data and descriptors typically required in exposure modeling (Pittinger 2003).
  - [Residential Exposure Standard Operating Procedures \(SOPs\)](#) are designed to provide standard default methods for developing residential exposure assessments for both handler and post application exposures when chemical - and/or site-specific field data are limited.
- **Endocrine Disruptor Screening Program.** EPA is validating methods or assays to identify and characterize the endocrine activity of pesticides, commercial chemicals, and environmental contaminants, specifically in relation to estrogen, androgen, and thyroid hormones. The validation framework includes reduction of animal use, refine procedures involving animals to make them less stressful, and replace animals where scientifically appropriate.

### **Pollution Prevention Technical Assistance & Information Sharing**

- [Pollution Prevention Resource Exchange \(P2Rx\)](#) is a consortium of eight regional centers that offer a range of services for business, government and technical assistance providers including information for specific industry sectors, training, library resources, referrals and research. The centers collect,

synthesize, and update technical information; and provide contact information for experts and other sources. The Pollution Prevention Information Clearinghouse (PPIC) is a free information service of the U.S. EPA dedicated to reducing and eliminating industrial pollutants through technology transfer, source reduction, education and public awareness.

- [Compliance Assistance Centers](#) help businesses, local governments, and federal facilities to understand and comply with environmental requirements and save money through pollution prevention. The centers offer easy access to plain-language materials and other resources through: web sites targeted to industry sectors, virtual plant tours, telephone assistance, “ask the expert,” email discussion groups, State Resource Locators that offer a wide range of topics on environmental compliance information. The centers are sponsored by EPA in partnership with industry, academic institutions, environmental groups, and other government agencies.
- **EPA Office of Pollution Prevention and Toxics Tribal Program** works in partnership with tribal governments to safeguard and protect the environment from toxic hazards and to promote pollution prevention in Indian country. The [OPPTS Tribal newsletter](#) features a wide variety of environmental information, perspectives, and issues that affect American Indian Tribes.

### **III.1.c. Governance:**

#### **Selection of Relevant United States Laws**

- The [Toxic Substances Control Act \(TSCA\)](#) provides authorities to require the development and submission of data relating to the health and environmental effects of commercial and industrial chemicals, and to regulate such chemicals when they present an unreasonable risk to human health and the environment. Under TSCA, EPA has established reporting, record-keeping, testing, and control-related requirements for new and existing chemicals.
- The [Federal Insecticide, Fungicide, and Rodenticide Act \(FIFRA\)](#) regulates the sale, distribution and use of pesticides in the US. FIFRA authorizes EPA to review and register pesticides for specified uses, and to suspend or cancel the registration of a pesticide if subsequent information shows that continued use would pose unreasonable risks.
- The [Federal Food, Drug, and Cosmetic Act \(FFDCA\)](#) authorizes EPA to set maximum residue levels, or tolerances, for pesticides used in or on foods or animal feed.
- The [Food Quality Protection Act of 1996 \(FQPA\)](#) amended FIFRA and FFDCA setting tougher safety standards for new and old pesticides, and to make uniform requirements regarding processed and unprocessed foods.
- The [Resource Conservation and Recovery Act \(RCRA\)](#) gives EPA the authority to control hazardous waste from the “cradle-to-grave:” generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also provides a framework for the management of non-hazardous solid

wastes. RCRA address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

- The [Comprehensive Environmental Response, Compensation, and Liability Act \(CERCLA\) or Superfund](#) provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants into the environment. Through CERCLA, EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup.
- The [Emergency Planning & Community Right-to-Know Act \(EPCRA\)](#), also known as Title III of the Superfund Amendments and Reauthorization Act (SARA), is designed to help local communities protect public health, safety, and the environment from chemical hazards.
- The [Pollution Prevention Act \(PPA\)](#) established pollution prevention as the national policy for controlling pollution at its source. EPA works to reduce pollution before it occurs by supporting innovative changes in the production and use of raw materials.
- The [National Environmental Policy Act \(NEPA\)](#) policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.
- The [Clean Air Act](#) is the law that defines EPA's responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer. The last major change in the law, the Clean Air Act Amendments of 1990, was enacted by Congress in 1990. Legislation passed since then has made several minor changes.
- The objective of the **Federal Water Pollution Control Act**, commonly referred to as the [Clean Water Act \(CWA\)](#), is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands.
- The [Safe Drinking Water Act \(SDWA\)](#) is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

[Public Involvement Tools and Resources](#). Public involvement encompasses the full range of activities used to engage the public in the decision-making processes. Public involvement is a progression that starts with outreach to build awareness and interest. It evolves to information exchange, through collaboration and recommendation to agreement and decision-making.

#### **III.1.d. Capacity-Building and Technical Cooperation:**

United States government activities on capacity-building and technical cooperation are described under section III.2. Internationally-Focused Agencies and Programs.

### **III.1.e. Illegal International Traffic:**

**Importing and Exporting Industrial Chemicals.** The US government can refuse entry into the US of a shipment of any chemical substance or mixture that fails to comply with the requirements under the Toxic Substances Control Act (TSCA). TSCA also requires a person who exports or intends to export a chemical substance or mixture that is subject to certain TSCA regulatory actions to notify EPA of the export. For most enforcement cases under TSCA, the Agency pursues an administrative civil penalty action in order to expeditiously receive a monetary penalty and remedy the violation.

**Importing and Exporting Pesticide Products.** With limited exceptions, pesticides which are sold or distributed in the US must first be registered with EPA. All registered pesticides sold or distributed within the US for export to other countries must bear the product label approved by EPA. Pesticides that are not registered for use in the US may be manufactured in the US and exported subject to certain conditions. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires that exporters of unregistered pesticides first obtain a statement signed by the foreign purchaser indicating the purchaser's awareness of the unregistered status of such pesticide in the US. The requirement is shipment-specific for a particular exporter, product and purchaser. To ensure that government officials in the receiving country are informed of the shipment, EPA transmits a copy of the statement to the Designated National Authority (DNA) under the UN program on Prior Informed Consent. This process is useful in tracking unused or abandoned pesticides in developing countries, particularly DDT in Africa.

## **III.2. INTERNATIONALLY-FOCUSED AGENCIES AND PROGRAMS**

The use and release of certain chemicals can be of serious concern if they have significant impacts on human health or the environment. Some chemicals and pollutants can cross national and international boundaries and move long distances through air and water. Because of this, [negotiation and implementation of international agreements and collaborative activities](#) are essential to ensuring environmental protection in the United States as well as our partners throughout the world—particularly the developing nations who have weak protocols and tracking mechanisms.

### **III.2.a. Risk reduction:**

The United States participates in the [Strategic Approach to International Chemicals Management](#) (SAICM), a voluntary initiative to help countries and participants manage chemicals foster the sound management of chemicals. SAICM works toward the goal that by 2020 chemicals are produced and used in ways that minimize significant adverse impacts on human health and the environment. The United States has provided support to the overall implementation of SAICM, including the first regional meeting of the Group of Latin American and the Caribbean, as well as financial and technical support to projects under the Quick Start Program. The US has also contributed to international cooperation on several [emerging policy issues](#) within [SAICM](#).

The United States engages [international partners](#), multilaterally and bilaterally, to address key [mercury](#) issues including data collection and inventory development, source characterization, and best practices for emissions and use reduction. As called for by UNEP Governing Council Decision 23/9 IV of February

2005, the US has been a catalyst in the development of the UNEP [Global Mercury Partnerships](#) designed to achieve reductions in use and emissions of mercury globally. The United States strongly supports the negotiation under the UN Environment Program of a new, legally binding instrument to reduce mercury releases into the environment.

**Ozone-Depleting Substances (ODS).** In 1985 the Vienna Convention established a mechanism for international co-operation in research into the ozone layer and the effects of ozone depleting substances. That year also marked the first discovery of the Antarctic ozone hole. On the basis of the Vienna Convention, in 1987 the [Montreal Protocol on Substances that Deplete the Ozone Layer](#) was finalized and calls for the 191 Parties to phase out the use of man-made ozone depleting substances.

[Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal](#) controls the international trade in hazardous wastes through a "notice and consent" regime for the export of hazardous waste to importing countries. The United States signed the Basel Convention in 1990 and in 1992 the United States Senate provided its advice and consent; however, before the United States can ratify the Convention, there is the need for additional legislation to implement its requirements.

The [Rotterdam Convention on the Prior Informed Consent \(PIC\) Procedure for Hazardous Chemicals and Pesticides](#) provides governments with the advance information they need to assess the risk of importing certain chemicals and pesticides. The United States signed the PIC Convention in 1998, but has not yet become a Party.

The [Stockholm Convention on Persistent Organic Pollutants](#) aims to protect human health and the environment from chemicals that are toxic, have the potential to accumulate in unhealthy quantities in humans and animals, are stable and thus resistant to natural breakdown, and can be transported over long distances. The Convention creates a science-based procedure to add new chemicals beyond the initial twelve covered by the convention. The Convention entered into force on May 2004. The US signed the Stockholm Convention in 2001, but it has not yet become a Party.

The United States also participates in the [Partnership for Clean Fuels and Vehicles](#), which has successfully eliminated lead from gasoline in most countries and is working to reduce sulfur and other emissions, and the [Partnership for Clean Indoor Air](#) which reduces health risks from indoor burning of coal and other fuels which emit air toxics as well as criteria pollutants.

The [Convention on Long-Range Transboundary Air Pollution \(LRTAP\)](#), signed in Geneva in 1979 to address transboundary acid deposition in Europe. In the intervening years, Protocols have been added to cover a broad range of pollutants. The Parties to the convention include countries from western and Eastern Europe, Canada and the US. Of the eight protocols to the Convention, the US primarily focuses on:

- The 1998 Protocol on Heavy Metals, the US is a Party to the protocol
- The 1998 [Protocol on Persistent Organic Pollutants](#) (POPs) entered into force on October 2003 to reduce use and release of 16 POPs, the US is not a Party to the protocol

- The 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, the US is a Party to the protocol

The [Great Lakes Binational Toxics Strategy \(GLBTS\)](#). Since 1997, Environment Canada (EC) and EPA, along with stakeholders from industry, academia, state/provincial and local governments, Tribes, First Nations, and environmental and community groups have worked together toward the goal of virtually eliminating persistent toxic substances, such as mercury, PCBs and dioxin from discharging into the Great Lakes environment. The GLBTS also tracks trends of these substances in gull eggs and fish as well as open water, air and sediment. New challenges are presented by emerging substances of concern, such as flame retardants. Voluntary projects of the GLBTS include the burn barrel outreach campaign and the wood stove exchange campaign.

[US Canada Air Quality Agreement](#) is a 15 year old bilateral agreement addressing transboundary air pollution originally focused on the problem of acid rain.

The [Arctic Contaminants Action Program \(ACAP\)](#) is a working group of the [Arctic Council](#), and encourages national actions by Arctic governments to reduce emissions of pollutants. It includes initiatives to manage local sources of contamination, such as the Indigenous Peoples Community Action Initiative implemented by the Russian association of Indigenous Peoples of the North.

### **III.2.b. Knowledge and Information:**

[Globally Harmonized System \(GHS\)](#) for the Classification and Labeling of Chemicals provides comprehensive standardized system for internationally-recognizable chemical hazard communication.

EPA worked with UNEP to develop the [Chemical Information Exchange Network \(CIEN\)](#), which improves access to chemicals management information by developing an in-country network of government officials and stakeholders, providing Internet connectivity where needed, and providing training on accessing chemicals management information and developing country-specific web resources.

USAID has developed **Comparative Risk Assessments (CRA)** to help ascertain which chemical pollutant is projected to cause the most mortality and morbidity and thence offer a roadmap for a developing country or region to address potential chemical abuses. CRA was conducted in Bangkok; Cairo; Lima, Peru; Caspian Sea; and others. These proved useful in targeting Aid monies to the right cleanup and coordinating other donors as well. In Egypt USAID targeted on removal of lead from the atmosphere including removing lead from gasoline and cleaning a lead smelter in Cairo.

**Materials and Waste Exchanges.** USAID's Ecoasia program has the objective of reducing chemical pollutants and promoting best practices. It aims to build upon existing standards and efforts in the region to harmonize test procedures and specifications for CFLs and improve the quality of CFLs being produced and sold in Asian countries. This includes a project to Test and benchmark the quality of CFLs in the region; develop harmonized minimum test procedure for CFLs; develop common "tiers" for rating CFL performance and quality; and support schemes for compliance and enforcement of the testing and standards programs.



Other ECO-Asia activities that affect chemicals include:

#### **USAID ECO-Asia Reports**

[Innovative Approaches to Financing Energy Efficiency in Asia](#) (August 2009)

[Biofuels in Asia: An Analysis of Sustainability Options](#) (March 2009)

[Policy Brief: Biofuels in Asia: An Analysis of Sustainability Options](#) (March 2009)

[Phasing in Quality: Harmonizing CFLs to Help Asia Address Climate Change](#) (March 2009)

[Financing Energy Efficiency in India](#) (November 2008)

[Confidence in Quality: Harmonization of CFLs to Help Asia Address Climate Change](#) (October 2007)

[Designing a Cleaner Future for Coal: Solutions for Asia that Address Climate Change](#) (October 2007)

[From Ideas to Action: Clean Energy Solutions for Asia to Address Climate Change](#) (March 2007)

More information about USAID/RDMA's regional clean energy activities is available at <http://usaid.eco-asia.org/programs/cdcp/index.html>. USAID is also currently addressing the Agent Orange cleanup in Vietnam at Danang Base.

#### **Organization for Economic Cooperation and Development (OECD) Information tools:**

- [OECD High Production Volume \(HPV\) Chemicals Program](#) is a voluntary program in which each participating country's government works with industry to obtain screening-level toxicity data and other basic information on HPV chemicals. Each country prepares assessments of these data for presentation at biannual meetings. Under this program, EPA has committed to review approximately 500 chemicals between 2005 and 2010.
- The US supports the development of the [OECD eChemPortal](#), which provides public access to information on properties and effects of chemicals prepared by international, national and regional chemical review programs. The eChemPortal currently provides searching capabilities by chemical substances and, in phase two, will provide searching by chemical properties. The eChemPortal provides access to databases from the US, European Chemical Substances systems, Japan, Finland, Australia and New Zealand.
- The [OECD Clearing House on New Chemicals](#) has been working on the development of a software tool to assist in the generation of forms needed for notification of new chemical substances in OECD member and non-member countries. This tool is intended to consist of a database that will sit behind a company firewall, to capture the information needed for preparation of dossiers. The Clearing House is also further developing the "parallel" review process (whereby a company would submit the same notification package to two or more countries and the countries would agree to a

common hazard assessment for the substance), new chemicals working definitions, exemptions and reduced notification approaches by OECD countries.

- The [OECD Test Guidelines Program](#) develops protocols for studies to assess physicochemical properties, environmental fate, ecotoxicity, and health effects endpoints. A foundation of the OECD chemicals program is the Mutual Acceptance of Data (MAD) agreement among OECD countries to accept for review studies generated in accordance with OECD Test Guidelines and Principles of Good Laboratory Practice regardless of where the study was performed.
- The primary objective of the [OECD Principles of Good Laboratory Practice \(GLP\)](#) is to ensure the generation of high quality and reliable test data related to the safety of industrial chemical substances and preparations in the framework of harmonizing testing procedures for the Mutual Acceptance of Data (MAD).
- [OECD Working Party on Manufactured Nanomaterials \(WPMN\)](#) is engaged in a variety of projects to further the understanding of the properties and potential risks of nanomaterials, such as development of a Database on Environmental Health and Safety (EHS) Research, test guidelines, cooperation on voluntary and regulatory programs, and cooperation on risk assessments. The WPMN has identified a representative list of manufactured nanoscale materials for environmental health and safety testing, and has also published a list of testing endpoints. In addition, the WPMN has launched a Sponsorship Program for Testing Manufactured Nanomaterials, for which the OECD will act as a clearinghouse and will prepare a guidance manual. EPA is sponsoring fullerenes, single walled carbon nanotubes, multiwalled carbon nanotubes, silver and cerium oxide, and is co-sponsoring titanium dioxide, zinc oxide and dendrimers. The US chaired the WPMN from 2006-2009.

#### **Pollutant Release and Transfer Registries (PRTRs):**

- [OECD PRTRs](#). OECD produces documents describing the experiences of countries that have developed PRTRs; current and emerging uses of PRTR data; how PRTRs differ; and the identification, selection, and adaptation of release estimation techniques that industry can use to calculate PRTRs. The OECD coordinates PRTR activities to enable member countries to improve information about implementation of PRTRs.
- [North American Commission for Environmental Cooperation \(CEC\)](#) annually publishes the *Taking Stock: North American Pollutant Releases and Transfers* report, which is a consolidation of certain PRTR data from the Canadian National Pollutant Release Inventory, the US Toxics Release Inventory, and Mexico's Registro de Emisiones y Transferencia de Contaminantes. Only those data common to all three PRTR systems are used. There are only about nine industrial sectors and 60 chemicals that are commonly reported to each of these PRTRs.
- The US works with [UNITAR](#) and [Central American Commission for Environment and Development \(CCAD\)](#) to facilitate development of PRTRs in two countries in Central America, and the development of a PRTR in Chile, through funding related to US trade agreements with those countries.

### **III.2.c. Governance:**

EPA works with a number of countries to improve environmental governance through training and capacity building. In the context of bilateral programs, EPA conducts training, development and implementation of environmental laws, environmental inspections, environmental impact assessment, enforcement and compliance, and resolving environmental disputes. In addition, EPA has provided tailored expertise to various countries on structuring environmental agencies and strengthening public participation in environmental decision-making. EPA is also active in the International Network for Environmental Compliance and Enforcement (INECE) and the IUCN Commission on Environmental Law.

### **III.2.d. Capacity-Building and Technical Cooperation:**

- The United States, Canada and Mexico developed a strategy for [regional implementation of SAICM in North America](#) under the [Sound Management of Chemicals \(SMOC\)](#) initiative of the Commission for Environmental Cooperation (CEC).. In June 2008, the Ministers approved a renewed North American agenda for chemicals management, involving the following:
  - Establish a foundation for chemicals management to increase comparability of chemical management approaches, with an initial focus on supporting Mexico's development of an inventory of industrial chemicals.
  - Develop and implement a sustainable regional approach for environmental and human biomonitoring and assessment, with an early emphasis on supporting Mexico to implement its Environmental Monitoring and Assessment Program (Programa de Monitoreo y Evaluación Ambiental—PRONAME).
  - Reduce or eliminate the risk from chemicals of mutual concern: mercury; dioxins and furans, and hexachlorobenzene; and lindane and other isomers of hexachlorocyclohexane.
  - Improve environmental performance of sectors.
- Under the **Central America and Dominican Republic Free Trade Agreement (CAFTA-DR)**, the US is working with CCAD and governments in the region on:
  - Regional SAICM implementation – building upon national priorities
  - Developing mercury inventories and eliminating mercury in the health care sector
  - Improving chemical security and management
  - Working with stakeholders to adapt the US program on pesticide safety in the region.

These are examples of US efforts to mainstream chemicals management into development assistance cooperation.
- **Promoting Shared Scientific and Technical Expertise on Pesticides.** EPA interacts with other countries and international organizations to share scientific and technical expertise on pesticides, lessen the resource burden on governments and the regulatory community, and maintain high

standards for the protection of human health and the environment. Some of these [activities include](#): collaboration with China (including interacting on an informal basis with USAID particularly with regards to disposal of DDT); Agent orange; Dieldrin disposal (sometimes employing local cement kilns to meet EPA Emission standards for Dioxin); International Food Safety Standards (CODEX); FAO/WHO Joint Meeting on Pesticide Residues; North American Free Trade Agreement Technical Working Group on Pesticides; OECD Working Group on Pesticides; and International Program on Chemical Safety.

- This US sponsored with UNEP the [Workshop on Managing Perfluorinated Chemicals and Transitioning to Safer Alternatives](#) held in Geneva, Switzerland, to explore opportunities for managing PFCs and making a transition from PFOS, PFOA, PFOS and PFOA precursors, and related higher homologue chemicals to safer alternatives.
- The United States also sponsored the [Workshop on Continuing PCB Management in the Latin American and Caribbean Countries](#) in Panama City, which built upon the previous regional activities and provided an opportunity for all stakeholders involved to share their experience and identify opportunities to advance towards the goal of eventually eliminating PCBs from the region.
- The US is co-sponsoring a series of regional workshops on nanomaterial health and safety issues, as recommended at SAICM Second International Conference on Chemicals Management (ICCM-2), which are planned to be held jointly under the auspices of UNITAR, the SAICM Secretariat and the OECD.
- USAID has a long history of developing local capacity and **Clean Production Centers** (CPCs) throughout the world, which re-design local industrial processes to reduce materials, energy, and materials and pave the way for replication of these technologies in economies of the developing world. CPCs are created as a response to the enormous shift in the manufacturing base from the G7 countries to the developing world. USAID has interacted and built centers in many geographical regions including Asia, Eurasia, Latin America and Caribbean, the Near East, Africa, and Eastern Europe. Through CPCs, the developing world now pays more attention to reduction of chemical abuse to the environment on purely economic motivations, and the payoffs have been large. Plants improve processes related to leather tanneries, smelting, lead/copper mining, dairy, food processing, steel manufacturing, fishmeal, pulp and paper, brewery, fruit and vegetables, and hotels and hospitality, among many others.
- **Waste Exchange Pollution Prevention Project:** USAID developed an internet based waste exchange network in Bolivia at the Association of Industries--based upon a model supplied by Chile (CORFU). Bolivian officials were trained in Chile and the model was developed and is operational. A small fee is charged for each transaction—from the waste creator excess material to the waste consumer and vice versa. Other countries have expressed an interest in replicating this model. Eventually the operating cost is covered by the “deals” and chemicals are reduced.

### **III.2.e. Combating Illegal International Traffic:**

- The US supports [UNEP's Green Customs Initiative](#), which builds the capacity of customs officials to combat illegal trade in ozone-depleting substances and other hazardous chemicals.
- EPA developed, adapted and delivered a **Survey Training Course for Customs Officers and Inspectors** on trade in hazardous wastes (Basel Convention), ozone-depleting substances (Montreal Protocol), chemicals covered by the Rotterdam and Stockholm Conventions, and endangered species (CITES). The effort was carried out in close cooperation with international and regional organizations with the aim to influence or establish the necessary policy, legal, enforcement, and managerial authorities to interdict non-compliant shipments.
- The United States is working with CCAD and countries party to the **Central America and Dominican Republic Free Trade Agreement (CAFTA-DR)** to adopt inter-agency or ministerial agreements with environment, health, agriculture and customs authorities to improve chemical enforcement. To date, El Salvador and Honduras have adopted such agreements.

## **IV. WASTE MANGEMENT**

### **IV.1 Materials Management Overview**

How society uses materials fundamentally affects our economic and environmental future. Inefficient and wasteful use of materials now challenges the capacity of the Earth – air, water and land. We can fulfill our needs and prosper while using less material, reducing toxics, and recovering more of the material we consume. By acting less wastefully and considering system-wide impacts in the design, marketing, reuse, recycling, and disposal of products, life-cycle materials assessment represents an important change in how we think about waste and chemicals management. Actions are being taken by EPA to: (1) manage materials and products on a life-cycle basis; (2) build the nation's capacity to manage materials, and (3) accelerate the public dialogue necessary to create a green, resilient, competitive, and sustainable economy in the future. The President's [Executive Order 13514](#), Federal Leadership in Environmental, Energy, and Economic Performance, emphasizes the importance of sustainability and requires U.S. Federal agencies to meet a number of energy, water, and waste reduction targets, including 50% recycling and waste diversion by 2015.

#### **IV.1.a EPA Materials Management Responsibilities**

EPA's Strategic Plan <http://www.epa.gov/finance/plan/plan.htm> identifies priority approaches to protect the land, including reducing waste at its source, recycling waste for materials or energy values, managing waste effectively by preventing spills and releases of toxic materials, and cleaning up contaminated properties. EPA's waste management office, the Office of Resource Conservation and Recovery, <http://www.epa.gov/epawaste/index.htm> is primarily responsible for overseeing implementation of certain provisions of the nation's Resource Conservation and Recovery Act (RCRA). RCRA's central goals are to:

- Protection from the hazards of waste disposal

- Reduce or eliminate waste
- Conserve energy and natural resources by recycling and recovery
- Reduce or eliminate waste
- Clean up waste, which may have spilled, leaked, or been improperly disposed.

EPA works in close partnership with the States, Tribes, industry, environmental groups, and the public to achieve these goals. Hazardous waste <http://www.epa.gov/epawaste/basic-hazard.htm> regulated under RCRA is waste with properties that make it dangerous or potentially harmful to human health or the environment, if mismanaged. Non-hazardous waste <http://www.epa.gov/epawaste/basic-solid.htm> may include household garbage, industrial waste, and commercial waste. Under RCRA, much of the responsibility for regulating these wastes is delegated to the States.

The Agency increasingly emphasizes opportunities for source reduction, recycling, and reuse. In 2002, the Agency issued “*Beyond RCRA: Waste and Materials Management in the Year 2020*”. This report describes the need to shift from a waste management approach to materials management: a “cradle-to-cradle” approach aimed at reducing environmental impacts throughout the life cycle of products, materials, and activities. In 2009, a roadmap describing how to move towards a materials management approach was prepared: *Sustainable Materials Management: The Road Ahead*” <http://www.epa.gov/epawaste/inforesources/pubs/vision.htm>. The report suggests a path to move towards materials management and is focused on 1) knowing and reducing the life cycle impacts across the supply chain; 2) using less material inputs (reduce, reuse, recycle); 3) using less toxic and more renewable materials; and 4) considering whether services can be substituted for products.

EPA’s Resource Conservation Challenge <http://www.epa.gov/epawaste/rcc/index.htm> (RCC) is an important national effort developed by EPA to conserve natural resources. The RCC builds on the strengths of many EPA programs and partners to help prevent pollution, reduce the use of toxic chemicals, promote recycling and reuse of materials, and conserve energy. The current focus of the RCC is fourfold: (1) achieving a national 35% recycling rate for municipal solid waste; (2) fostering beneficial reuse of secondary materials; (3) reducing priority and toxic chemicals; and (4) promoting green initiatives, with an initial focus on electronics.

Green remediation <http://www.epa.gov/superfund/greenremediation/> embraces the idea that all aspects of environmental protection should be considered when cleaning up contaminated properties. Using green remediation principles, EPA is taking actions to encourage the sustainable reuse of these properties. In addition to clean up, these actions can result in lower energy demand, reduced greenhouse gas emissions, less water use, and other health and environmental benefits that contribute to economic and environmental sustainability. For example, EPA’s Brownfields Sustainability Pilots [http://www.epa.gov/brownfields/sustain\\_plts/](http://www.epa.gov/brownfields/sustain_plts/) fund actions that further long-term environmental stewardship.

## IV.2 Domestically-Focused Agencies and Programs

EPA largely has focused on developing hazardous and municipal solid waste programs in the United States and fostering a strong societal commitment to recycling and pollution prevention. Since the enactment of RCRA, EPA has built a comprehensive cradle-to-grave regulatory program for hazardous waste management; set national baseline standards for municipal solid waste landfills; identified priority pollutants on which to focus hazardous waste reduction efforts; worked in successful partnerships to reduce waste, promote recycling, and build markets for recycled-content products; and provided education and technical assistance to further in these efforts. While safe waste management and cleanup remain a critical foundation necessary to protect human health and the environment, EPA increasingly is emphasizing the importance of work in resource conservation, sustainability, and safe materials management.

### IV.2.a Reducing Environmental Impacts of Products

Product stewardship <http://www.epa.gov/waste/partnerships/stewardship/basic.htm> calls on all parties in the product life cycle - material feedstock suppliers, manufacturers, retailers, and consumers—to share responsibility for reducing the environmental impacts of products. Beginning with design, products can be made and used in ways that conserve materials and foster reuse to save energy, reduce waste, preserve resources, and protect the environment. Life cycle assessment <http://www.epa.gov/nrmr/lcaccess/> (LCA) is an important technique used to help achieve this goal. LCA allows users to make more informed decisions through a better understanding of the human health and environmental impacts of products, processes, and activities. EPA has created the WASTE Reduction Model [http://www.epa.gov/climatechange/wydc/waste/calculators/Warm\\_home.html](http://www.epa.gov/climatechange/wydc/waste/calculators/Warm_home.html) to help solid waste planners and organizations calculate, track, and voluntarily report reductions in these emissions from alternative materials management practices such as source reduction (e.g., using less packaging material <http://www.epa.gov/retailindustry/products/sustainability.html#packaging>), recycling, and composting that reduce waste quantities and toxicity. EPA created the Recycled Content (ReCon) tool to help companies and individuals estimate life-cycle greenhouse gas (GHG) emissions and energy impacts from purchasing and/or manufacturing material with varying degrees of post-consumer recycled content. [http://www.epa.gov/climatechange/wydc/waste/calculators/Recon\\_home.html](http://www.epa.gov/climatechange/wydc/waste/calculators/Recon_home.html)

#### IV.2.a.a Product Design and Development

Pollution prevention <http://www.epa.gov/p2/pubs/p2policy/framework.htm> means changing the culture from one that tolerates pollution to a sustainable approach that increasingly eliminates pollution at the source and prevents the creation of waste in the first place. Important opportunities for applying pollution prevention principles exist in product design and development:

- Process Improvement and Waste Minimization. Design for the Environment <http://www.epa.gov/dfe/> is an EPA program that promotes cleaner technologies and safer chemical alternatives by assisting manufacturers to select safer chemicals in processes and

product design. The Green Suppliers Network <http://www.epa.gov/greensuppliers/> works with large manufacturers to engage their small and medium-sized suppliers in low-cost technical reviews that focus on process improvement and waste minimization through lean manufacturing techniques. The Suppliers Partnership for the Environment <http://www.epa.gov/oppt/suppliers/> provides a forum in which automotive and vehicle suppliers can share environmental best practices and common-sense approaches that benefit smaller companies in the industry through increased energy efficiency, waste elimination, and technology optimization.

- **Energy Star** [http://www.energystar.gov/index.cfm?c=about.ab\\_index](http://www.energystar.gov/index.cfm?c=about.ab_index). The Energy Star Program uses energy-efficiency-labeling and tax credits to conserve energy and reduces waste by promoting the use of energy-efficient products and practices. Products in more than sixty categories are eligible for the Energy Star.
- **Green Building** <http://www.epa.gov/greenbuilding/>. Green, or sustainable, building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life cycle - from siting to design, construction, operation, maintenance, renovation, and deconstruction. The use of green building approaches is important to EPA's Brownfields Program <http://epa.gov/brownfields/>, which supports the sustainable reuse of properties complicated by the presence or potential presence of hazardous substances, pollutants, or contaminants.

#### **IV.2.a.b Product Marketing and Sales**

EPA encourages the marketing and sale of products that reduce waste and are better for the environment:

- **The Comprehensive Procurement Guideline (CPG) Program** <http://www.epa.gov/waste/consERVE/tools/cpg/index.htm>. The CPG Program is part of EPA's continuing effort to promote the use of recovered materials. Buying recycled-content products ensures that the materials collected in municipal recycling programs will be used again in the manufacture of new products. Under RCRA and Executive Order 13101, EPA is required to designate products that are or can be made with recovered materials, and to recommend practices for buying these products. Once a product is designated, procuring agencies are required to purchase it with the highest recovered material content level practicable.
- **Environmentally-Preferable Purchasing** <http://www.epa.gov/epp/index.htm> (EPP). US Federal agencies are directed by federal laws, regulations, and Executive Order 13423 to purchase environmentally preferable products and services. EPA's EPP Program helps these agencies comply with green purchasing requirements by providing Green Purchasing Guides for topics such as cleaning products and carpeting. EPP resources for electronics <http://www.epa.gov/epp/pubs/products/electronic.htm>, for example, encourage federal government facilities and agencies to purchase greener electronic products, reduce their environmental impacts during use, and manage obsolete electronics in an environmentally safe way. The Federal Electronics Challenge <http://www.federalelectronicschallenge.net/> is a government partnership program to support these goals.



- Recycling Markets Development. Materials and waste exchanges <http://www.epa.gov/epawaste/consERVE/tools/exchange.htm> are markets for buying and selling reusable and recyclable commodities. EPA provides resources, including information on international and national markets <http://www.epa.gov/epawaste/consERVE/tools/exchnat.htm>, for buying and selling reusable and recyclable commodities in order to support the development of markets <http://www.epa.gov/epawaste/consERVE/rrr/rmd/index.htm> for recycled products.

#### IV.2.b Reducing Chemical Risks

Priority and toxic chemicals reduction <http://www.epa.gov/epawaste/rcc/resources/action-plan/appndxb.htm> is an important objective of the RCC. To achieve this goal, EPA promotes the use of advanced production and management tools, including green chemistry <http://www.epa.gov/greenchemistry/index.html>, green engineering, <http://www.epa.gov/oppt/greenengineering/>, environmental management systems <http://www.epa.gov/EMS/>, lean manufacturing <http://www.epa.gov/lean/>, chemical management services <http://www.epa.gov/waste/hazard/wastemin/minimize/cms.htm>, and waste-to-energy technologies <http://www.epa.gov/RDEE/energy-and-you/affect/municipal-sw.html>. Examples of EPA programs that focus on the reduction of wastes from chemicals of concern include:

- Reducing Priority Chemicals. Misuse of products containing toxic metals such as mercury, cadmium, and lead is a serious concern. Through the National Partnership for Environmental Priorities <http://www.epa.gov/epawaste/partnerships/npep/> (NPEP), EPA partners with industry, business, municipalities, federal facilities, and Tribes to reduce the use of potentially hazardous chemicals in products and processes through improved chemicals management. The National Lead Free Wheel Weight Initiative <http://www.epa.gov/waste/hazard/wastemin/nlfwwi.htm>, for example, is a broad public-private NPEP partnership that encourages a transition from the use of lead for wheel weights to lead-free alternatives. EPA also encourages consumers and businesses to use non-mercury alternatives to mercury-containing products <http://www.epa.gov/mercury/consumer.htm>, and to recycle mercury-containing products when possible. Some batteries contain mercury and cadmium, and electronic products may contain these toxic constituents. EPA's National Vehicle Mercury Switch Recovery Program <http://www.epa.gov/mercury/switch.htm> (NVMSRP) is an example of a national effort to recover all available mercury switches from scrap automobiles.
- Schools Chemical Clean-Out Campaign <http://www.epa.gov/epawaste/partnerships/sc3/index.htm>. The Schools Chemical Cleanout Campaign is an EPA initiative aimed at ensuring that all U.S. schools are free from hazards associated with mismanaged chemicals. The Campaign provides schools with information and tools to manage chemicals responsibly by removing inappropriate, outdated, unknown, and unnecessary chemicals, raising awareness of chemical issues, and promoting sustainable solutions. Tools include: training, curriculum change, and long-term management solutions. Using these techniques, schools, parents, and local organizations can partner to create a chemical management program that meets the unique needs of their schools

- **Rulemakings.** EPA's Universal Waste Rule <http://www.epa.gov/epawaste/hazard/wastetypes/universal/> encourages recycling and proper disposal of certain consumer products that contain toxic materials, such as batteries, thermostats, and florescent lamps. Cathode ray tubes (CRTs) are video display components of televisions and computer monitors. The glass in CRTs typically contains enough lead to require its management as hazardous waste under certain circumstances. EPA's CRT Rule <http://www.epa.gov/osw/hazard/recycling/electron/crt-fs06.htm> streamlines the federal hazardous waste management requirements for CRTs and CRT glass destined for recycling in order save energy, conserve resources, and allow for the recovery and reuse of lead and glass.

### **IV.2.c Reuse and Recycling**

EPA promotes the many benefits, including resource conservation and cost savings, of reuse and recycling, which converts materials that otherwise would be considered waste into valuable resources. WasteWise <http://www.epa.gov/epawaste/partnerships/wastewise/index.htm>, for example, is an EPA partnership program that seeks to reduce and recycle municipal solid waste and selected industrial waste streams. Working with businesses, schools, hospitals, local communities, and government agencies, WasteWise saves energy and prevents the release of greenhouse gases.

#### **IV.2.c.a Municipal Materials Management**

EPA has established an action plan to achieve a National Recycling Rate of 35% for municipal solid waste <http://www.epa.gov/epawaste/rcc/resources/action-plan/act-p1.htm>, including household and office waste. The action plan lays out a framework or road map and targets actions for particular waste streams (e.g., paper and paperboard, organic waste, and packaging/containers) to achieve this goal. EPA initiatives to foster the recycling of household and office materials include:

- **Organic Materials** <http://www.epa.gov/waste/conserva/materials/organics/index.htm>. Many opportunities exist to reduce, reuse, and recycle organic materials. Excess food can be donated to feed hungry people. Greenscapes <http://www.epa.gov/epawaste/conserva/rrr/greenscapes/index.htm>, for example, encourages companies, government agencies, and homeowners to make more cost-efficient and environmentally-friendly landscaping decisions. GreenScapes' on-line calculators promote sustainable landscaping decisions by allowing readers to compare costs between environmentally-preferable methods and the use of virgin materials. Through composting <http://www.epa.gov/epawaste/conserva/rrr/composting/index.htm>, yard trimmings, food waste, and wood waste can prevent soil erosion and provide valuable nutrients.
- **Electronics** <http://www.epa.gov/waste/conserva/materials/ecycling/index.htm>. EPA is working to educate consumers and others about the importance of reusing and recycling electronics. Plug in to ECycling <http://www.epa.gov/epawaste/partnerships/plugin/index.htm> is a partnership program between EPA and leading consumer electronics manufacturers, retailers, and mobile service providers of televisions and computers to foster and promote shared responsibility for safe recycling of electronics,. Responsible Recycling (R2) Practices

<http://www.epa.gov/waste/consERVE/materials/ecycling/r2practices.htm> are a set of guidelines for accredited certification programs to assess electronics recyclers' environmental, worker health and safety, and security practices.

- **Mercury-Containing Lamps**  
<http://www.epa.gov/epawaste/hazard/wastetypes/universal/lamps/index.htm>. EPA is working with manufacturers and major U.S. retailers to develop, implement and expand recycling options for all mercury-containing light bulbs, including compact fluorescent light bulbs.
- **Landfill Methane Outreach Program** <http://epa.gov/lmop/> (LMOP). LMOP is a voluntary EPA assistance program to help reduce methane emissions from landfills by encouraging the recovery and use of landfill gas as an energy resource. LMOP forms partnerships with communities, landfill owners, utilities, power marketers, States, project developers, Tribes, and non-profit organizations to help assess project feasibility, find financing, and market the benefits of project development.
- **Recycle on the Go** <http://www.epa.gov/epawaste/consERVE/rrr/rogo/index.htm>. EPA's Recycle on the Go Program promotes recycling opportunities in public locations like parks, convention centers, sports stadiums, and shopping centers. Recycle on the Go helps communities develop the infrastructure necessary to achieve recycling in these public places.
- **Pay-As-You-Throw** <http://www.epa.gov/waste/consERVE/tools/payt/index.htm>. In communities with pay-as-you-throw programs (also known as unit pricing or variable-rate pricing), residents are charged for the collection of household trash based on the amount they throw away. This strategy creates a direct economic incentive to recycle more and to generate less waste. EPA promotes Pay-As-You-Throw through national workshops, informational guides, videos, and web-based resources.

#### **IV.2.c.b Industrial and Building Materials Management**

Nearly every industrial process, from manufacturing consumer goods to generating energy, produces different types of usable materials. Hundreds of millions of tons of nonhazardous industrial materials are often wasted. Industrial materials recycling <http://www.epa.gov/epawaste/consERVE/rrr/imr/index.htm>, also referred to as beneficial use, involves reusing or recycling byproduct materials generated from industrial processes. These materials can be used as substitutions for raw materials in the manufacture of consumer products, roads, bridges, buildings, and other construction projects. Similarly, construction and demolition (C&D) materials recycling <http://www.epa.gov/waste/consERVE/rrr/imr/cdm/index.htm> involves the use of heavy materials, such as concrete, wood, metals, glass, and salvaged building components debris generated during the construction, renovation, and demolition of buildings, roads, and bridges. EPA initiatives to promote the reuse and recycling of industrial and building materials include:

- **Coal Combustion Products Partnership**  
<http://www.epa.gov/epawaste/partnerships/c2p2/index.htm>. Coal combustion products are generated from burning coal in coal-fired power plants and include fly ash, bottom ash, boiler slag, and flue gas desulfurization gypsum. Recycling coal combustion byproducts saves money

and natural resources and reduces energy consumption. The Coal Combustion Partnership promotes the beneficial use of these materials in cement and other products.

- **Foundry Sands Recycling** <http://www.epa.gov/waste/consERVE/rrr/imr/foundry/index.htm>. Spent foundry sands are generated by the metal casting industry. Together with industry, EPA has set national goals for the safe reuse of nonhazardous foundry sands. The recycling of nonhazardous, spent foundry sand in asphalt, concrete, and mortar mixes can save energy, reduce the need to mine virgin materials, and reduce costs for both producers and end users.
- **Recycling C&D Debris** <http://www.epa.gov/waste/consERVE/rrr/imr/cdm/programs.htm>. EPA has established partnerships and programs to reduce and utilize C&D debris. Careful consideration of how C&D materials are generated and managed is a critical element of green buildings <http://www.epa.gov/waste/consERVE/rrr/imr/cdm/greenbld.htm> that provide healthier and more resource-efficient models for construction, operation, maintenance, and renovation. EPA's Construction Initiative <http://www.epa.gov/waste/consERVE/rrr/imr/initiative.htm> complements EPA's initiatives to promote green buildings. The Initiative is a collaborative, public-private sector effort to increase the recycling and reuse of industrial materials, including coal combustion products, spent foundry sand, construction and demolition materials, iron and steel slag, scrap tires, and pulp/paper mill residuals, in building and transportation construction projects across the nation.

#### **IV.2.c.c Hazardous Materials Management**

EPA has established hazardous waste recycling <http://www.epa.gov/waste/hazard/recycling/index.htm> regulations to promote the reuse and reclamation of useful materials in a manner that is safe and protective of human health and the environment. Hazardous waste recycling opportunities includes used oil, precious metals, and scrap metal. Appropriate reuse and recycling of hazardous household products <http://www.epa.gov/waste/consERVE/materials/hhw.htm#options> also can save money and reduce the need for generating hazardous substances.

#### **IV.3 Internationally-Focused Agencies and Programs**

Relevant EPA international responsibilities include agreements, regulations, and initiatives <http://www.epa.gov/waste/hazard/international/index.htm>. The U.S. has established important agreements that affect the handling of wastes shipped across international borders, and U.S. regulations govern the import and export of hazardous waste. International initiatives involve the Organization for Economic Cooperation and Development (OECD), the U.S.-Mexico and U.S.-Canada borders, the Commission for Environmental Cooperation (CEC), and methane gas capture.

##### **IV.3.a Transboundary Movement of Hazardous Waste**

**IV.3.a.a U.S. Import/Export Requirements** <http://www.epa.gov/waste/hazard/international/imp-exp.htm>. The United State is a party to various international agreements which provide for prior notification of shipment of wastes (i.e., both importing and exporting of waste). EPA processes notifications documenting individual shipment of waste and receives annual export reports for the

regulated community. Importers and exporters of hazardous wastes must comply with applicable US domestic laws and regulations, which include regulations under the Resource Conservation and Recovery Act (RCRA). The [Import-Export Program \(IEP\)](#) in EPA's Office of Enforcement and Compliance Assurance is responsible for overseeing international trade in hazardous waste involving the United States.

#### **IV.3.a.b International Agreements** <http://www.epa.gov/waste/hazard/international/agree.htm>

The United States is party to agreements with Canada, Mexico, Costa Rica, Malaysia, the Philippines, and the OECD concerning the transboundary movement of waste. In addition, the U.S. is a signatory to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

- Canada. The original 1986 agreement between Canada and the U.S. on the transboundary shipment of hazardous waste between the two countries seeks to provide the U.S. and Canada with safe, low cost options for managing waste for which there is a lack either of domestic capacity or the technology to manage this waste appropriately. This agreement was amended in 1992
- Mexico. A 1986 agreement between Mexico and the U.S. controls the transboundary shipment of hazardous wastes between the two countries.
- OECD. A 2001 OECD Decision on the control of transboundary movements of hazardous wastes destined for recovery operations establishes hazardous waste shipment requirements between OECD countries, including the U.S.
- Basel Convention on the Control of Transboundary Hazardous Wastes and their Disposal. The Basel Convention regulates the import and export of hazardous waste among party nations and establishes legal obligations to ensure that such wastes are managed in an environmentally-sound manner. As a non-party to the Convention, the U.S. participates in Convention meetings and initiatives, including the Basel Mobile Phone Partnership Initiative <http://www.basel.int/industry/mppi.html> (MPPI). MPPI was established as a sustainable partnership on the environmentally-sound management of used and end-of-life mobile telephones.
- Costa Rica, Malaysia, and the Philippines. The Agreement Between the Government of America and the Government of Malaysia Concerning the Transboundary Movement of Hazardous Wastes from Malaysia to the United States (1995), the Agreement on the Transboundary Movement of Hazardous Waste from Costa Rica to the United States (1997), and the Agreement Between the Government of the United States of America and the Government of the Republic of the Philippines Concerning the Transboundary Movement of Hazardous Wastes from the Philippines to the United States (2001) are bilateral agreements that govern the export of hazardous wastes from these countries into the U.S. .

#### **IV.3.b International Initiatives.**

EPA international work involves the OECD, Border Plan 2012, the Commission for Environmental Cooperation (CEC), and methane capture:

- OECD. The U.S. actively participates in and supports the OECD Working Group on Waste Prevention and Recycling (WGWPR), whose work includes: [Sustainable Materials Management \(SMM\)](#); [Environmentally Sound management of Waste \(ESM\)](#); Transboundary Movements of Waste [http://www.oecd.org/document/54/0,3343,en\\_2649\\_34395\\_37987446\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/54/0,3343,en_2649_34395_37987446_1_1_1_1,00.html), and [Waste Prevention and Minimisation](#).
- U.S. Border Programs. The U.S.-Mexico Environmental Program <http://www.epa.gov/usmexicoborder/index.html> (Border 2012) is a bi-lateral collaboration between the United States and Mexico to improve the environment and protect the health of the nearly twelve million people living along the border. The U.S has been active in addressing materials management priorities identified by the Border 2012 Waste Policy Forum <http://www.epa.gov/usmexicoborder/fora/waste-forum/index.html>, including waste management infrastructure, international electronic exchange of export/import data, scrap tire clean up and prevention, and clean up and restoration of contaminated sites. EPA also administers border environmental programs <http://www.epa.gov/oem/content/border.htm> jointly with Canada and Mexico to prepare for and prevent chemical and other hazardous substance emergencies along the northern and southern borders of the U.S.
- Commission for Environmental Cooperation <http://www.epa.gov/oia/regions/na/nacec/index.html> (CEC) Waste Program. The CEC fosters collaboration among the North American Free Trade Agreement (NAFTA) parties to implement NAFTA's environmental side agreements. Under the CEC Hazardous Waste Task Force, the U.S. has worked to improve the tracking of transboundary movements of hazardous waste and increase the environmentally-sound management of materials in North America.
- Methane Capture <http://www.epa.gov/outreach/international.html>. The Methane to Markets Partnership is an international initiative that advances cost-effective, near-term methane gas recovery and use as a clean energy source. The goal of the Partnership is to reduce global methane emissions in order to enhance economic growth, strengthen energy security, improve air quality, improve industrial safety, and reduce emissions of greenhouse gases. EPA is involved in a number of international activities to better understand and quantify global methane emissions, assess the costs and benefits of emission reduction options, and facilitate cost-effective emission reduction opportunities.

## **V. MINING OVERVIEW**

### **Introduction**

The U.S total domestic mining and waste removal for nonfuel mineral materials production amounted to 5.9 billion metric tons (Gt) in 2007 (*most current year final statistics are available*). These materials included 4.5 Gt of crude ore mined or quarried and 1.4 Gt of mine ore and waste from development operations. Overall, 97% of nonfuel mineral materials was mined and quarried using surface methods, and 3% was mined underground. Most non-fuel mining activities took place in: Nevada, Arizona, Florida,

Minnesota, Utah, California, Texas, Michigan, Pennsylvania, and Georgia. These 10 States accounted for 63% of the tonnage removed in the production of nonfuel mineral materials mined in the United States.

U.S. coal production in 2008 (*most current year final statistics are available*) reached a record level of 1,171.5 million short tons, with 389.8 million short tons from the Appalachia Region, 146.7 million short tons from the Interior Region, and 633.6 million short tons from the Western Region. In 2008, U.S. coal consumption declined in every coal-consuming sector.

With such a large and active industry, the U.S. mining sector has increased its focus on sustainable mining practices in the 21<sup>st</sup> century. Special initiatives throughout the country have brought together the public, industry, and government to find innovative ways to ensure mineral extraction and processing activities have minimal environmental impacts and are sustainable. U.S. laws and regulatory agencies provide a framework and baseline for increased sustainability focus for mining activities.

The members of the National Mining Association (NMA) have adopted sustainable development principles and have issued the National Mining Association Sustainable Development Pledge: *The members of the National Mining Association pledge to conduct their activities in a manner that recognizes the needs of society and the needs for economic prosperity, national security and a healthy environment. Accordingly, we are committed to integrating social, environmental, and economic principles in our mining operations from exploration through development, operation, reclamation, closure and post closure activities, and in operations associated with preparing our products for further use.* [http://www.nma.org/issues/environment/sustainable\\_development.asp](http://www.nma.org/issues/environment/sustainable_development.asp)

To further improve health and safety at the nation's underground and surface mines through greater safety awareness, improved training and advanced technology, NMA is launching the "Safety First: Stay Alert" safety initiative aimed at reducing accidents and fatalities associated with unsafe behavior and practices at mining facilities. "Stay Away, Stay Alive" is a safety initiative aimed at reducing accidents and fatalities associated with unsafe activity in proximity to continuous miner machinery. This initiative is a first step and lays the groundwork for the next generation of underground mining technology that will be used to detect unsafe proximity to mining equipment. *Drive Safe, Arrive Safe*" is a safety initiative aimed at reducing accidents and fatalities associated with unsafe behavior and practices at mining facilities. [http://www.nma.org/stay\\_alert.asp](http://www.nma.org/stay_alert.asp), [http://www.nma.org/stay\\_alive.asp](http://www.nma.org/stay_alive.asp), [http://www.nma.org/drive\\_safe.asp](http://www.nma.org/drive_safe.asp).

The regulatory and technical aspects of the U.S. mining industry are complex, with overlapping laws, regulatory agencies, and state and federal roles for the different types of mining. Each mine faces a somewhat unique set of regulatory requirements, depending upon state statute or regulation; whether it is on state, federal, tribal, or private land; local regulations; the kind of mining and metal recovery operation proposed; and the specific environmental considerations unique to the site. Mining activities

in the U.S. are regulated by various entities with states playing a key role in oversight. The U.S. Army Corps of Engineers (USACE); U.S. Department of Interior's Bureau of Land Management (BLM), National Park Service (NPS), Office of Surface Mining (OSM), U.S. Geological Survey (USGS); U.S. Agriculture's Forest Service (USFS); U.S. Department of Labor's (DOL) Mine Safety and Health Administration (MSHA); Environmental Protection Agency's (EPA) Office of Water and the Office of Solid Waste and Emergency Response all play a role in influencing environmental outcomes at mine sites where they have ownership or jurisdiction. The overlapping laws and agencies provide an intricate network of oversight of mining activities, from exploration and permitting through closure and site reuse.

## **V.1. Domestically Focused Mining Agencies and Programs**

### **V.1.A: Interagency**

#### **Federal Mining Dialogue (FMD)**

The Federal Mining Dialogue, FMD, is a cooperative initiative among federal environmental and land management agencies for remediating contamination, improving safety, and minimizing releases from operating, abandoned, and inactive hardrock mining and mineral processing sites. Member agencies encourage efficient management of the nation's public land and mineral resources in an environmentally sound manner. FMD member agencies include USACE, USDA, USFS, BLM, OSM, USGS, NPS, Department of Justice, MSHA, and EPA. One goal of the FMD is to focus on future uses of abandoned mine lands (AMLs), and identify the economic, environmental, and social benefits that accrue from their reuse. Reuse may serve as a catalyst for expediting environmental risk reduction.

<https://www.abandonedmines.gov>

### **V.1.B Department of Interior**

#### **DOI OSM**

The Surface Mining Control and Reclamation Act of 1977 (SMCRA), calls on the Office of Surface Mining, OSM, of the Department of Interior, DOI, to balance the environmentally adverse effects of surface coal mining with the Nation's need for coal as an essential energy source. OSM ensures that coal mining is conducted in an environmentally responsible manner and that the land is adequately reclaimed during and following the mining process. OSM requires plans that assure that mining sites will be restored to their original contours and to mitigate acid mine drainage before a permit is granted for mining operations. The primary responsibility for regulating surface coal mining now rests with the coal-mining States, with OSM performing an oversight role.

OSM works with colleges and universities and other state and federal agencies to further the science of reclaiming mined lands and protecting the environment. These initiatives include promoting the planting of trees and establishing much-needed wildlife habitat.

<http://www.osmre.gov/index.shtm>



## **Appalachian Regional Reforestation Initiative (ARRI)**

The ARRI is a coalition of citizens, the coal industry, and government that is dedicated to restoring forests on coal mined lands in the Eastern United States. The goals of the initiative are to

- Plant more high-value hardwood trees on reclaimed coal mined lands in Appalachia
- Increase the survival rates and growth rates of planted trees
- Expedite the establishment of forest habitat through natural succession

ARRI advocates using a technique known as the Forestry Reclamation Approach to plant trees on reclaimed coal mined lands. Highly productive forestland can be created on reclaimed mine lands under existing laws and regulations by using the Forestry Reclamation Approach.

<http://www.arri.osmre.gov/>

## **DOI BLM**

The Department of Interior's Bureau of Land Management, BLM, manages public lands under its domain using the principles of multiple use and sustained yield. BLM's statutory mandate under the Federal Land Policy and Management Act of 1976 (FLPMA) is to prevent unnecessary or undue degradation.

Exploration and mining activities on mining claims on BLM administered lands are subject to the regulations in 43 CFR 3809 and for Wilderness Study Areas, 43 CFR 3802. For activities other than casual use, they require the operator to submit either a notice or a plan of operations and a reclamation plan. A plan of operations must describe in detail the site and the proposed operation, including measures that will be taken to prevent undue and unnecessary degradation and to reclaim the site to regulatory standards. Reclamation must include salvaging topsoil for later use, erosion and runoff control, toxic materials isolation and control, reshaping the area, reapplication of topsoil, and revegetation (where reasonably practical).

General Info: <http://www.blm.gov/wo/st/en.html>

Coal Mining: [http://www.blm.gov/wo/st/en/prog/energy/coal\\_and\\_non-energy.html](http://www.blm.gov/wo/st/en/prog/energy/coal_and_non-energy.html)

**BLM AML Program:** The Bureau of Land Management's Abandoned Mine Lands Program, BLM AML, works in partnerships with EPA, state agencies, tribes, private parties, and other groups to accelerate the rate of cleanup of watersheds affected by abandoned hard rock mines.

[http://www.blm.gov/wo/st/en/prog/more/Abandoned\\_Mine\\_Lands.html](http://www.blm.gov/wo/st/en/prog/more/Abandoned_Mine_Lands.html)

## **DOI NPS**

The National Park Service, NPS, has the responsibility for managing the National Park System to conserve scenery, natural and historic objects, and wildlife, and to provide for the public enjoyment of those resources that will leave lands unimpaired for the enjoyment of future generations. NPS ensures that

mineral activities prevent or minimize damage to the environment and that the pristine beauty is preserved for the benefit of present and future generations.

<http://www.nature.nps.gov/geology/mining/>

**NPS Abandoned Mineral Land Restoration Program:** The Abandoned Mineral Land Restoration Program encourages the full restoration of lands affected by mining activities, addresses environmental concerns (metals contamination, acid mine drainage), safety hazards (vertical mine openings, unstable slopes), and the sustainability of bat species, which may rely on mine shafts for habitat.

<http://www.nature.nps.gov/geology/aml/index.cfm>

## DOI USGS

Under the Geological Survey Organic Act of 1879 and the Economy Act of 1932, the United States Geological Survey, USGS, provides statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, the national security, and protection of the environment. USGS publishes the annual Mineral Commodity Summaries and Minerals Yearbook. The USGS Minerals Yearbook also provides mining information for most of the countries of the world (*see next International Section for more details*).

<http://minerals.usgs.gov/minerals/pubs/mcs/>

<http://minerals.usgs.gov/minerals/pubs/myb.html>

USGS also provides scientific expertise to help land managers minimize or eliminate the adverse environmental effects of AMLs. The U.S. Geological Survey Mine Waste Characterization Project has taken a multidisciplinary approach to assemble, develop, and refine methods and tools for characterizing and screening weathered solid-mine wastes. Researchers from a variety of disciplines, including geophysics, geochemistry analytical chemistry, geology, mineralogy, remote sensing, and spatial modeling, have worked together at metal mining waste sites in Colorado and New Mexico to develop an integrated "toolkit" for the rapid screening and characterization of historical mine-waste piles. Detailed studies have been conducted at eight main mine-dump sites (six are located in Colorado), representing both igneous-hosted and carbonate-hosted polymetallic deposits, to examine the influence of carbonate materials. Two other sites are arid analog mine-waste piles in southwestern New Mexico have been chosen to study the influence of climate. Tools developed from this work can be used in ranking and prioritizing historical mine-waste piles.

<http://mine-drainage.usgs.gov/>

## DOI MMS

The Minerals Management Service (MMS), a bureau in the U.S. Department of the Interior, is the Federal Agency that manages the nation's natural gas, oil and other mineral resources on the outer continental

shelf (OCS). The agency also collects, accounts for and disburses more than \$8 billion per year in revenues from Federal offshore mineral leases and from onshore mineral leases on Federal and Indian lands. MMS's mission is to manage the ocean energy and mineral resources on the Outer Continental Shelf and Federal and Indian mineral revenues to enhance public and trust benefits, promote responsible use, and realize fair value.

<http://www.mms.gov/>

#### **V.1.C Department of Agriculture Forest Service (USFS)**

The United States Forest Service, USFS, regulates the use of public lands in accordance with various authorities and program specific statutes. Exploration and mining activities on lands administered by the USFS are subject to the regulations in 36 CFR 228(A). Any proposed operation that could likely cause significant disturbance of surface resources must gain the approval of the USFS. USFS ensures mines and oil, gas and geothermal energy operations on federal lands are in compliance with pollution control laws, standards or implementation plans, or land management requirements.

<http://www.fs.fed.us/>

An important part of the USFS Minerals and Geology Management Program's mission is the restoration of land disturbed by historic mining activities. In 1995 the USDA Forest Service, using data compiled by the US Bureau of Mines, estimated the number of abandoned mines inside National Forest boundaries to be 38,991 total abandoned mine site and that 13,597 or 34% of the total were mines with records of mineral production. Many involved minerals like arsenic, cadmium, copper, lead, mercury and zinc which can cause human health and environmental impacts.

<http://www.fs.fed.us/geology/aml-index.htm>

#### **V.1.D EPA**

##### **EPA Superfund Program**

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, EPA has remediated over 500 mining and mineral processing sites, focusing on sites where other regulatory tools have not achieved protection goals. EPA's Superfund program established the Beneficial Use of Mining Waste workgroup to identify, resolve and/or clarify key issues with respect to the beneficial use of mining and mineral processing wastes for non-residential use purposes. EPA's AML Program is coordinated through the National Mining Team (NMT) and Abandoned Mine Lands Team (AMLT).

<http://www.epa.gov/superfund/>

<http://www.epa.gov/superfund/programs/aml/>

**EPA Brownfields Program** It is estimated that there are more than 450,000 brownfields in the U.S. EPA's Brownfields Program provides grants and technical assistance to communities, states,

tribes, and other stakeholders to prevent, assess, safely clean up, and sustainably reuse brownfields. The Mine-Scarred Lands initiative provides technical assistance to communities to reclaim and reuse mine-scarred lands.

<http://epa.gov/brownfields/index.html>

[http://epa.gov/brownfields/policy/initiatives\\_sb.htm#msl](http://epa.gov/brownfields/policy/initiatives_sb.htm#msl)

### **EPA Office of Federal Activities**

The National Environmental Policy Act (NEPA) requires federal agencies to consider potential environmental impacts before taking major actions, such as issuing mining permits or making decisions that affect federal lands. This environmental assessment (EA) is used to assess the adequacy of proposed mitigation measures and reclamation procedures to prevent unnecessary and undue degradation. If significant impacts are likely from mining activities, the agency must prepare an environmental impact statement (EIS). EPA reviews EISs on proposed Federal Agency actions and prepares written comments and complies with NEPA by writing EAs or EISs for certain EPA actions.

<http://www.epa.gov/Compliance/nepa/>

### **EPA RE-Powering America's Land Initiative**

EPA encourages renewable energy development on current and formerly contaminated land and mining sites. Eight wind turbines were installed on an old slag pile at the Bethlehem Steel site in Lackawanna, NY that now produce enough electricity to power 7,000 homes.

<http://www.epa.gov/renewableenergyland/>

**EPA Office of Water** The Clean Water Act (CWA) is one of the most widely used regulatory tools for ensuring environmental sustainability at mining sites by providing limitations on impacts to the nation's waterways.

Under Section 402 of the CWA, all point source discharges from mining must be authorized under a National Pollutant Discharge Elimination System (NPDES) permit. Under the stormwater program, runoff from mining operations requires a permit if it comes into contact with overburden, raw material, intermediate products, finished product, byproduct, or waste products located on the site of such operations.

<http://cfpub.epa.gov/npdes/indpermitting/mining.cfm>

Although most Section 402 mining permits are issued by states, the Office of Water (OW) may review permits to ensure that the permits contain appropriate technology-based and water quality-based effluent limitations. Section 404 of the CWA provides authority for regulating the discharge of "dredged or fill material." Section 404 permits are generally issued by the Corps of Engineers.

<http://www.epa.gov/ow/>

#### **EPA Resource Conservation and Recovery Act (RCRA) Program**

Regulation affecting mineral processing wastes was developed through a long process covering the period 1980 to 1991. EPA has jurisdiction to regulate solid wastes from mining activities in the United States under the Resource Conservation and Recovery Act (RCRA). However, the current program focuses primarily on hardrock mining (i.e. mining of metallic ores and phosphate rock).

<http://www.epa.gov/osw/nonhaz/industrial/special/mining/>

#### **V.1.E Army Corps of Engineers (USACE)**

The Restoration of Abandoned Mines (RAMS) Program utilizes the United States Army Corps of Engineers, USACE, environmental authorities to provide technical, planning, and design assistance to Federal and non-Federal interests in carrying out projects to address water quality problems caused by drainage and related activities from abandoned and inactive non-coal mines.

<https://www.nwo.usace.army.mil/html/rams/rams.html>

#### **V.1.F Department of Labor (DOL) Mine Safety and Health Administration (MSHA)**

The mission of the Mine Safety and Health Administration (MSHA) is to administer the provisions of the Federal Mine Safety and Health Act of 1977 (Mine Act), as amended by the Mine Improvement and New Emergency Response Act of 2006 (MINER Act), and to enforce compliance with mandatory safety and health standards as a means to eliminate fatal accidents; to reduce the frequency and severity of nonfatal accidents; to minimize health hazards; and to promote improved safety and health conditions in the Nation's mines.

<http://www.msha.gov/sosa/webresc.asp>

#### **V.1.G States and Tribes**

The EPA works with other federal agencies, state and local governments, and Indian tribes to develop and enforce regulations under existing environmental laws. The EPA, which is responsible for researching and setting national standards for a variety of federal environmental programs, delegates to states and tribes the responsibilities for issuing permits and monitoring and enforcing compliance. Where national standards are not met, the EPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality. States and Tribes are the leaders in mining regulation. All States have general environmental statutes that provide coverage to mining operations. Many states have been authorized to implement federal environmental programs, such as the National Pollutant Discharge Elimination System (NPDES) program under the Clean Water Act (CWA) and the hazardous waste program under the Resource Conservation and Recovery Act (RCRA).

<http://web.ead.anl.gov/dwm/regs/federal/epa/index.cfm>

## V.2 Internationally Focused Programs and Activities

**USGS Minerals Information Team:** As noted in the previous section, the Team collects and publishes production data, trade data, and other information for most of the countries of the world. Information on mining and investment laws, ownership, and country infrastructure is published in the country chapters of the USGS Minerals Yearbook.

<http://www.mms.gov/>

USGS also supports many international scientific studies and provides technical expertise throughout the world. The Department of the Interior's Minerals Management Service (MMS) disbursed more than \$10.68 billion in Fiscal Year 2009 from revenues collected from energy and mineral production on Federal and American Indian lands, including energy and mineral production on the Federal Outer Continental Shelf. The billions of dollars being disbursed will support much needed projects such as land and water conservation efforts around the United States, power and water projects in the West, critical infrastructure improvements, and funding for education. A complete breakout of FY 2009 disbursements is available at [www.mrm.mms.gov](http://www.mrm.mms.gov).

<http://international.usgs.gov/index.htm>

### **USFS International Program**

The USFS International Program promotes sustainable forest management and biodiversity conservation internationally. By linking the skills of USFS field-based staff with partners overseas, the program addresses the most critical global forestry issues and concerns. International Programs has three main staff units: [Technical Cooperation](#), [Policy](#), and [Disaster](#). Both Technical Cooperation and DASP work closely with [United States Agency for International Development](#) (USAID). Technical Cooperation, specifically, develops and manages natural resource projects overseas on a wide range of topics (i.e. fire management and forest health). There are two main disaster programs: [Disaster Assistance Support Program \(DASP\)](#) and the [Disaster Mitigation Program](#). Funded by USAID's Office of Foreign Disaster Assistance, DASP trains and mobilizes personnel domestically to respond and mitigate foreign disasters, such as the drought in Ethiopia and the locust response in West Africa. The Disaster Mitigation Program, on the other hand, trains and provides technical expertise to partners overseas in emergency preparedness, response and disaster mitigation.

<http://www.fs.fed.us/global/index.html>

### **DOI International Technical Assistance Program**

In 1995, the U.S. Agency for International Development (USAID) and DOI established the DOI International Technical Assistance Program (ITAP) to provide capacity building in other countries using the diverse expertise of DOI bureaus. DOI-ITAP capacity building includes, but is not limited to: on-site technical assistance, study tours, mentoring, train-the-trainers workshops, procurement, and training in operations and maintenance of equipment.

<http://www.doi.gov/intl/itap/overview.html>

### **OSM's Environmental Operations Division**

The Environmental Operations Division coordinates OSM's international programs including international technical assistance activities.

### **USAID Projects in Europe and Eurasia**

**GEF:** The GEF (global environment facility) was created in 1990 to address global environmental issues, including the protection of international waters, and a reduction in ozone depleting chemicals. The GEF/Danube project was awarded a \$150 million contribution by United States to the GEF. The GEF/Danube River project achieved its objective of monitoring and reducing pollution across three international boundaries from industrial sources including the two mines. The international boundaries cover: Slovakia/Ukraine, Hungary/Slovakia, and Hungary/Romania borders.

**USAID:** USAID's contribution to in the mining sector proved vital to the economic redevelopment of the Kosovo area. An environmental assessment was part of the Kosovo Strategy that addressed Kosovo's Trepca Mining, Smelting and Refining Complex sites which provide raw materials (primary lead and zinc) for the economic development of Kosovo. This project helped in the development of an environmentally sound mining and industrial production corridor in Kosovo which resulted in local jobs and strong local economic development. Among other works USAID provided Technical Assistance to uranium and copper mines in Romania.

**Sarajevo:** USAID helped to restore electricity produced by coal fired power plants by restoring operations at the Vrtliste surface coal mine to ensure a sustainable supply of coal for coal-fired electrical plants. USAID also helped Sarajevo restore its electric power generation capacity by repairing the Kakanj thermal Power Plant.

**Cyprus:** USAID addressed the consequences of mining in a post-conflict situation, including the closure and restart of mining operations. A mine reclamation plan was prepared which addressed the impact of mining operations on the quality of surface and ground waters in northern Cyprus and the Mediterranean Sea. USAID helped the mine located in Lefka-Xeros to identify environmental impacts and mitigation procedures.

**Romania:** A USAID Contribution to Emergency Response-Cyanide Spill in Romania: In 2000, approximately 100,000 square meters of hazardous liquid waste began flowing out of a holding pond from a gold mine in Baia Mare, northern Romania, into the Szamos River, which is a tributary to the Danube River. The mine is jointly owned by an Australian company and a Romanian state-owned mining company. The liquid waste contained high concentrations of cyanide and heavy metals, which are used to extract gold from mine tailings. USAID responded to this environmental catastrophe by working with the respective stakeholders. A team of engineering experts engaged in evaluating the integrity of the impoundment at Baia Mare Gold Mine and other Romanian sites to prevent spills of mining chemicals

and tailings in the future. Another team of experts studied the affected region in Romania/Hungary, and responded to needs of the affected population and the environment.

## **USAID Projects in Africa**

### **The Central African PRADD project**

The Property Rights and Alluvial Diamond Development, PRADD, which was co-sponsored by State Dept, as part of the Kimberley identification process is a project in Central African Republic, CAR. PRADD is designed to identify, clarify, and reinforce property rights to land and minerals at alluvial diamond mining pilot sites. It has been established that artisanal diamond miners capture only a small share of the value of alluvial rough (i.e., unprocessed) diamonds.

**The PRADD project:** PRADD is working in cooperation with a small team of national experts, and in close collaboration with the Ministry of Energy, Mines and Hydraulics (MEMH) in CAR. During the first year they conducted participatory rural appraisals (PRAs), a census of miners, a socioeconomic survey of all 253 artisanal miners in the pilot area, and mine-specific surveys. The information thus gathered permitted the development of a property rights claims registry of all 253 artisanal miners in the pilot zones linked to a basic production and sales information management framework in a geographic information system, GIS. This property information management system framework represents an internal control mechanism that will strengthen CAR's capacity to monitor illicit activities and trace diamonds along the earth-to-export chain of custody. PRADD's efforts included sponsorship of GIS training at the University of Bangui for five ministry technicians. These reviews, presented during national level workshops, have stimulated lively debate on the effectiveness of CAR's internal control systems and created increased awareness of the positive contribution that strengthened property rights could play.

**Senegal:** In Senegal, the USAID Agriculture and Natural Resources Management program "Wula Nafaa" is involved with artisanal gold miners. An Environmental Protection Agency (EPA) team requested USAID to follow-up on their activities in Kedougou as their funding was ending. The EPA had focused on reducing the hazards related to the use of mercury by artisanal gold miners. During an USAID/EPA workshop in Dakar it became evident that the problems in this mining sector go far beyond just the improper use of mercury and reducing the environmental impact of artisanal mining would require an intensive, integrated approach.

In light of the enormous environmental, health, legal, social problems and commercial issues involved in artisanal gold mining, USAID concluded that Wula Nafaa could play a key role especially in communities where we already have developed local conventions. USAID/ Dakar has included local governments in land use planning and has developed community based management schemes to manage resources. This project is on-going.



## USA Projects in Latin America and Caribbean

**Best Practices Manual:** USAID developed a manual and a CD of best practices for the entire non-ferrous mining industry using the know-how of US Experts and has distributed it to the World Mining Congress in Las Vegas, NV in 2000. Over 1000 copies were distributed worldwide. It was well received and is still available.

**Barbados-open pit mining operations:** A project to reduce the release of land-based pollution into estuaries and the sea, which threatens marine biodiversity. The impact assessment of quarrying on marine biodiversity showed that most negative impact was sedimentation that killed organisms directly; stressed coral reefs and made aquatic species more vulnerable to disease and global warming effects, and altered or degraded habitats so significantly that multiple species could no longer survive. This project focuses on improving the legal regulations for operating an open pit quarry in the Commonwealth of Dominica.

## USAID CAFTA Projects

**Mining Manual:** USAID and EPA are developing, with support from the Department of Interior an (environmental assessment) EIA Technical Review Guideline and Terms of Reference (TORs) for commercial mining, under CAFTA DR environmental cooperation agreement. The guidelines will include the US experience as well as those of other nations and international organizations, will identify what is best practice, but offer a range of alternatives for mitigating and avoiding negative impacts. It is being developed with an expert team drawn from CAFTA DR country environmental and mining Ministries, and institutions in these countries which offer mining expertise. The guidelines will be ready for pilot use soon. Based on pilot testing and industry workshops CAFTA will provide feedback to the member mining ministers to decide how to use the guidelines.

## USEPA Projects

**Kyrgyzstan Mercury Mining:** EPA is supporting a joint UNEP/UNITAR project to assist the Government of Kyrgyzstan in developing an action plan to address primary mercury mining. Reducing the supply of mercury has been identified as a priority by the UNEP Governing Council, which considers mercury mining as an important activity to be limited in order to reduce releases of mercury to the environment. Kyrgyzstan is the last remaining major supplier of mined mercury to the international marketplace. This project was initiated to assist Kyrgyzstan in phasing out mercury production at the Khaidarkan Mercury Mine. As part of the overall project, assessments are being undertaken aimed to facilitate the involvement of donors (such as the GEF, World Bank, Asia Development Bank and others) in the eventual cessation of mercury mining activities in an environmentally and socially sound manner, and in remediation of contamination caused by mining activity.

**Amazon Gold Mining (Brazil and Peru):** EPA developed and piloted, through its contractor, Argonne National Laboratory, a low-cost, locally appropriate mercury emissions control technology. This emission technology is designed to limit release of mercury from secondary gold refining which is carried out in enclosed gold shops, which are prevalent throughout the Amazon. EPA developed and evaluated

the prototype technology in the Tapajos Region of Brazil, and in the Madre de Dios region in Peru. The gold shop mercury capture system is now in the replication phase, where the Agency is providing training and outreach for its further dissemination and sustainability. Replication is occurring at the local level in Brazil, as orders come into metal workers to construct the system for additional gold shops. The government of Peru, through the Ministry of Energy and Mines, is taking the lead on replication of the technology across Peru, with EPA assistance in workshops. A final report about the technology, as well as a construction manual and outreach documents are available in Portuguese, Spanish, and French. The system captures more than 80% of mercury being used. Since mercury is easily recycled, it will be managed according to a government plan. To date, EPA estimates a capture of about 337kg of mercury from participating gold shops. <http://www.ipd.anl.gov/anlpubs/2008/06/61757.pdf>

## **VI. SUSTAINABLE PRODUCTION AND CONSUMPTION**

There is growing worldwide pressure on natural resources, environmental carrying capacities, and material prices. As a result, there is growing interest in increasing efficiency in use of resources and reducing environmental impacts and waste. There is also greater awareness of the need to be better stewards of the environment and to reach a more sustainable level of production and consumption in order to become more competitive.

Stewardship is an ethic and a behavior that move us along a path toward sustainability. In the United States, there are many efforts in place in the public, private, and non-profit sectors to foster stewardship and progress toward sustainability. However, these efforts are often not connected within or across organizations.

Provided below are illustrative examples of activities to advance stewardship and sustainability. The categories encompass environmental impacts and focus areas. The activities encompass tools and sources of information and data that can lead to greater stewardship and sustainability.

The following description of sustainability efforts are organized by a) Domestic: Sustainable Manufacturing; Energy; Water Quantity/Water Quality; Products; Supply Chain; Sustainable Agriculture; Sustainable Communities; Ecosystems; and Government Agency Toolbox; and b) International.

### **VI.1. DOMESTICALLY-FOCUSED AGENCIES AND PROGRAMS**

#### **V1.1.a. Sustainable Manufacturing:**

According to the Alliance for American Manufacturing, manufacturing represents 12 percent of the US gross domestic product, two-thirds of its total exports of goods and services, and supports more than 20 million jobs. However, the role of manufacturing in the US economy continues to decline. US Department of Commerce is interested in a more competitive manufacturing sector with greater profits and presence in the US economy.

**Sustainability.** As U.S. companies look to more efficiently use of resources (e.g., improve energy efficiency, minimize raw materials use), ensure compliance with domestic and international

environmental and health regulations, and enhance marketability of their products and services, they have also become interested in sustainable manufacturing practices. U.S. Department of Commerce defines sustainable manufacturing as the creation of manufactured products that use processes that minimize negative environmental impacts, conserve energy and natural resources, are safe for employees, communities, and consumers, and are economically sound. There is a growing understanding that sustainable manufacturing practices will improve U.S. global competitiveness, firm profitability, and manufacturing job growth.

One of the main goals at the U.S. Department of Commerce is to foster domestic and international conditions for doing business that allow U.S. firms to be more sustainable and thereby improve competitive advantage, compete more successfully, and enhance profitability.

In order to ensure comprehensive implementation of this initiative and meet a critical need in ensuring communication between federal agencies engaged in this area, Department of Commerce's Manufacturing and Services unit created an interagency working group on sustainable manufacturing.

(<http://manufacturing.gov/sustainability>) (<http://trade.gov/competitiveness/sustainablemanufacturing>)

#### **By-product synergy.**

By-product synergy (BPS) matches producers of under-valued waste streams with users, helping to create new revenues or savings for the organizations involved while also reducing environmental impacts. BPS also works with regulators to establish support for the process. Participants learn about each other's production processes, input needs, and by-product streams. Through facilitated collaboration, e.g., by the U.S. Business Council for Sustainable Development, they identify innovative ways to partner and integrate their operations to cut pollution, save energy, reduce material costs, and improve their bottom line. (<http://www.usbcسد.org/byproductsynergy.asp>)

**Life cycle assessment** (LCA) is a technique to assess the environmental aspects and potential impacts associated with a product, process, or service, by:

- compiling an inventory of relevant energy and material inputs and environmental releases;
- evaluating the potential environmental impacts associated with identified inputs and releases; and
- interpreting the results to help you make a more informed decision.

EPA promotes the use of LCAs to make more informed decisions through a better understanding of the human health and environmental impacts of products, processes, and activities.

(<http://www.epa.gov/nrmrl/lcaccess>)

**Footprinting.** Measuring an organization's footprint is an estimate of the impacts on the environment from its activities. These impacts can include the organization's direct impacts as well as its indirect impacts from its suppliers and customers. The footprint can measure specific impacts, e.g., carbon or water. (e.g., Global Footprint Network - <http://www.footprintnetwork.org>; H2O Conserve - <http://www.h2oconserve.org>) There are a number of on-line calculators to assist organizations estimate these impacts. (e.g., <http://www.nature.org/initiatives/climatechange/calculator>;

[http://www.epa.gov/climatechange/emissions/ind\\_calculator.html](http://www.epa.gov/climatechange/emissions/ind_calculator.html);  
[http://www.h2oconserve.org/wc\\_disclaimer.php](http://www.h2oconserve.org/wc_disclaimer.php)).

**Carbon footprint.** PepsiCo. estimated its carbon footprint to determine how much each carbon dioxide is released into the atmosphere to produce each half-gallon of its orange juice.

**Design for the Environment (DfE)** Program works with environmental organizations and industry to protect human health and promote sustainable chemistry. The DfE Safer Product Labeling Program empowers the consumer to make informed choices about safer household and cleaning products by allowing the use of it logo on products. This program also offers manufacturers assistance in selecting safer chemicals for cleaning products. DfE's Alternatives Assessments program helps other industries choose safer chemicals, like lead-free solder and flame retardants in furniture and electronics. When safer chemical alternatives have not yet been identified, DfE encourages best practices to minimize pollution, especially in the auto refinishing and spray polyurethane foam industries. (<http://epa.gov/dfe>)

**Performance benchmarking.** The benchmarking analysis is based on publicly available information on each company's Internet site. The findings are posted on the company's website. The benchmark comparisons are used to help the company analyze how to further improve its environmental performance. For example, Bristol Myers Squibb benchmarked its environmental performance to other pharmaceutical companies and companies in other industries.

**Environmental management system (EMS)** is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. Most EMSs are built on the "Plan, Do, Check, Act" model, which leads to continual improvement based upon: Planning, including identifying environmental aspects and establishing goals; Implementing, including training and operational controls; Checking, including monitoring and corrective action; and Reviewing, including progress reviews and acting to make needed changes to the EMS. (<http://www.epa.gov/EMS>;  
<http://www.iso14000-iso14001-environmental-management.com>)

**Lean** is a business model and collection of methods that help eliminate waste while delivering quality products on time and at least cost. EPA is interested in finding ways to maximize the environmental benefits of lean in the manufacturing realm and in streamlining administrative processes.

(<http://www.epa.gov/lean>; <http://www.lean.org>)

**Sector strategies.** EPA's Sector Strategies Program works to improve environmental protection, energy efficiency, and resource management in major U.S. manufacturing and business sectors by developing and promoting strategies that reduce barriers to progress and drive improvement. The program's sector-based approach complements EPA's traditional focus on individual media (air, water, and waste), by providing a holistic view of the full range of each sector's environmental impacts and challenges within its regulatory and economic frameworks. (<http://epa.gov/sectors>)

#### **VI.1.b. Energy:**

The role of energy in the U.S. economy and environmental protection efforts is becoming more clearly understood. Energy has also become a greater focal point in national security. One area of focus has been to increase the amount of energy derived from renewable sources – e.g., according to the U.S. Department of Energy, renewable energy represented over 7 percent of total U.S. energy consumption in 2008, compared to 6 percent in 2004.

([http://eia.doe.gov/cneaf/alternate/page/renew\\_energy\\_consump/rea\\_prereport.html](http://eia.doe.gov/cneaf/alternate/page/renew_energy_consump/rea_prereport.html))

**Energy assessments.** Department of Energy’s Industrial Technologies Program conducts energy assessment through Save Energy Now. These assessments help facilities identify opportunities to save energy and money in energy-intensive industrial manufacturing systems.

(<http://www1.eere.energy.gov/industry/saveenergynow/assessments.html>) In addition, the Industrial Technologies Program sponsors Industrial Assessment Centers, which provide these energy assessments and also serve as a training ground for the next-generation of energy savvy engineers.

(<http://www1.eere.energy.gov/industry/bestpractices/iacs.html>)

**Energy efficiency.** ENERGY STAR is a joint program of the U.S. EPA and the U.S. Department of Energy to encourage greater deployment of energy efficient products and practices. Products in more than 60 categories are eligible for the ENERGY STAR label due to their energy savings. Product categories include:

- Appliances;
- Heating and cooling;
- Water heaters;
- Home envelope;
- Home electronics;
- Office equipment;
- Lighting;
- Commercial food service; and
- Other commercial products. (<http://www.energystar.gov>)

**Green power.** Green Power Partnership is a voluntary program that supports the procurement of green power by organizations by offering expert advice, technical support, tools and resources. Partnering with EPA can help an organization lower its transaction cost of buying green power, reduce its carbon footprint, and communicate its leadership to its key stakeholders. Green power is electricity produced from a subset of renewable resources, such as solar, wind, geothermal, biomass, and low-impact hydro.

(<http://www.epa.gov/grnpower>)

**Reducing transportation-related emissions.** Smart Way Program is a brand that represents environmentally cleaner, more fuel efficient transportation options. The SmartWay brand identifies products and services that reduce transportation-related emissions. However, the impact of the brand is much greater since the SmartWay brand signifies a partnership among government, business, and consumers to protect the environment, reduce fuel consumption, and improve our air quality. All of EPA SmartWay transportation programs result in significant, measurable air quality and/or greenhouse gas improvements while maintaining or improving current levels of other emissions and/or pollutants.

(<http://www.epa.gov/smartway>)

### **VI.1.c. Water Quantity/Water Quality:**

For many areas of the U.S., water availability continues to be a major long-term issue. Water availability refers to the quantity and quality of water to support increased development. Some areas have resorted to rationing, but, more often, increased water conservation and protection efforts are relied on.

**Sustainable infrastructure.** Much of the drinking water and wastewater infrastructure in the U.S. was built 30 years following World War II, mirroring the increase in population. We will face infrastructure rehabilitation and replacement needs over the next several decades. If these needs are not addressed, the achievements of the last 30-40 years and our nation's waters and public health will be at risk. EPA is promoting sustainable practices that will help to reduce the potential gap between funding needs and spending at the local and national level. EPA's Sustainable Infrastructure Initiative guides its efforts in changing how the nation views, values, manages, and invests in its water infrastructure. EPA is working with the water industry to identify best practices that have helped many of the nation's utilities address a variety of management challenges and extend the use of these practices to a greater number of utilities. Collaboration with a coalition of leaders, with EPA playing a prominent role, can build a roadmap for the future promotion of sustainable infrastructure through a Four Pillars approach:

- Better management of water and wastewater utilities;
- Rates that reflect the full cost pricing of services;
- Efficient water use; and
- Watershed approaches to protection. (<http://www.epa.gov/waterinfrastructure>)

**Reducing and returning water.** Some companies are voluntarily establishing an ambitious goal to be water neutral across its operations and its supply chain. It plans to reduce and recycle the amount of water used and return the water that it uses. Coca-cola, for instance, is working with the World Wildlife Fund to identify opportunities to reduce water use in its supply chain, for example, with sugar growers.

**Water quality monitoring.** As of 2004, 16% of nation's river miles and 39% of nation's lake acres assessed, and 29% of nation's bays/estuary square miles.

(<http://www.epa.gov/owow/305b/2004report/report2004pt1.pdf>) Kodak Colorado Division, in collaboration with the City of Fort Collins, South Fort Collins Sanitation District, Boxelder Sanitation District, Town of Windsor Sanitation District, and the City of Greeley Sanitation District, work with the Colorado Department of Public Health and Environment, the North Front Range Water Quality Planning Association, and EPA Region 8 to coordinate water quality monitoring along 40 miles of the Cache la Poudre River and provide the monitoring data to the State. In addition, Kodak worked with the state to exercise permitting flexibilities based on new monitoring guidance developed by the state to encourage similar efforts in other watersheds ([www.cdphe.state.co.us/wq/PermitsUnit/PolicyandGuidance/MonitoringReductionPolicy.pdf](http://www.cdphe.state.co.us/wq/PermitsUnit/PolicyandGuidance/MonitoringReductionPolicy.pdf)). As a result of sharing their water quality monitoring data, the State integrated ambient water monitoring into Kodak's effluent monitoring strategy and reflect this in their permit.

**Volunteer water quality monitoring.** EPA provides information to inform the public of local watershed protection and restoration efforts. (<http://www.epa.gov/adopt>) For example, EPA provides information

about how volunteers can monitor water quality (<http://www.epa.gov/owow/monitoring/volunteer>) and a directory of volunteer organizations around the country engaged in monitoring rivers, lakes, estuaries, beaches, wetlands, and ground water. (<http://yosemite.epa.gov/water/volmon.nsf>)

**Water efficiency.** WaterSense, a partnership program sponsored by EPA, makes it easy for Americans to save water and protect the environment. WaterSense helps consumers identify water-efficient products and programs. The WaterSense label will indicate that these products and programs meet water efficiency and performance criteria. WaterSense labeled products will perform well, help save money, and encourage innovation in manufacturing. WaterSense is partnering with irrigation professionals and irrigation certification programs to promote water-efficient landscape irrigation practice, and is also partnering with manufacturers, retailers and distributors, and utilities to bring WaterSense products to the marketplace and make it easy to purchase high-performing, water-efficient products. (<http://www.epa.gov/WaterSense>)

**Watershed association.** Stony-Brook-Millstone Watershed Association is a non-profit organization dedicated to enhancing the quality of the natural environment surrounding Stony Brook and the Millstone River. The association is committed to informed land use decision making, the protection of water quality and supply, and an improved community awareness of environmental issues. In addition to management of a nature reserve and hiking trails, the association sponsors educational programs, teacher workshops, and a partnership program to foster stewardship of the watershed. (<http://thewatershed.org>)

#### **VI.1.d. Products:**

Products have environmental implications based on the materials and resources used to produce and transport them and their form and destination after they are used. Product purchase and product manufacturing decisions are inter-connected. There is growing awareness that a company's environmental footprint includes the use of its products, and in some cases, these product use impacts outweigh the company's direct environmental impacts.

**Environmental impacts.** Consumer product choices have environmental implications. EPA provides information to inform consumer choices. (<http://www.epa.gov/epahome/shopping.htm>)

**Ecolabels.** Ecolabels represent a way to communicate the environmental impacts of products. A website has been established to list and provide information about various ecolabels in use around the world. (<http://www.ecolabelling.org>)

**Product design.** Some companies classify ingredients considered for use in its products by their impact on the environment and human health. As an example, SC Johnson scientists have a computerized system that helps them select the best available ingredients and continually improve their products.

**Stewardship.** Product stewardship is a product-centered approach to environmental protection and calls on those in the product lifecycle -- manufacturers, retailers, users, and disposers -- to share responsibility for reducing the environmental impacts of products. This website highlights the latest developments in

product stewardship and provides numerous links to other sources of information.

(<http://www.epa.gov/epawaste/partnerships/stewardship>)

#### **V1.1.e. Supply Chain:**

There is growing understanding that a company's environmental footprint does not start or end at the fence line of its facilities, but its footprint also includes its supply chain. In some cases, the environmental impacts of a company's supply chain may outweigh its direct environmental impacts.

**Greening supply chain.** The [Green Suppliers Network](#) is a collaborative venture among industry, EPA, and the U.S. Department of Commerce's Manufacturing Extension Partnership (MEP). The Green Suppliers Network works with all levels of the manufacturing supply chain to improve processes and minimize waste generation. Through onsite technical reviews, suppliers continuously learn ways to increase energy efficiency, identify cost-saving opportunities, and optimize resources and technologies to eliminate waste. The result has been more effective processes and products with higher profits and fewer environmental impacts. Operating under the umbrella of the Green Suppliers Network, **E3: Economy, Energy, and Environment** is a coordinated federal and local technical assistance initiative to help manufacturers adapt and thrive in a new business era focused on sustainability.

**Sustainable sourcing.** A number of companies are actively engaged with sustainable sourcing of supplies through purchase of certified sustainable forest and paper products or sustainable agricultural products. For example, Xanterra Parks & Resorts Sustainable Cuisine program and Xerox's support of sustainability forestry through its product offerings and partnership with The Nature Conservancy.

**Transparency.** Some companies share the names of their suppliers to promote transparency and to raise the environmental standards in the electronics industry supply chain. Hewlett Packard, for instance, provides the list of its top suppliers through its website. In addition, it has provided information regarding the greenhouse gas emissions from its suppliers

**Industry Code of Conduct.** Electronic Industry Citizenship Coalition promotes an industry code of conduct for global electronics companies and their supply chains to promote progressive corporate social responsibility programs and improve working and environmental conditions. (<http://www.eicc.info>)

#### **VI.1.f. Sustainable Agriculture:**

Agriculture and forestry are a major U.S. industry, providing significant economic benefits from both domestic and export sales. In addition, agriculturalists and foresters manage extensive acreage in the United States and, thus, can exert significant impacts—both positive and negative—on the natural environment and communities. This section provides highlights of the scope of agriculture in the United States along with a brief overview of the programs of the U.S. Department of Agriculture affecting economic, environmental and social dimensions of agriculture-- including consumers.



In 2007, U.S. farms sold \$297 billion in agricultural products (of which \$81.9 billion were exports) while incurring \$241 billion in production expenses. In addition to receipts from sales, U.S. farms also received \$8 billion in government payments and \$10 billion in farm-related income in 2007. (See National Agricultural Statistics Service, [www.nass.usda.gov](http://www.nass.usda.gov), [www.agcensus.usda.gov](http://www.agcensus.usda.gov) ).

The value of agricultural production is concentrated in a few regions: the Midwest, the Mississippi Delta, California and the Atlantic Coast. The top five states for the value of agricultural products sold and their percentage of the total value are: California (11.4 percent), Texas (7.1 percent), Iowa (6.9 percent), Nebraska (5.2 percent) and Kansas (4.8 percent). Of the almost \$300 billion agricultural products sold in 2007, grains and oilseeds accounted for 26 percent, cattle and calves for 21 percent, poultry and eggs for 12 percent, milk for 11 percent, and fruits and nuts for 5 percent.

Non-Federal agricultural and forest lands occupy 1.4 billion acres or nearly 70 percent of the contiguous United States. U.S. land types include forests (28 percent), croplands (20 percent), urban, suburban and rural residential areas, (6 percent), miscellaneous other uses (7 percent); and special uses—primarily parks and wildlife areas (13 percent)-- (<http://www.ers.usda.gov/publications/sb973.pdf>). In addition to supporting the agriculture and forest sectors, farms and forests also provide a range of ecosystem services including wildlife habitat and corridors that support healthy wildlife populations, filter groundwater supplies, regulate surface water flows, sequester carbon, and provide open space and scenic vistas that improve quality of life for people. Increasingly, methods of valuing and accounting for ecosystem services associated with landscapes and their management are being developed and implemented. (See USDA Office of Ecosystem Services).

Many farmers and ranchers have a strong conservation ethic and produce in sustainable ways. As a whole, the U.S. farming community has made considerable strides in moving toward agricultural practices that have lower impacts on the environment and are more sustainable. For example, the soil erosion rate on U.S. croplands has been reduced by 40 percent since the 1980s while use of no- and minimum tillage has increased significantly. Pesticide use has dropped with the increased adoption of integrated pest management (IPM), and use of insect-resistant crops. U.S. agriculture has continued to increase in productivity so that demands of a growing global population for food, fiber, and more recently, biofuels, may be met without bringing new lands into production and without increases of most agricultural inputs. At the same time, farming and ranching may include activities that can have negative environmental consequences. Crop and animal production can affect water and air quality, water flows, and wildlife habitat. Fertilizers, insecticides, pesticides and livestock waste can enter ground and surface water, adversely affecting water quality. Overgrazing and cropping fragile lands can increase particulate matter in the air. The conversion of grasslands to crop and can increase soil erosion and reduce wildlife cover” (See “Conservation and the Environment”, 2007 Farm Bill Theme Papers, USDA/OCE).

Farms in the United States fall increasingly into a bimodal size distribution. The 2007 Census of Agriculture results show that concentration of production agriculture has increased in the last five years. In 2002, 144,000 farms produced 75 percent of the value of U.S. agricultural production. In 2007, the number of farms that produced that same share of production declined to 125,000. ([www.agcensus.usda.gov](http://www.agcensus.usda.gov)) The 2007 Census of Agriculture counted 2,204,792 farms in the United States,

which was a 4 percent increase from 2002. Overall, however, the number of farms nationwide has been on a declining trend since World War II. Most of the recent growth in U.S. farm numbers came from small operations, especially farms with sales of less than \$1,000 (an increase of 118,000 between 2002 and 2007), but also farms with sales of more than \$500,000 (an increase of 46,000). Most farms in the United States are small, with 60 percent of all farms reporting less than \$10,000 in sales of agricultural products. Of the 2.2 million farms nationwide, only 1 million show positive net cash income from the farm operation. The remaining 1.2 million farms depend on non-farm income to cover farm expenses. Sixty-five percent of farmers also work off-farm.

The United States Department of Agriculture ([www.usda.gov](http://www.usda.gov)) promotes sustainable development related to agriculture, forestry, and communities by working with farmers and forest managers of all sizes, organizations, individuals, and state, local and tribal governments to:

- Emphasize farm and forest management and practices that are profitable, ecologically sound and good for communities.
- Conserve important farm-, range-, and forest lands and protect them from conversion.
- Provide incentives and know-how to keep environmentally sensitive farmland covered with grasses and trees.
- Help citizens care for their neighborhood gardens, community trees and forests and other green spaces.
- Help farmers get the most value for their products through farmers markets, direct marketing techniques, and organic market expansion along with export and other markets.
- Connect small business owners—including farmers—to the latest technologies and resources.
- Foster start-up of micro- and small enterprises through grants and loans.
- Work with communities to identify options and plan their futures.
- Create regional partnerships to connect urban and rural consumers and producers.
- Target information and education to families, consumers, ranchers, woodlot owners, and local government officials through a national network of extension agents.
- Link rural communities across long distances to vital services using the latest technologies, for example eXtension.
- Reduce hunger; improve nutrition and food quality; and build community food systems, linking local farmers and markets.

The USDA Strategic Plan describes Departmental goals and priorities can be found on <http://www.ocfo.usda.gov/usdasp/usdasp.htm>.

Selected USDA Sustainability and Stewardship Programs and Activities include:

- USDA Council for Sustainable Development—facilitates interagency work on the economic, environmental and social sustainability of food, fiber, agricultural, forest and range systems. Provides a Departmental platform to discuss vital issues, set priorities and share best practices. (<http://www.usda.gov/oce/sustainable>)
- Science for Sustainability Research, Education and Extension.
  - Research for Agricultural Systems and Sustainability  
[http://www.ars.usda.gov/research/programs/programs.htm?NP\\_CODE=207](http://www.ars.usda.gov/research/programs/programs.htm?NP_CODE=207)

[http://www.ars.usda.gov/research/programs/programs.htm?NP\\_CODE=305](http://www.ars.usda.gov/research/programs/programs.htm?NP_CODE=305)

<http://www.nifa.usda.gov/fo/fundview.cfm?fonum=1134>

<http://www.nrcs.usda.gov/technical/nri/ceap/> ■ Conservation Effects Assessment Project (CEAP) began in 2003 as a [multi-agency](#) effort to quantify the environmental benefits of conservation practices used by private landowners participating in selected U.S. Department of Agriculture (USDA) conservation programs. The project consists of three components: (1) [National Assessment](#) - Providing national summary estimates of conservation practice benefits and assessing the potential for USDA conservation programs to meet the nation's environmental and conservation goals. [Cropland](#), [wetlands](#), [wildlife](#) and [grazing lands](#) will be assessed. (2) [Watershed Assessment Studies](#) - Basic research on conservation practices in selected watersheds nationwide to provide a framework for evaluating and improving performance of national assessment models; (3) [Bibliographies and Literature Reviews](#) - Current literature on conservation programs. Four literature reviews are being developed that will document what is known and not known about the environmental benefits of conservation practices and programs for cropland, fish and wildlife, wetlands, and grazing lands.

<http://www.ars.usda.gov/pandp/locations.htm?modecode=02-02-00-00>

- Sustainable agriculture information resources  
[http://afsic.nal.usda.gov/nal\\_display/index](http://afsic.nal.usda.gov/nal_display/index)  
<http://attra.ncat.org/>
- Grants, research, and education for sustainable agriculture  
[www.sare.org](http://www.sare.org)
- National multi-stakeholder Roundtables on forests, ranges, minerals, and water  
<http://www.sustainableforests.net>  
<http://sustainableangelands.warnercnr.colostate.edu>  
<http://www.unr.edu/mines/smr/>  
<http://acwi.gov/swrr/>
- Sustainable USDA Business Operations
- Biobased fuels and other products
- Biobased products policy to increase utilization of biobased renewable products by USDA and throughout the Federal Government by designation of eligible products  
<http://www.usda.gov/procurement/biobased/index.htm>  
[http://www.usda.gov/procurement/programs/biobased/biobased\\_finalrule.pdf](http://www.usda.gov/procurement/programs/biobased/biobased_finalrule.pdf)  
[http://www.usda.gov/procurement/programs/biobased/awarenessbrochure\\_may2006.pdf](http://www.usda.gov/procurement/programs/biobased/awarenessbrochure_may2006.pdf)

- Farm and Forestland Conservation Programs to reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, protect farm and forest lands from conversion and respond to forest health threats

<http://www.nrcs.usda.gov/programs/>

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject-copr&topic=crp>

<http://www.fs.fed.us/spf/>

Integrated Pest Management (IPM) reduces use of agricultural pesticides

<http://www.ipmcenters.org/>

[http://ars.usda.gov/research/programs/programs.htm?NP\\_CODE=304](http://ars.usda.gov/research/programs/programs.htm?NP_CODE=304)

<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1114>

<http://www.nrcs.usda.gov/technical/nutrient.html>

- Agroforestry. USDA's National Agroforestry Center accelerates application of agroforestry through a national network of partners. Together it conducts research, develops technologies and tools, coordinates demonstrations and training, and provides useful information to natural resource professionals. One of its focus areas includes tree planting—the right trees planted in the right places for the right reasons can add value to land-use systems. The Center's Working Trees theme promotes development of sustainable agriculture and communities.

<http://www.unl.edu/nac>

- Sustainable Forestry. Certification programs were established to coordinate development of forest management standards for different bioregions, certify sustainable forest management practices, prevent illegal logging, and communicate these practices to consumers and influence their purchase decisions. Supporting organizations include the Forest Stewardship Council (<http://www.fscus.org>), Sustainable Forestry Initiative (<http://www.sfiprogram.org>), Rainforest Action Network (<http://ran.org>) and the World Wildlife Fund ([http://www.panda.org/what\\_we\\_do/footprint/forestry](http://www.panda.org/what_we_do/footprint/forestry)).

- Sustainable Communities, linking local farms and food to communities, through direct marketing, value added producer grants, farmers markets, and farm-to-school programs.

<http://www.ams.usda.gov/directmarketing/>

<http://www.rurdev.usda.gov/rbs.coops/vadg.htm>

<http://www.ams.usda.gov/farmersmarkets/>

[http://www.fns.usda.gov/cnd/Guidance/Farm-to-School-Guidance\\_12-19-2005.pdf](http://www.fns.usda.gov/cnd/Guidance/Farm-to-School-Guidance_12-19-2005.pdf)

<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1200>

-Resource Conservation and Development Program assists local groups plan and implement coordinated approaches to conservation and development

<http://www.nrcs.usda.gov/programs/rcd/>

-Community Food Projects meet the need of low-income people, increase the self-reliance of communities in providing for their own needs, and promote local food, farm, and nutrition solutions (CSREES/ now NIFA)

-Expanded Food and Nutrition Education Program (EFNEP), a program operating in 50 states plus American Samoa, Guam, Micronesia, Northern Marianas, Puerto Rico and the Virgin Islands, designed to assist limited-resource audiences in acquiring the knowledge, skills, attitudes, and changed behavior necessary for nutritionally sound diets, and to contribute to their personal development and the improvement of the total family diet and nutritional well-being.

-Food recovery/Food donations. USDA citizen guide on food recovery, defined as the collection of wholesome food for distribution to hungry people. (<http://www.usda.gov/news/pubs/gleaning/content.htm>). It has also developed a policy to support food donations (<http://www.afm.ars.usda.gov/ppweb/PDF/223-01.pdf>). EPA Region 1 has a website to identify organizations that accept food donations (<http://www.epa.gov/ne/assistance/reuse/food/html>).

-Nutrition guidance. The USDA Center for Nutrition Policy and Promotion (CNPP) works to improve the health and well-being of Americans by developing and promoting dietary guidance that links scientific research to the nutrition needs of consumers. CNPP is an agency of USDA's [Food, Nutrition, and Consumer Services](#). It collaborates with the Department of Health and Human Services in formulating dietary guidelines for Americans, prepares and maintains the Thrifty Food Plan, and the Diet Pyramid for adults and for children, among other activities ([www.cnpp.usda.gov](http://www.cnpp.usda.gov)). (<http://www.mypyramid.gov>).

-Nutrition Assistance. Fully two thirds of the USDA budget is provided to U.S. consumers in the form of nutrition assistance through a variety of well known programs including the Supplemental Nutrition Assistance Program (SNAP)—formerly food stamps—the Special Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC), the School Feeding Programs (lunch, breakfast, etc.). These programs are administered by the USDA Food and Nutrition Service ([www.fns.usda.gov](http://www.fns.usda.gov)).

**Selected new programs and priorities are provided here:**

- “Know Your Farmer-Know Your Food” Initiative, announced by USDA Secretary Tom Vilsack in September 2009 to help support small and medium farmers through marketing and other assistance. [www.usda.gov/knowyourfarmer](http://www.usda.gov/knowyourfarmer)

[http://www.youtube.com/watch?v=Tms8ye8mw\\_k](http://www.youtube.com/watch?v=Tms8ye8mw_k)

**Newly announced changes in Research, Education and Economics<sup>1</sup>:**

- New Office of the Chief Scientist—Chief Scientist role is to focus resources where scientific breakthroughs can fundamentally change the way we address some of the most vexing of society’s problems, from food safety and food security to climate change.
- National Institute of Food and Agriculture (formerly Cooperative Research, Education and Extension Service).
- Specialty Crop Research Initiative (SCRI), \$50 million
- Organic Agricultural Research and Extension Initiative, \$18 million
- Agriculture and Food Research Initiative (AFRI), provides funding for fundamental and applied research, extension, and education to address food and agricultural sciences. Priorities include:
  - Plant health and production and plant products
  - Animal health and production and animal products
  - Food safety, nutrition and health
  - Renewable energy, natural resources and environment
  - Agriculture systems and technology;
  - Agricultural economics and rural communities.
- Biomass Research and Development Initiative, competitive grants to research, develop, and demonstrate biomass projects. The three main technical areas are: (1) Feedstocks Development, (2) Biofuels and Biobased Product Development, and (3) Biofuels Development Analysis. (Joint with Dept. of Energy)

Agriculture is a major U.S. industry and a net exporter of food. According to USDA, there are currently over two million farms covering an area of over 922 million acres (includes cropland, pastureland, and woodland), representing over 40 percent of the country’s total land area. Given its size, agriculture represents a level of significance in environmental protection efforts.

**Sustainable development in agriculture.** The USDA Council on Sustainable Development facilitates interagency work on the economic, environmental and social sustainability of food, fiber, agricultural, forest and range systems by providing a Departmental platform to discuss vital issues, set priorities and share best practices. Related topics include sustainable agriculture, sustainable forestry, and sustainable communities, and the links between them. (<http://www.usda.gov/oce/sustainable>)

**Sustainable agriculture research and education.** The Sustainable Agriculture Research and Education (SARE) program has helped advance farming systems that are profitable, environmentally sound, and good for communities through a nationwide research and education grants program. SARE administers a

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<sup>1</sup> Statement by Dr. Rajiv Shah, Under Secretary of Research, Education and Economics, Before the Subcommittee on Conservation, Credit, Energy, and Research Committee on Agriculture, U.S. House of Representatives, September 30, 2009.

competitive grants program and publishes a variety of print and electronic resources for farmers, agricultural educators, and consumers. (<http://www.sare.org>)

**Sustainable farming.** World Wildlife Fund (WWF) works to reduce humanity's ecological footprint – the amount of land and natural resources needed to supply food, water, fiber and timber, and to absorb CO<sub>2</sub> emissions. Its focus areas for reducing impacts include carbon, energy, and climate; farming, fishing, forestry, and water. When farming operations are sustainably managed, both on land and in the water, they can preserve and restore critical habitats, help protect watersheds, and improve soil health and water quality. To achieve these benefits, WWF collaborates with a wide range of players to:

- Convene multi-stakeholder roundtables;
- Identify and implement better management practices that protect the environment and producers' bottom line;
- Create financial incentives to encourage biodiversity conservation;
- Improve agricultural policies; and
- Identify new income opportunities for producers to ensure their economic viability.

WWF focuses on reconciling the needs of people with the diversity of all life found on our planet. With growing global food needs, sustainable resource management of farming activities becomes ever more urgent. ([http://www.panda.org/what\\_we\\_do/footprint/agriculture](http://www.panda.org/what_we_do/footprint/agriculture))

**Agroforestry.** USDA's National Agroforestry Center accelerates the application of agroforestry through a national network of partners. Together, it conducts research, develops technologies and tools, coordinates demonstrations and training, and provides useful information to natural resource professionals. One of its focus areas includes tree planting – i.e., the right trees planted in the right places for the right reasons can add value to land-use systems. The Center's *Working Trees* theme promotes development of sustainable agriculture and communities. (<http://www.unl.edu/nac>)

**Food recovery/Food donations.** USDA has a citizen guide on food recovery, defined as the collection of wholesome food for distribution to poor and hungry people. (<http://www.usda.gov/news/pubs/gleaning/content.htm>). It has also developed a policy to support food donations (<http://www.afm.ars.usda.gov/ppweb/PDF/223-01.pdf>). EPA Region 1 has a website to identify organizations that accept food donations (<http://www.epa.gov/ne/assistance/reuse/food.html>).

**Food pyramid.** USDA's Center for Nutrition Policy and Promotion was established to improve the nutrition and well-being of Americans. Toward this goal, the Center focuses its efforts on two primary objectives:

- Advance and promote dietary guidance for all Americans, and
- Conduct applied research and analyses in nutrition and consumer economics.

(<http://www.mypyramid.gov>)

**Sustainable Forestry.** With growing public interest in forest management and reducing deforestation, certification programs were established to coordinate development of forest management standards for different bioregions, certify sustainable forest management practices, prevent illegal logging, and communicate these practices to consumers and influence their purchase decisions. Supporting

organizations include Forest Stewardship Council (<http://www.fscus.org>), Sustainable Forestry Initiative (<http://www.sfiprogram.org>), Rainforest Action Network (<http://ran.org>), and World Wildlife Fund ([http://www.panda.org/what\\_we\\_do/footprint/forestry](http://www.panda.org/what_we_do/footprint/forestry)).

#### **VI.1.g. Sustainable Communities:**

The goal of sustainable communities is to move and plan toward safe, livable, and healthy lifestyles, while also expanding economic opportunities and protecting the environment.

**Green communities.** Green Communities website is a portal to tools and information on the best strategies, programs, and policies to reduce one's environmental footprint. A 5-step environmental planning framework leads viewer to a greener, sustainable future. (<http://www.epa.gov/greenkit>)

**Sustainable communities.** EPA joined with the U.S. Department of Housing and Urban Development (HUD) and the U. S. Department of Transportation (DOT) to help improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide. Through a set of guiding livability principles and a partnership agreement that will guide the agencies' efforts, this partnership will coordinate federal housing, transportation, and other infrastructure investments to protect the environment, promote equitable development, and help to address the challenges of climate change. (<http://www.epa.gov/smartgrowth/2009-0616-epahuddot.htm>; <http://www.sustainable.org>)

**Green Buildings.** The goal of [EPA's Green Building Program](#) is to facilitate the mainstream adoption of effective green building practices. Recognizing that many other organizations are already working toward this goal, EPA will focus primarily on two roles:

- *Strengthening the Foundations of Green Buildings:* EPA has expertise and credibility to raise awareness of green building practices and to work with this emerging field to ensure that it promotes continual improvement and employs practices that most effectively advance environmental and human health protection. EPA's *Green Building Strategy* commits the Agency to strengthening the scientific, technical, economic and institutional foundations of green building.
- *Raising Public Awareness of Building-related Impacts and Opportunities:* Recognizing that most of the attention to green buildings, to date, has focused on new commercial and public buildings, EPA will increase its focus on untapped opportunities for greening existing buildings and houses, which comprise the majority of the U.S. building market. In particular, the Agency will focus on providing green building information and opportunities to homeowners.

**Sustainable Tourism/Hospitality:** EPA has several ongoing activities in this area:

- EPA is participating with other stakeholders (Green Meeting Industry Council, Convention Industry Council, etc.) in efforts to develop ASTM sustainability standards for the meetings and events industry. Currently, development work is centered around nine related economic sectors involving some facet of the meeting/event industry -- Accommodations, Audio Visual, Communication,



Exhibits, Food and Beverage, On-site Office, Destinations, Meeting Venue, and Transportation. EPA hopes the final ASTM standards will be specific, measurable, performance-based criteria, and (if deemed sufficient) intends to adopt them into Agency procurement rules as a means to assist in government purchasing of meeting and conference facilities and services.

- In addition to assisting in developing the ASTM standards, EPA regional offices have helped local hotels, restaurants, sports arenas, and other hospitality providers identify and implement sustainable practices through workshops and other training opportunities.
- EPA also has an on-going dialogue with state green lodging programs to ensure effective coordination and information exchange on green hospitality at the local and state levels.

**Low Impact Development (LID)** is an approach to land new development, redevelopment, or retrofits to existing development that works with nature to sustainably manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste. There are many practices that have been used to adhere to these principles such as bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements. By implementing LID principles and practices, water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within an ecosystem or watershed. Applied on a broad scale, LID can maintain or restore a watershed's hydrologic and ecological functions. (<http://www.epa.gov/nps/lid>)

**Green infrastructure** refers to systems and practices that use or mimic natural processes to infiltrate, evapotranspire (the return of water to the atmosphere either through evaporation or by plants), or reuse stormwater or runoff on the site where it is generated. Green infrastructure can be used at a wide range of landscape scales in place of, or in addition to, more traditional stormwater control elements to support the principles of LID. ([http://cfpub.epa.gov/npdes/home.cfm?program\\_id=298](http://cfpub.epa.gov/npdes/home.cfm?program_id=298))

**Cleaning up and revitalizing sites.** The expansion, redevelopment, or reuse of brownfields may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. (<http://www.epa.gov/brownfields>)

**Reducing pollution.** Community Action for a Renewed Environment (CARE) is a competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. Through this program, EPA provides financial and technical assistance to these communities to renew their environment. (<http://www.epa.gov/care>)

#### **VI.1.h. Ecosystems:**

There is growing understanding of the need to value and protect ecosystems and of the services they provide. Protection of ecosystems can be fostered through partnership efforts that promote greater environmental stewardship. Companies rely on ecosystems for the services they provide (e.g., material inputs), but they also affect ecosystems. As ecosystems are degraded or depleted, company access to resources and profitability can be negatively affected.

**Ecosystems Services.** World Resources Institute assist with Corporate Ecosystem Services Reviews, which are a structured methodology to develop strategies for managing business risks and opportunities arising from a company's dependence and impact on ecosystems.

(<http://www.wri.org/project/ecosystem-services-review>)

**Habitat Restoration.** EPA's Five Star Restoration Program brings together students, conservation corps, other youth groups, citizen groups, corporations, landowners and government agencies to provide environmental education and training through projects that restore wetlands and streams. The program provides challenge grants, technical support and opportunities for information exchange to enable community-based restoration projects. At the completion of Five Star projects, each partnership will have a demonstrated record of accomplishment and will be well-positioned to take on other projects. When added together, these grassroots efforts will make a significant contribution to the environmental landscape and to the understanding of the importance of healthy wetlands and streams in the communities. (<http://www.epa.gov/wetlands/restore/5star>)

**Wetlands.** The U.S. federal government protects wetlands through regulations, economic incentives and disincentives, cooperative programs, and acquisition. In addition, a number of states have enacted laws to regulate activities in wetlands, and some counties and towns have adopted local wetlands protection ordinances or have changed the way development is permitted. Most coastal states have significantly reduced losses of coastal wetlands through protective laws. (<http://www.epa.gov/wetlands>)

**Wildlife Conservation.** Within USDA's Natural Resources Conservation Service is the Agricultural Wildlife Conservation Center, whose mission is to expand and improve efforts to protect and conserve wildlife. It accomplishes this mission through: a) sponsoring natural resources conservation programs to reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters; b) providing technical resources to farmers and ranchers; and c) technical partnerships with federal, state, and nonprofit groups. (<http://www.whmi.nrcs.usda.gov>)

**Wildlife habitat restoration and enhancement.** Wildlife Habitat Council is a nonprofit group of corporations, conservation organizations, and individuals dedicated to restoring and enhancing wildlife habitat. The Council helps large landowners, particularly corporations, manage their unused lands in an ecologically sensitive manner for the benefit of wildlife. (<http://www.wildlifehc.org>)

**Bird habitat/migratory routes.** U.S. Fish and Wildlife Service's Migratory Bird Program seeks to conserve migratory bird populations and associated habitats for future generations, through monitoring and population management. Much of this work is carried out through regional partnerships of government

agencies, corporations, and nongovernmental organizations. These partnerships deliver habitat conservation in support of national and international bird conservation efforts.

(<http://www.fws.gov/pdfs/Migratory%20Birds%20Transition%202009.pdf>) The Nature Conservancy partners with indigenous communities, businesses, governments, multilateral institutions, other non-profits, and individuals. Its Migratory Bird Program helps to ensure that protection efforts appropriately address the habitat needs of birds through North America, Latin America, and the Caribbean. They work with conservation ornithologists and planners to identify habitats needed by bird species and develop plans and strategies to conserve habitat at the local level. (<http://my.nature.org/birds/about>) The Gulf Coast Bird Observatory is an organization that has designed and conducted many conservation projects, including migration studies, habitat enhancement, land acquisition, and regional habitat mapping. Its main conservation program is its Site Partner Network, a network of partners located in the U.S. and Mexican states that border the Gulf of Mexico. The 65 sites currently in its Network preserve and restore essential migratory bird habitat for 300 plus species of birds. Among the Partners, more than 8 million acres of precious wetland, forests, coastal prairies and other critical habitats for birds are being protected. "We value ... stewardship of birds and their ecosystems, partnerships with all, and sharing of expertise and knowledge." (<http://www.gcbo.org>) (<http://www.epa.gov/owow/birds/bird.html#pif>)

#### **VI.1.i. Government Agency Toolbox:**

Government agencies have a number of tools available to foster environmental stewardship and sustainability:

**Environmental education** increases public awareness and knowledge about environmental issues or problems. In doing so, it provides the public with the necessary skills to make informed decisions and take responsible action. Through the many programs funded and led by EPA, people of all ages and backgrounds are being provided multiple experiences that foster development of the combination of knowledge, skills, and attitudes required to be environmentally literate. Because environmental education is a process, it cannot in itself improve the environment. Instead, environmental education provides the capability and skills over time to analyze environmental issues, engage in problem solving, and take action to sustain and improve the environment. As a result, individuals are more capable of weighing various sides of an environmental issue to make informed and responsible decisions.

(<http://www.epa.gov/enviroed>)

**Executive Order 13148** states that the head of each Federal Agency is responsible for ensuring that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision-making and long-term planning processes, across all agency missions, activities, and functions. Consequently, environmental management considerations must be a fundamental and integral component of Federal Government policies, operations, planning, and management. The head of each Federal Agency is responsible for meeting the goals and requirements of this order, which deal with environmental management systems, environmental compliance, toxics reporting, pollution prevention, toxic chemicals, ozone-depleting substances, and landscaping.

(<http://ceq.hss.doe.gov/nepa/regs/eos/eo13148.html>)

**Executive Order 13514** sets sustainability goals for Federal agencies and focuses on making improvements in their environmental, energy, and economic performance. The Executive Order requires Federal agencies to set a 2020 greenhouse gas emissions reduction target within 90 days; increase energy efficiency; reduce fleet petroleum consumption; conserve water; reduce waste; support sustainable communities; and leverage Federal purchasing power to promote environmentally-responsible products and technologies.

([http://www.whitehouse.gov/assets/documents/2009fedleader\\_eo\\_rel.pdf](http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf))

**Funding.** Watershed organizations and state and local governments need adequate resources to achieve the goals of the Clean Water Act and improve our nation's water quality. To support these efforts, EPA created a website to provide tools, databases, and information about sources of funding to practitioners and funders that serve to protect watersheds. (<http://www.epa.gov/owow/funding.html>)

**Funding.** [EPA's Pollution Prevention \(P2\) Grant Program](#) provides matching funds to state and tribal programs to support P2 activities across all environmental media (air, water and land) to develop state-based programs. EPA believes these environmental programs have the best opportunity to promote P2 because states and tribes have direct contact with industry and are aware of local needs. This program assists businesses and industries in identifying better environmental strategies and improving business competitiveness. The grants support P2 integration, technical assistance, training, outreach, education, data collection, research, and recognition programs. In recent years, EPA awarded approximately \$4.1 million annually.

**Environmental information.** EPA provides a menu-driven list of examples of what individuals, communities, businesses and institutions, and governments can do to become better stewards. Environmental stewardship is the responsibility for environmental quality shared by all those whose actions affect the environment. (<http://www.epa.gov/stewardship>) In addition, Department of Interior manages a website that provides an atlas released by the Commission for Environmental Cooperation, which gathers and presents information designed to help understand environmental issues of North America. The maps and tools provided are designed to help the public visualize environmental topics for North America. (<http://www.nationalatlas.gov>)

**Incentives.** EPA promotes use of various types of incentives to achieve environmental improvements. For example, water quality trading is an incentive to achieve water quality goals more efficiently. Trading is based on the fact that sources in a watershed can face very different costs to control the same pollutant. Trading programs allow facilities facing higher pollution control costs to meet their further pollution reductions by arranging for environmentally equivalent (or superior) pollution reductions from another source at a lower cost, thus achieving the same water quality improvement at lower overall cost. (<http://www.epa.gov/owow/watershed/trading.htm>)

**Labels.** USDA's National Organic Program regulates the standard for any farm, wild crop harvesting, or handling operation that wants to sell an agricultural product as organically produced. ([http://www.usda.gov/wps/portal/!ut/p/s.7\\_0\\_A/7\\_0\\_10B?navid=ORGANIC\\_CERTIFICATIO&navtype=RT&parentnav=AGRICULTURE](http://www.usda.gov/wps/portal/!ut/p/s.7_0_A/7_0_10B?navid=ORGANIC_CERTIFICATIO&navtype=RT&parentnav=AGRICULTURE)) In addition, the Program develops, implements, and administers national

production, handling, and labeling standards for organic agricultural products, and accredits certifying agents (foreign and domestic) who inspect organic production and handling operations to certify that they meet USDA standards.

(<http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateA&navID=NationalOrganicProgram&leftNav=NationalOrganicProgram&page=NOPNationalOrganicProgramHome&acct=AMSPW>) USDA's Economic Research Reserves provides economic research, analysis, and information about the production and marketing of organic products. (<http://www.ers.usda.gov/Briefing/Organic>)

The [Electronic Product Environmental Assessment Tool \(EPEAT\)](#) helps purchasers buy environmentally preferable electronics. A list of EPEAT registered products and participating manufacturers and guidance for purchasers on how to buy EPEAT registered products is located on EPEAT's website. EPEAT-registered computer desktops, laptops, and monitors must meet an environmental performance standard for electronic products – IEEE 1680-2006. This is a voluntary consensus standard developed by stakeholders – including manufacturers, purchasers, and NGOs -- through IEEE's open, consensus-based process. [EPEAT products](#) contain less toxic and hazardous substances, are easier to recycle, and are more energy efficient than conventional products serving the same purpose.

**Partnerships.** The Federal Network for Sustainability promotes cost-effective, energy- and resource-efficient operations across all branches of government. Through individual initiatives and joint ventures, the Network strives to better understand the interrelationship between energy use, economics, and environmental impact. (<http://federalsustainability.org>)

**Revolving loans.** Clean Water State Revolving Fund (CWSRF) programs are America's largest water quality financing source. Since 1987, through Congressional appropriations, CWSRFs have funded over \$68 billion, providing over 22,700 low-interest loans to date. In addition, these programs have provided more than \$5 billion annually in recent years to fund water quality protection projects for wastewater treatment, nonpoint source pollution control, and watershed and estuary management. States prioritize which water quality projects to fund. CWSRFs offer:

- Low interest rates, flexible terms;
- Significant funding for nonpoint source pollution control and estuary protection;
- Assistance to a variety of borrowers; and
- Partnerships with other funding sources. (<http://www.epa.gov/owm/cwfinance/cwsrf>)

**Partnership programs.** EPA has developed a number of partnership programs to address a wide variety of environmental issues. Through these programs, EPA is working collaboratively with companies, facilities, organizations, communities, and individuals. There are now more than 13,000 businesses and other organizations participating in EPA Partnership Programs. (<http://www.epa.gov/partners>)

**Partnerships:** The [Federal Electronics Challenge \(FEC\)](#) is a partnership program that empowers federal agencies to manage their electronics in an environmentally-sound manner during all three life-cycle phases: acquisition and procurement; operation and maintenance; and end-of-life management. The FEC

supports efforts to continuously improve environmental stewardship of electronic assets government-wide. The FEC also provides resources and technical assistance to help federal agencies and facilities improve electronics management throughout the life cycle.

**Procurement.** EPA's Comprehensive Procurement Guideline (CPG) program is part of its continuing effort to promote the use of recycled materials. Buying products with recycled-content ensures that the materials collected in recycling programs will be used again in the manufacture of new products. A key component of the CPG program is EPA's list of designated products and the accompanying recycled-content recommendations. EPA has already designated or is proposing to designate eight categories of products:

- Construction Products;
- Landscaping Products;
- Non-paper Office Products;
- Paper and Paper Products;
- Park and Recreation Products;
- Transportation Products;
- Vehicular Products; and
- Miscellaneous Products. (<http://www.epa.gov/waste/consERVE/tools/cpg/products/index.htm>)

**Environmentally Preferable Purchasing (EPP)** is a program, authorized by a Presidential Executive Order, which encourages and assists federal agencies in buying or leasing environmentally preferable products and services. Environmentally preferable products are those products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. EPA recognizes the influence the United States government has on what products and services are produced due to its tremendous purchasing power, and works to leverage that influence to minimize environmental burdens.

**Regulations.** A number of laws serve as EPA's foundation for protecting the environment and public health. However, most laws do not have enough detail to be put into practice right away. EPA is called a regulatory agency because Congress authorizes it to write regulations that explain the critical details necessary to implement environmental laws. In addition, a number of Presidential Executive Orders (EOs) play a central role in EPA's activities. (<http://www.epa.gov/lawsregs>)

**Compliance assistance** means helping businesses, federal facilities, local governments, and tribes meet their environmental regulatory requirements. Compliance assistance providers help regulated communities and businesses comply with environmental laws through one-to-one counseling, online resource centers, fact sheets, guides and training. Providers include EPA regional office staff; state, local and tribal governments; federal and state small business and pollution prevention technical assistance extension agents, consultants, and trade associations.

(<http://www.epa.gov/compliance/assistance/index.html>)

**Technical assistance.** EPA maintains a website to provide access to sustainability information (policies and programs; research, tools, and technologies; and assessments and performance measures) related to Urban Sustainability and the Built Environment; Water and Ecosystem Services; Energy, Biofuels and Climate Change; and Materials Management and Human Health. (<http://www.epa.gov/sustainability>)

**Technical assistance.** The [Pollution Prevention Resource Exchange \(P2Rx\)](#) is a consortium of eight regional pollution prevention information centers, funded in part through grants from EPA. These centers provide a range of services for business, government, and technical assistance providers including information for specific industry sectors, training, library resources, referrals and research. The centers collect, synthesize, and update technical information; and provide contact information for experts and other sources. The centers represent a broad constituency, including state and local P2 programs, manufacturing extension partnerships, cooperative extension and nonprofit organizations. The diversity of audiences contributes to an overall breadth of P2 information and opportunities.

**State based Technical Assistance.** EPA's **Pollution Prevention (P2) Grant Program** provides matching funds to state and tribal programs to support P2 activities across all environmental media (air, water and land) to develop state-based programs. EPA believes these environmental programs have the best opportunity to promote P2 because state and tribes have direct contact with industry and are more aware of local needs. This program assists businesses and industries in identifying better environmental strategies and improving business competitiveness. The grants support P2 integration, technical assistance, training, outreach, education, data collection, research, and recognition programs.

**Verification.** Environmental Technology Verification Program verifies the performance of innovative technologies that have the potential to improve protection of human health and the environment. The program accelerates the entrance of new environmental technologies into domestic and international marketplaces. Verified technologies are included for all environmental media -- air, water, and land.

(<http://www.epa.gov/etv>)

**Note:** Additional sustainable production and consumption activities are described in other chapters of the U.S. national report.

## **VI.2. INTERNATIONALLY-FOCUSED AGENCIES AND PROGRAMS**

**Asia-Pacific Partnership on Clean Development and Climate** is an innovative new effort to accelerate the development and deployment of clean energy technologies. APP partners Australia, Canada, China, India, Japan, Republic of Korea, and the United States have agreed to work together and with private sector partners to meet goals for energy security, national air pollution reduction, and climate change in ways that promote sustainable economic growth and poverty reduction. The Partnership will focus on expanding investment and trade in cleaner energy technologies, goods and services in key market sectors. The Partners have approved eight public-private sector task forces covering:

- Aluminum
- Buildings and Appliances

- Cement
- Cleaner Use of Fossil Energy
- Coal Mining
- Power Generation and Transmission
- Renewable Energy and Distributed Generation
- Steel

There are a number of U.S. projects to develop and deploy cleaner and more efficient technologies to meet national pollution reduction, energy security, or climate change challenges. The seven partner countries represent about half of the world's economy, population and energy use, and they produce about 65 percent of the world's coal, 48 percent of the world's steel, 37 percent of world's aluminum, and 61 percent of the world's cement. (<http://www.asiapacificpartnership.org>)

**Assistance and aid.** USDA's Foreign Agricultural Service carries out a broad array of international training, technical assistance, and other collaborative activities with developing and transitional countries to facilitate trade and promote food security. USDA FAS also works with U.S. food aid programs with the U.S. Agency for International Development (USAID). For example, USDA channels food aid to help needy people around the world:

- Food for Progress Program provides donations of agricultural commodities to needy countries to encourage economic and agricultural reforms that foster free enterprise.
- McGovern-Dole International Food for Education and Child Nutrition Program provides for donations of U.S. agricultural products and financial and technical assistance for school feeding and maternal and child nutrition projects in low-income, food-scarce countries committed to universal education.

FAS helps countries focus on the critical role science and technology can play in raising agricultural productivity in an environmentally sustainable way, including assistance in developing appropriate policies and institutions to facilitate research and technology transfer in order to increase incomes, reduce hunger, and improve nutrition. (<http://www.fas.usda.gov>)

**Assistance and aid.** U.S. Agency for International Development (USAID) is an independent federal government agency that receives overall foreign policy guidance from the Secretary of State. U.S. foreign assistance has always had the twofold purpose of furthering America's foreign policy interests in expanding democracy and free markets while improving the lives of the citizens of the developing world. One area of focus in its work is protecting the environment. USAID's programs in natural resource management are closely linked with programs to improve health, increase agricultural productivity, mitigate or adapt to climate change, and governance of the environment. Growing populations are placing increasing pressure on the resources in many countries and many of these resources, once used, are not renewable, so sustainability is important in all of the countries that USAID works with. ([http://www.usaid.gov/our\\_work/environment](http://www.usaid.gov/our_work/environment))

**Data sharing.** Existing emission inventories for countries, regions, and urban areas use different data formats and database structures, thereby making sharing and integrating data cumbersome. Emission analysts, modelers, and policy-makers should benefit from a system that makes it easier to exchange and use these data. The Networked Environmental Information System for Global Emissions Inventories



strives to create a web-based global air emissions inventory network that provides catalogs of distributed emission inventory data, tools for processing and analyzing the data, means for sharing data and tools, and an environment for collaboration among international researchers, policy-makers, and the interested public. (<http://www.neisgei.org>)

**Partnership to protect migratory birds.** Partners in Flight is a partnership effort among federal, state, and local government agencies, foundations, professional and conservation groups, industry, academia, and individuals, to protect land habitats of most landbirds throughout North and South America. (<http://www.partnersinflight.org>)

**Partnerships with poor countries.** Millenium Challenge Corporation forms partnerships with some of the world's poorest countries that are committed to good governance; economic freedom; and investments in their citizens. MCC provides these well-performing countries with large-scale grants to fund country-led solutions for reducing poverty through sustainable economic growth. Some of the areas assisted by MCC grants include agriculture and irrigation; transportation (roads, bridges, ports); and water supply and sanitation. (<http://www.mcc.gov>)

**Secretary of State's Award for Corporate Excellence** recognizes the important role U.S. businesses play abroad as good corporate citizens. Nominations are based on companies' achievements in one or more of the following areas: good corporate citizenship; exemplary employment practices; provision for a safe and healthy workforce; responsible environmental protection and practices; contribution to overall growth and development of the local economy; innovative programs with measurable results; compatibility/contribution to local science and technology; compliance with U.S., international, and local laws. (<http://www.state.gov/e/eeb/ace>)

**Sustainable consumption.** North American Sustainable Consumption Alliance is a partnership of people and organizations that working to promote more sustainable consumption patterns in Mexico, Canada, and the U.S. They share a common goal to encourage individuals, businesses, institutions, and governments to reduce their impact on the environment and society by changing how they consume materials and resources. (<http://nasca.icspac.net>)

**Voluntary partnerships.** Department of State maintains a website that provides information on U.S. efforts to work with other governments, the private sector, civil society, and other organizations to plan and implement voluntary partnerships that promote economic growth, social development, and environmental stewardship. (<http://sdp.gov>)

