



Evaluating the Greenhouse Gas Impacts of National Waste Prevention Activities: The U.S. Experience

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May 5, 1999





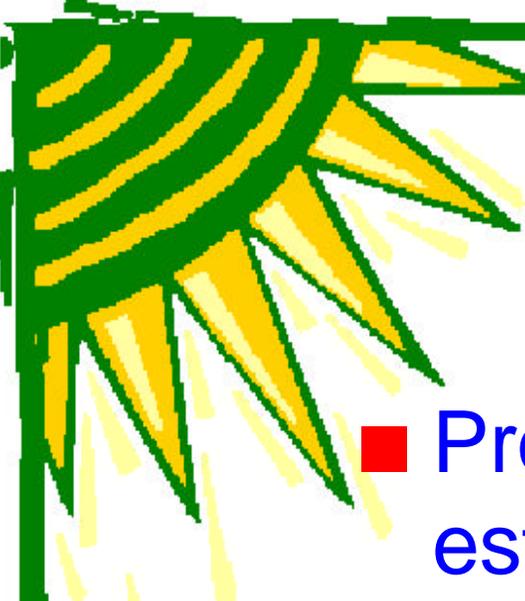
Purpose

- Provide an overview of US EPA's Climate and Waste Program
- Discuss measurement approach for key program elements
- Share findings



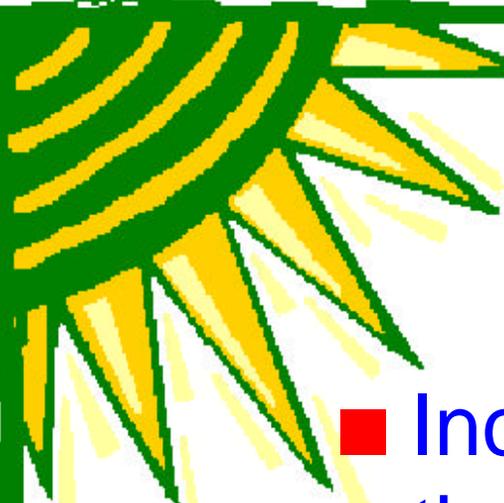
Program Overview

- Research and technical assistance on waste management options and their impact on GHG emissions
- National program implementation
 - *WasteWise*
 - *Pay-As-You-Throw (PAYT)*
 - *Demonstration projects*
- Outreach and education

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Research and Technical Assistance: Purpose

- Provide scientific basis for estimating GHG emission reduction benefits of waste management
- Target materials and management methods with large emission reduction potential

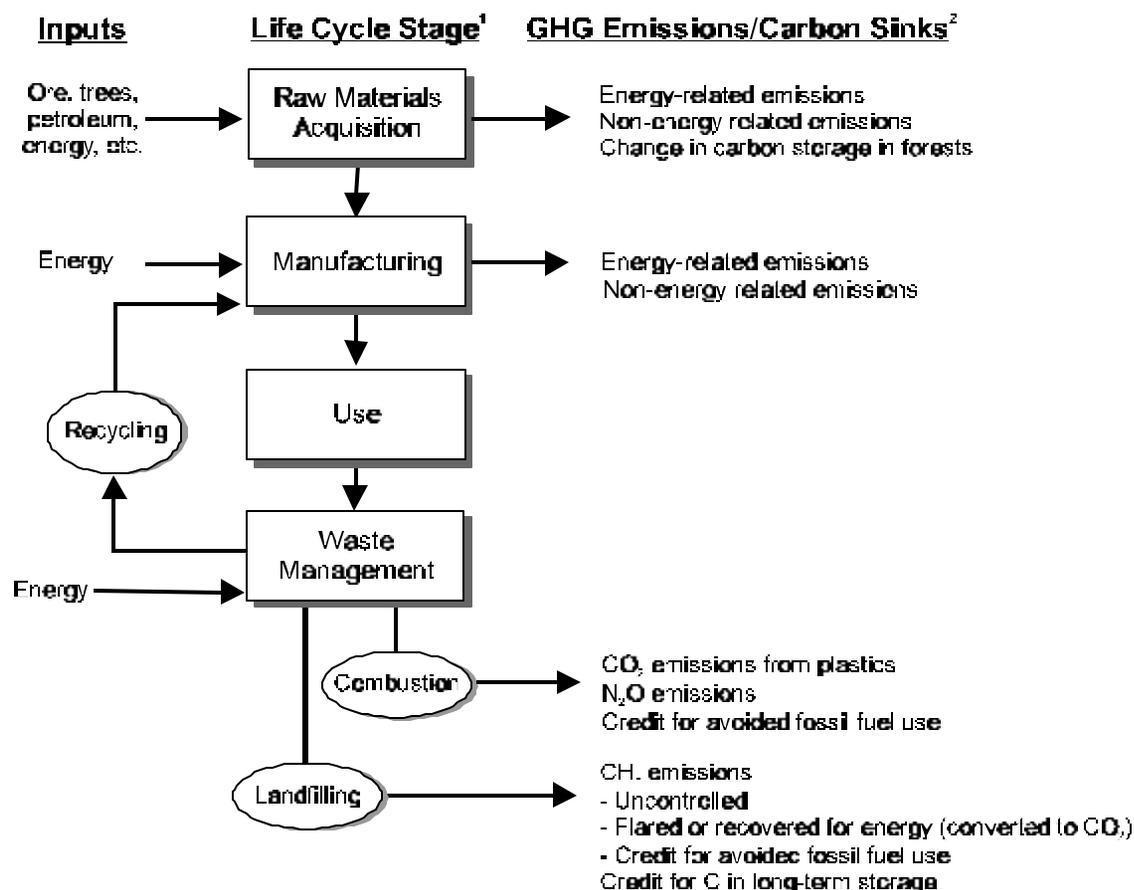


Research and Technical Assistance: Approach

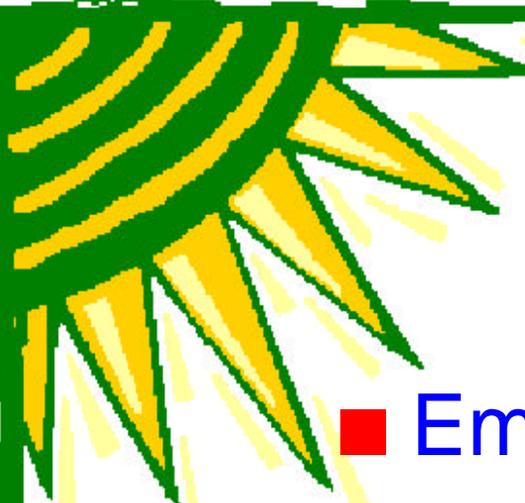
- Incorporate the full range of effects through a material's life cycle
- Use IPCC accounting methods for GHG emissions and sinks
 - *GWPs*
 - *Carbon cycling in forests*
 - *CO₂ emissions from combustion*

Life Cycle Analysis of GHG Emissions

Figure 1
GHG Sources and Sinks Associated with Materials in the MSW Stream

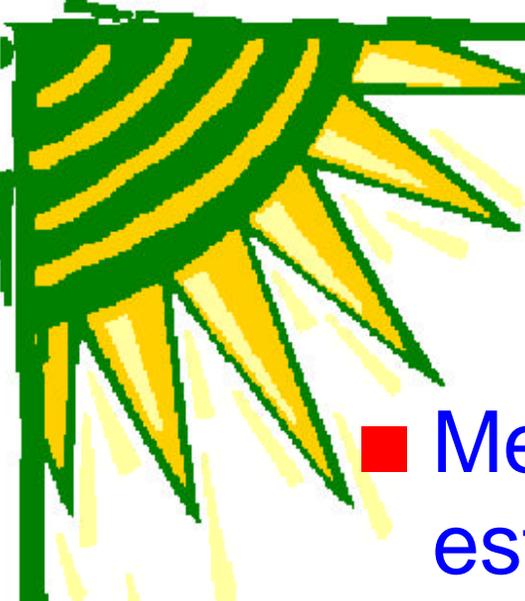


¹ New fuel source reduction affects all stages in the life cycle.
² All life cycle stages include transportation energy-related emissions (except that emissions from transporting products from manufacturers to consumers were not counted in this analysis).



GHG Emission Factors

- Emission factors developed for:
 - *12 material types and mixed MSW*
 - *Source reduction, recycling, combustion, and landfilling*
- Example application:
 - *GHG impact of recycling 10 tonnes of office paper. Baseline practice is landfilling.*
 - *Baseline: $10\text{ t} \times 1.16\text{ MTCE/t} = 11.6\text{ MTCE}$*
 - *Alternative: $10\text{ t} \times -0.90\text{ MTCE/t} = -9.0\text{ MTCE}$*
 - *Net change: $-9.0\text{ MTCE} - (11.6\text{ MTCE}) = -20.6\text{ MTCE}$*



Program Implementation: Purpose

- Meet the emission reduction goals established in the U.S. Climate Change Action Plan
 - *Overall goal - 109 MMTCE by 2000*
 - *EPA Waste and Climate Program goal - 5 MMTCE by 2000*
- Elements:
 - *WasteWise, PAYT, Demonstration Projects*



WasteWise

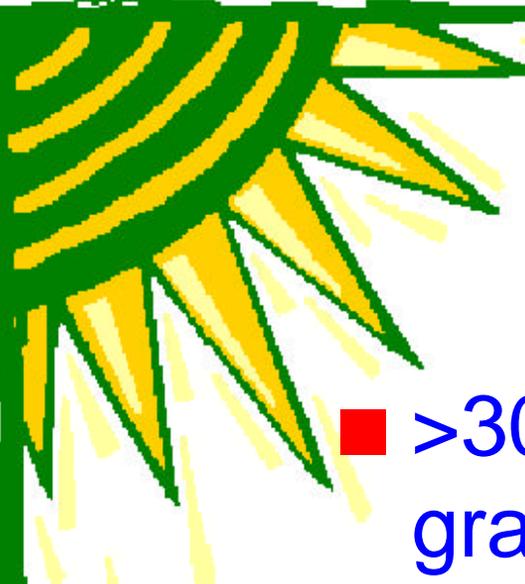
- Voluntary program; >900 partners
 - *Businesses*
 - *Federal, state, local, and tribal governments*
 - *Institutions*
- Encourages cost-effective actions to reduce solid waste
- Partners report accomplishments annually
- Quantifiable results





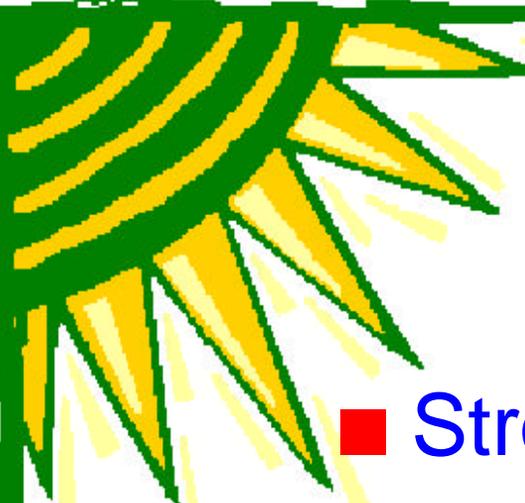
Pay As You Throw (PAYT)

- Economic incentive for residential waste reduction
 - *>4,000 communities (35 million residents)*
- EPA distributes information, provides training and technical assistance
- Measurement approach based on extrapolation from sample communities



Demonstration Projects

- >30 solid waste climate change grant projects
- Awarded to state and local governments and NGOs
- Longer “payback” period than other voluntary programs
- EPA tracks results and measures emission reductions



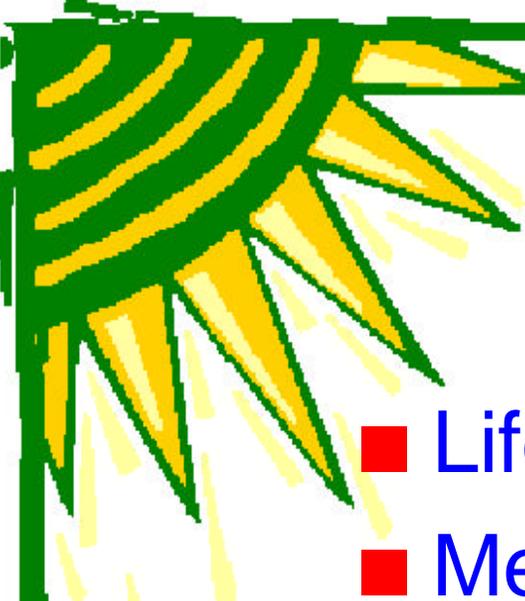
Findings

- Strong link between waste prevention and climate protection -- best estimated using life cycle approach and IPCC methods
- Waste prevention is a low-cost strategy that can broaden national, state, and local GHG mitigation portfolios



Findings

- Ability to quantify benefits increases support for program
- Potential for significant emission reductions
 - *In 1997, EPA Climate and Waste Program responsible for 2.8 MMTCE of emission reductions*
 - *On track to meeting US goal of 5 MMTCE emission reductions by 2000*

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Program Results are Transferable

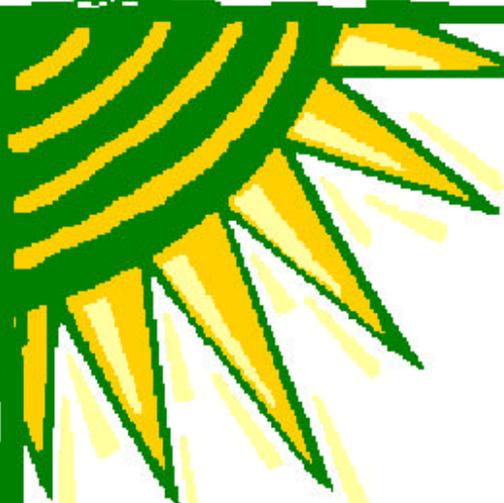
- Life cycle analysis/IPCC framework
- Measurement parameters
- Lessons from program implementation
- Program benefits of measuring waste prevention efforts in terms of GHG emission reductions



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