A modest review of Pollution Prevention since the P2 Act in 1990
Some Key Actions to Conserve Resources in America

• 1652 – Boston established a public water supply
• 1850s – literature emphasized the power and tranquility of nature
• 1903 – President Theodore Roosevelt visits current Yosemite, signed National Monument Act in 1906
• 1935 – Soil Conservation Service founded – reaction to dust bowl
SERVE
our fighting men abroad
CONSERVE
these services at home...

ELECTRICITY...
- Turn off lights and home appliances when not needed

COMMUNICATIONS...
- Don’t make unnecessary long distance phone calls

WATER...
- Repair leaky faucets... don’t let water run needlessly

TRANSPORTATION...
- War traffic comes first... travel only when you must

Saving these services frees fuel, manpower, material and equipment for War.

Fuel Fights!

SAVE YOUR SHARE

1. Keep temperature at 65°F. during day - lower at night.
2. Don’t heat unused rooms.
4. Draw window shades at night.
5. Shut off heat when weather permits.
6. Keep heating plant in top condition.
7. Use less hot water.

Saving fuel also saves manpower, material, equipment
CONSERVE COAL, OIL, GAS... FOR WAR

Spotted at www.Yeeeeee.com
Ecology

- Ecology values esthetics and biology over efficiency and commerce
- Began to have public awareness after WWII as suburbs grew
- City growth highlighted negative effects of pollution
- 1962 – Rachel Carson wrote “Silent Spring” – connected pollution to public health and living organisms
- 1969 – Cuyahoga River fire – widely covered by media
- 1969 – Santa Barbara, CA oil spill – widely covered by media
- Presidents Kennedy and Johnson added the environment to their speeches and legislative programs
Regulation

• 1969 – National Environmental Policy Act (NEPA) – changed government from *conservator* of wilderness to *protector* of earth, air, land, and water

• 1970 – Nixon requested $4B to
  • Improve water treatment
  • Establish national air quality standards
  • Establish stringent motor vehicle emissions guidelines (we still have lead)
  • Establish research to reduce automotive pollution
  • Clean-up of federal facilities
  • End dumping of wastes into Great Lakes
First Earth Day – April 22, 1970

• An environmental “teach-in”
• Universal Recycling Symbol created
• Clean Air Act (amended in 1990)
Environmental Protection Agency

• Established Dec 2, 1970
  • Establish and enforce environmental protection standards
  • Conduct research on effects of pollution and controlling it
  • Assist others, through grants and technical assistance, to stop pollution
  • Recommend new policies for protection of the environment

• Focus was “Command and Control” – End of the Pipe

• 1976 – Resource Conservation and Recovery Act (RCRA)
  • Waste minimization work – includes source reduction or recycling
EPCRA – Emergency Planning and Community Right to Know

• EPCRA was passed in 1986 in response to the Bhopal, India methylisocyanate disaster
• Section 313 – Toxics Release Inventory (TRI)
• Doesn’t limit emissions but requires reporting
Pollution Prevention Act of 1990

- Millions of tons of pollution; billions of dollars spent for control
- Prevent pollution at the source can save money
  - Reduce raw material use
  - Reduce pollution control
  - Reduce liability
  - Protect the environment
  - Reduce risk to worker health and safety
- Existing regulations
  - Focus on treatment and disposal rather than source reduction
  - Do not emphasize multi-media
P2 Act (cont.)

- To overcome institutional barriers, businesses need
  - Information
  - Technical assistance

- Source reduction is fundamentally different and more desirable than waste management and pollution control

- EPA is directed to
  - Establish a source reduction program to collect and disseminate information
  - Provide financial assistance to States
  - Implement the other activities provided for in the act
P2 Policy (from P2 Act)

The Congress hereby declares it to be the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.
Habicht Memo (1992)
Re-confirmed by Administrator Browner in 1993

• Prevention includes “in-process” recycling but not “out-of-process” recycling

• P2 Act defines “source reduction” to mean any practice that
  • Reduces the amount of hazardous substance, pollutant, or contaminant entering waste stream or environment prior to recycling, treatment, or disposal
  • Reduces hazards to health and environment associated with release of such substances

• P2 is NOT
  • Recycling
  • Energy recovery (burning waste)
  • Treatment
  • disposal
P2 Examples

• Change product
  • Material substitution
  • Product & packaging redesign

• Change process
  • Improve efficiency
  • Equipment modification
  • New technology
  • Process redesign

• Good operating practices
  • Preventive maintenance
  • Material segregation
  • Supply chain management
  • Housekeeping
  • Training
  • Planning
EPA 33/50 program – Ask; Report

• Voluntary P2 initiative announced in 1991

• EPA identified 17 high priority toxic chemicals
  • Goal was to reduce total amount of these released by 33% by end of 1992
  • Reduce by 50% by end of 1995

• TRI is used to track these reductions, 1988 is baseline (1.5 billion pounds)

• Company’s CEOs contacted; 20,000 facilities; 13% pledged to reduce

• Program achieved goal by 1994, through participants’ efforts
  • U.S. also took action to phase out ozone-depleting chemicals under Montreal protocol
  • Releases in 1994: 672 million pounds
Figure 1. Releases and Transfers of 33/50 Program Chemicals, 1988-1996

Note: Does not include amounts for transfers to recycling and energy recovery reported for 1991-1996.
Other Successful Voluntary P2 initiatives

- 1996 – Presidential Green Chemistry Challenge Awards
- 2000 – Leadership in Energy and environmental design (LEED)
- 2000 – Performance Track (killed in 2009)
- 2005 – National Pollution Prevention Roundtable gives first MVP2 awards
- 2009 – Executive order 13514 prioritizes GHG emissions
P2 Synonyms

Implementation takes more than information
Sustainability
the triple bottom line

development that meets the needs of the present without compromising the ability of future generations to meet their own needs
Sustainable Materials Management

a little love for this program

“An approach to serving human needs by using and reusing resources productively and sustainably throughout their life cycles, generally minimizing the amount of materials involved and all associated environmental impacts.” (US EPA)
<table>
<thead>
<tr>
<th>ENERGY USED</th>
<th>BUY and DISPOSE</th>
<th>BUY and RECYCLE</th>
<th>USE and REUSE</th>
</tr>
</thead>
</table>

![Trash cans]  ![Recycle bins]

Still buying bottled water? **CUT IT OUT!**

NOVEMBER 15 is AMERICA RECYCLES DAY  We can do more!
Climate change impacts for the Standard Home by lifecycle stage

- Original Materials Production
- Replacement Materials Production
- Construction
- Maintenance
- Occupancy - Electricity
- Occupancy - Natural Gas
- Material Transportation
- Material End-of-Life

Natural gas (heating) vs. Electricity

Climate Change Impact (kg CO2 Eq)

Material Production and Transport

*** 70 year lifetime ***
Food Waste Hierarchy

SMM for Food

Which are P2?
Lays out relative ranking of materials, product and services using selected environmental criteria to help identify potential candidates for initial application of comprehensive materials management strategies

Factors for ranking:
- Environmental impact (13 measures)
- Energy use
- Material use
- Material waste
- Water use
Results of SMM rankings – caveat – it’s complicated!!!

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Intermediate</th>
<th>Final</th>
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</thead>
<tbody>
<tr>
<td>Electric services (utilities)</td>
<td>56.3</td>
<td>52.2</td>
<td>54.2</td>
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<tr>
<td>Cotton</td>
<td>28.9</td>
<td>21.4</td>
<td></td>
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<tr>
<td>Industrial inorganic and organic chemicals</td>
<td>22.8</td>
<td>21.3</td>
<td></td>
</tr>
<tr>
<td>Crude petroleum and natural gas</td>
<td>19.2</td>
<td>18.3</td>
<td></td>
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<tr>
<td>Coal</td>
<td>19.1</td>
<td>14.7</td>
<td></td>
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<tr>
<td>Meat animals</td>
<td>16.4</td>
<td>15.2</td>
<td></td>
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<tr>
<td>Paper and paperboard mills</td>
<td>14.6</td>
<td>15.1</td>
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<tr>
<td>Petroleum refining</td>
<td>14.5</td>
<td>15.6</td>
<td>22.8</td>
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<tr>
<td>Feed grains</td>
<td>13.4</td>
<td>9.8</td>
<td></td>
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<tr>
<td>New residential 1 unit structures, nonfarm</td>
<td>11.5</td>
<td>15.0</td>
<td>14.7</td>
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<tr>
<td>Apparel made from purchased materials</td>
<td></td>
<td></td>
<td>27.4</td>
</tr>
<tr>
<td>Motor vehicles and passenger car bodies</td>
<td></td>
<td></td>
<td>22.5</td>
</tr>
<tr>
<td>Eating and drinking places</td>
<td></td>
<td></td>
<td>21.5</td>
</tr>
<tr>
<td>Retail trade, except eating and drinking</td>
<td></td>
<td></td>
<td>17.3</td>
</tr>
<tr>
<td>Meat packing plants</td>
<td></td>
<td></td>
<td>16.5</td>
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</table>
Zero Waste

9 STEPS TO LANDFILL-FREE

- Define Zero Waste
- Track Waste Data
- Prioritize Waste-Reduction Activities
- Engage Employees and Build a Sustainability Culture
- Strengthen Supplier Partnerships
- Resolve Regulatory Challenges
- Achieve Landfill-Free
- Share Best Practices
- Improve Efforts
Zero Waste Hierarchy

1. Thoughtful Design
2. Buy Smart
3. Reuse
4. Recycle
5. Compost
6. Waste to Energy

Product Redesign
Source Reduction
Reuse
Recycling
Composting
Waste Composition Research
Material Recovery
Biological Treatment
Stabilized Landfill

www.EnergyJustice.net/zerowaste