

**Emerging Drivers for Cleantech:
An EPA-University and Entrepreneur Roundtable
October 26, 2009, 10 a.m. – 12:30 p.m.**

10:00 – 10:15

Opening and Introductions Walter W.
Kovalick Jr., Acting Deputy Regional
Administrator

10:15 – 10:35

EPA's Role in Fostering Technology

10:35 – 11:10

EPA's Assets for Technology
Developers and Entrepreneurs

- **April Richards:** Small Business
Innovative Research Program (SBIR)
- **Valerie Blank:** Cooperative Research
and Development Agreements
(CRADA)
- **Maggie Theroux:** Environmental
Technology Verification (ETV) Program
- **Alan Walts:** Supplemental
Environmental Projects (SEPs)

11:10 – 11:30

Emerging Environmental Challenges

11:30 – 12:00

Responses to EPA Information on
Demand for Cleantech

- **Allen J. Dines:** President, Midwest
Research University Network
- **Dr. Kathy Banks:** Professor of Civil
Engineering, Purdue University
- **Jeffery Perl:** President, Chicago
Chem Consultants Corp

12:00 – 12:30

Discussion of On-Going Dialogue with
EPA about Cleantech

U.S. EPA: The Context for Promoting New Environmental Technology

October 26, 2009



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Outline

- Mission
- Operations and implementation
- Technology nexus

Mission and Mandates

- **One of 20+ independent regulatory agencies**
 - Not a Cabinet department, but Cabinet status
- **Protect public health and the environment**
- **Multiple statutes provide mandates**
 - Clean Air Act
 - Clean Water Act
 - Safe Drinking Water Act
 - Resource Conservation and Recovery Act (as amended)
 - Comprehensive Environmental Response Compensation and Liability Act (Superfund)
 - Federal Insecticide Fungicide and Rodenticide Act (FIFRA)
 - Toxic Substances Control Act (TSCA)
 - Others

What is the Regulated Community?

- Any business/organization that is required to comply with EPA statutory or regulatory requirements.
- Includes:
 - More than 800,000 permitted facilities under CAA, CWA and RCRA
 - Over 20 million small businesses
 - 80,000 units of local government
 - Millions of regulated facilities under more than 12 major environmental statutes

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Regulated entities need compliance assistance because:

- Most small business don't have staff who are dedicated to the oversight of their regulatory responsibilities.
- Regulatory obligations change.
- Need help to understand new rules, especially complex ones.
- Resources are often not sufficient to provide on-site assistance to more than a fraction of the regulated entities.

Operations and Implementation

- Agency exercises *discretion* in balancing direction under each statute—mainly in HQ
- Traditional role
 - Multiple avenues leading to regulatory controls
 - Best available control technology BACT—Water
 - RACT/BACT/LAER—Air
 - Ambient stds. → source control—Air
 - Emission trading—Air
 - Risk assessment balanced with other factors—Superfund regimen
 - Unreasonable risk—TSCA

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RACT, or Reasonably Available Control Technology, is required on existing sources in areas that are not meeting national ambient air quality standards (i.e., non-attainment areas). BACT, or Best Available Control Technology, is required on major new or modified sources in clean areas (i.e., attainment areas). LAER, or Lowest Achievable Emission Rate, is required on major new or modified sources in non-attainment areas.

Uncertainty introduced by new chemicals or substances showing up in new media

Asbestos and Reserve Mining

Precautionary principle in EU—until we know enough about the risks, don't proceed

Wildlife in Arctic showing a marked decline in PCB's in fatty tissue; PFOA's are on the upswing; mere presence is not a reason for action; how to sort this out?

Multimedia

WWT effluent guidelines and sludges; what is their impact?

MTBE added as fuel oxygenate in late 90's to decrease the smog problem in major cities; then discovered that MTBE is more mobile and more recalcitrant than BTEX and plumes moving out of leaking underground storage tanks. Not only from tanks in cities where MTBE authorized, but tanks elsewhere as well; so gas was shipped all over the U.S.; reconsidered MTBE and more careful about the new options, meanwhile we have new GW cleanup challenges

Scale—major source of water and air pollution are/have been addressed; now thousands of leaking underground storage tanks require partnership with states to address problems; non-point source

New science and technology—nanomaterials revolutionizing consumer products and other processes and products

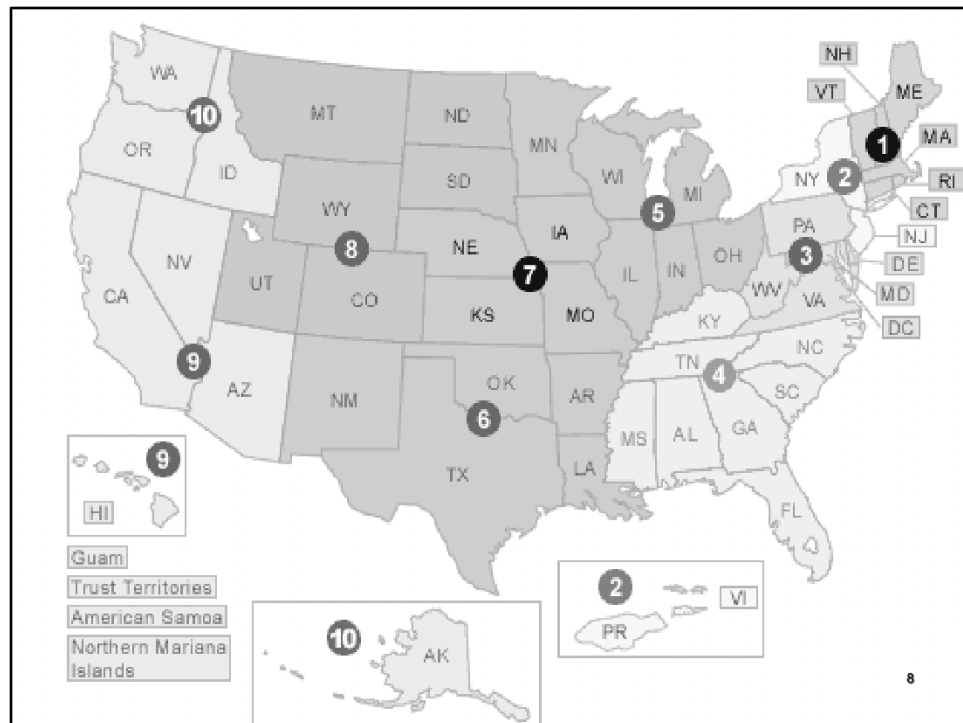
Ops and Implementation (cont.)

- **New Strategies (beyond “command and control”)**
 - Begun in 1990’s—HQ together with Regions
 - Compliance assistance
 - Voluntary partnerships, e.g. Energy Star, Waste Wise
 - Partnering for economic gain/ development
e.g. Brownfields, CRADAs

Plus

- International developments/imperatives (ISO 14000/EMS plus EU/China requirements)

N.B. As always, enforcement keeps a level playing field
















Ops and Implementation (cont.)

- Almost half of 17,000 FTE in Regional Offices
 - Most EPA regulatory programs delegated to states and tribes
 - Vast majority of inspection, permitting, enforcement at state/tribal level
- ~2400 FTE for science and technology work—mostly ORD
 - Of \$760M budget, ~\$440M extramural

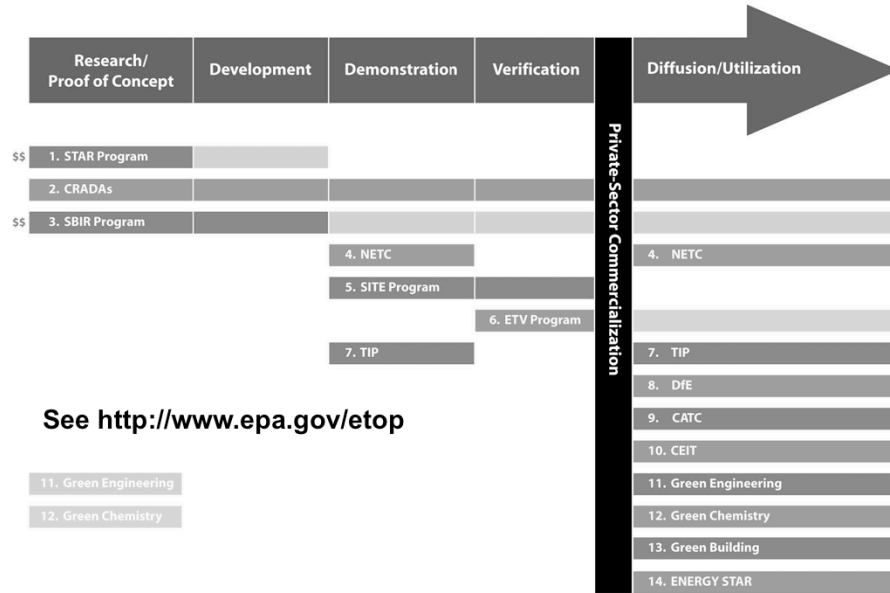
N.B. Large % of entire EPA workforce are scientists/engineers

EPA Roles in Environmental Technology Marketplace

- Funding agent 
- Technology developer 
- Regulator/enforcer   
- Information broker
 - Neutral  
 - Verification agent   
- Partner in deployment  
- User of "first resort" 

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Figure 1. Mapping of EPA's Environmental Technology Programs To the R&D Continuum



Note: Lighter shades of color indicate a minor or secondary emphasis for the listed program.
 \$\$: Program provides funding to developer.

Intersections: EPA's Work and Environmental Technologies

- **For niche areas, in depth understanding by researchers/programs,**
 - E.g. drinking water treatment, air pollution control, remediation, diesel retrofit
 - Monitoring technologies (due to methods approval function and operating in-house/State networks)
- **Secondary level of understanding of industrial processes to set BACT, etc. levels**
- **Appreciation of technology aspects of many sectors through partnering programs, i.e. Design for Environment, energy conservation, etc.**

Observations: How Technology Intersects with EPA Work

- With few exceptions, EPA mission is not to be a “technology development” organization
- New environmental problems are viewed first through statutory/regulatory lens (e.g. GHG sequestration = UIC program) leading to technology inquiry
- While expert in some niches, EPA’s mandates don’t call for comprehensive monitoring of technology developments
- The Environmental Technology Council is a forum for joint action across programs/regions—see www.epa.gov/etop

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Observations (cont.)

- EPA's regulatory agenda charts the subjects and issues to be addressed over a several year period
- By its nature, technology driven regulations "fix" *best* technology; resources normally limit EPA's ability to continuously update "best"
- EPA is well vested in technology diffusion activities, esp. verification
- EPA is experienced in operating SBIR and grant programs; no mandates for many other financial vehicles