

Market Driven Automotive Recycling in North America

“America Recycles Day” Media Event
November 10, 2005



Collaboration is Key

- Precompetitive, legal partnership for research to enhance an already successful, market-driven vehicle recycling infrastructure

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GM

- Leveraged Resources and Funding
 - American Plastics Council
 - Argonne National Laboratories
 - U.S. Department of Energy
 - Vehicle Recycling Partnership



Vehicle Recycling Partnership

- VRP formed (1991); charter member of USCAR's umbrella organization (1992)
- Formal collaboration agreements organized with:
 - Aluminum Association
 - American Plastics Council
 - Automobile Recyclers Association
 - Institute for Scrap Recycling Industries



VRP Accomplishments

- Published recycling preferred practices
- Established efficient fluid removal process
- Licensed Vehicle Recycling Development Center facility - dismantled \approx 1000 vehicles over 6 years of operation
- Researched separation technologies for commingled material streams
- Established USCAR Substances of Concern task forces - conducted supplier-based seminars
- Supported life cycle tools for quantifying resource use over the manufacturing, operation and end-of-useful-life phases.



Objective of the DOE Automotive Recycle R&D Plan

- To maximize the cost-effective recycling of current and advanced automotive materials
- To ensure that materials are not de-selected for the lack of recyclability
- To obtain stakeholder input concerning program development

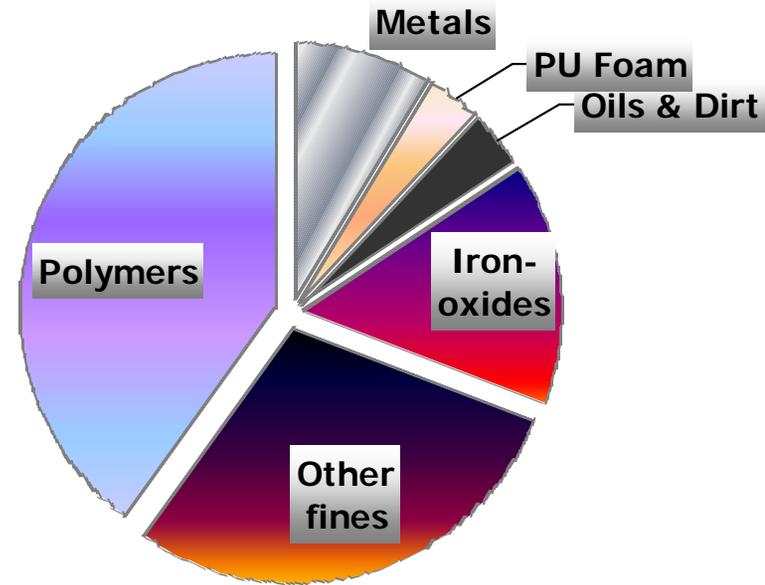
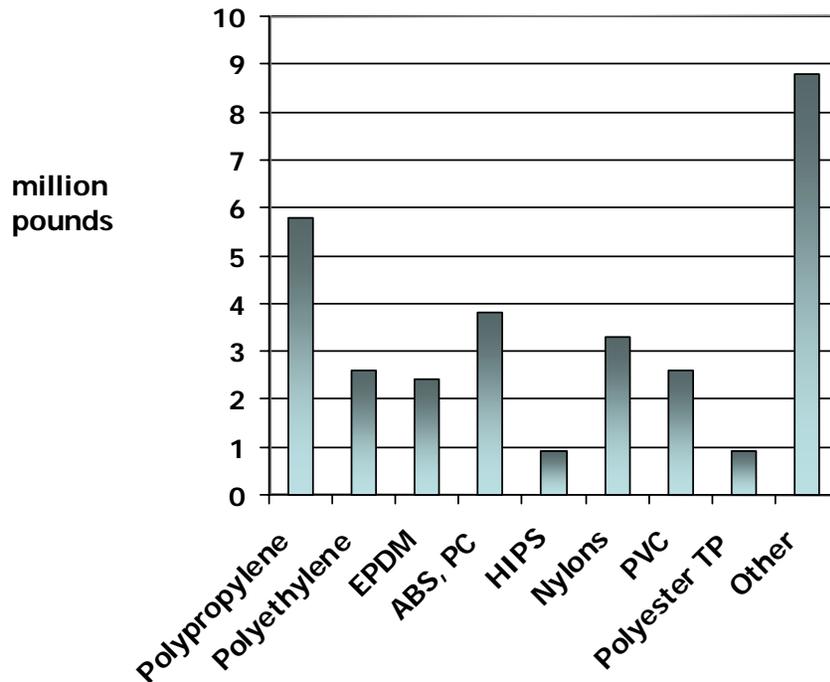


“Recycle Roadmap”

- Objective of the “Roadmap”: to provide overall direction to the DOE recycle program
- Workshop held in Sep 2005; workshop facilitated by Energetics
- Roadmap completed in May 2001; updated 2005 (<http://pe.es.anl.gov>)



Resources Recoverable from Shredder Residue



Basis: 75,000,000 pounds of ASR

Five-year R&D Program Plan Developed

Approach: Research, development, and validation of market acceptable ELV options compatible with the North American infrastructure

Strategy: Cooperative Research and Development Agreement (CRADA) involving government and industry

Goal: Maximize Sustainable Recovery and Recycling of Current and Future Automotive Materials



Current CRADA Research

- Life cycle analysis
 - Examines the total environmental impact of a product or process
- Substances of concern (SOCs)
 - Materials that may hinder the further recycling of automobiles
- Vehicle recyclability with advanced materials



Current CRADA Research

- Plastic material separation
 - Argonne National Laboratory
 - MBA Polymers
 - SiCon
 - Salyp
- Conversion technologies
 - Changing World Technologies (CWT)
 - Glycolysis

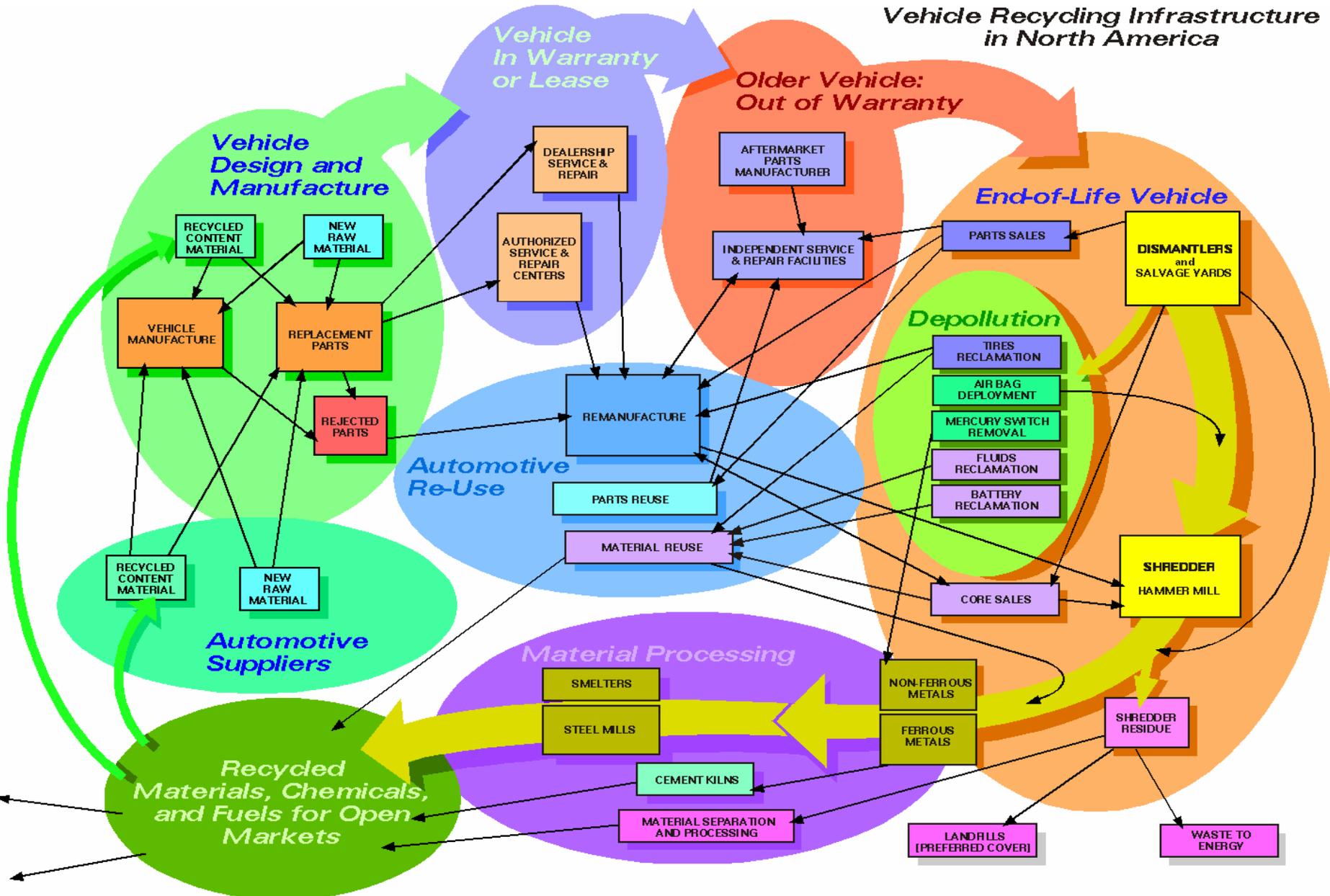


Conclusions

- The recycling technical challenge is to minimize the environmental impact of new materials and technologies in vehicles
- Ultimately, any new technology developed in response to these changes must have minimal risk
 - Proven markets for products
 - Regulatory barriers removed/transaction costs minimized
 - Proven cost-effective, full-scale implementation within the current recycling infrastructure



Vehicle Recycling Infrastructure in North America



Summary

- The North American Vehicle Recycling Infrastructure is a successful market driven approach to vehicle recycling
- Collaboration is key to continued success
- The CRADA is a powerful mechanism to leverage the vast technical resources of the US government and industry

