

Going Green In Rubber

Resources for Reducing Rubber Operation Wastes
and Markets for Utilizing your Green Product

Introduction:

Edward Noga

Editor

Rubber & Plastics News



Going Green in Rubber

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Today's sponsor:

Green Rubber



Going Green in Rubber

Resources for Reducing Rubber Operation
Wastes and Markets for Utilizing your
Green Product

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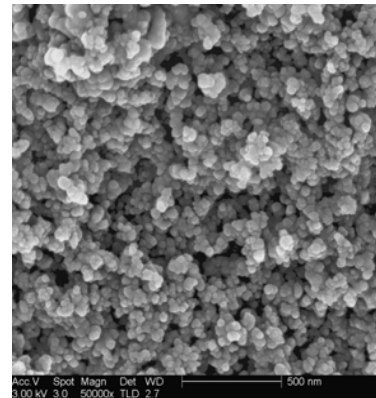
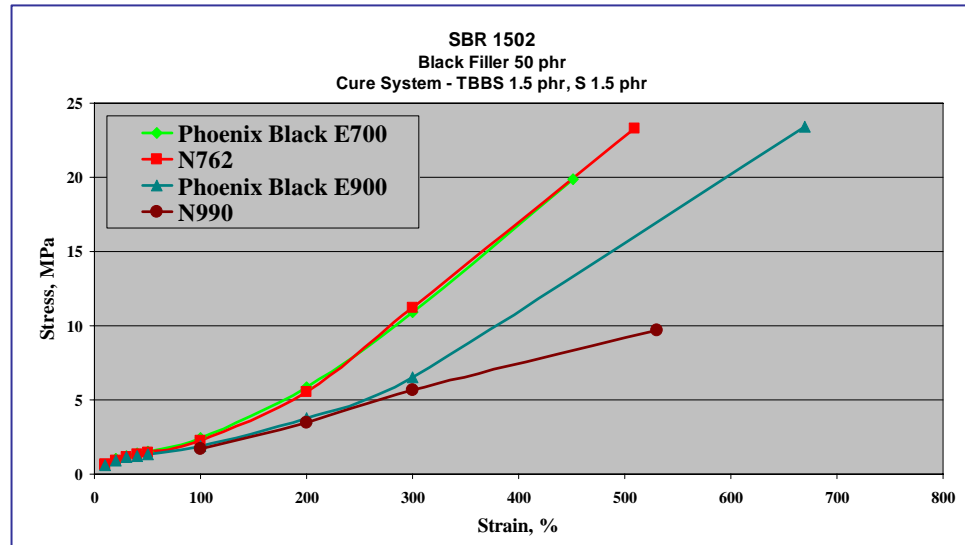
Going Green in Rubber

Welcome

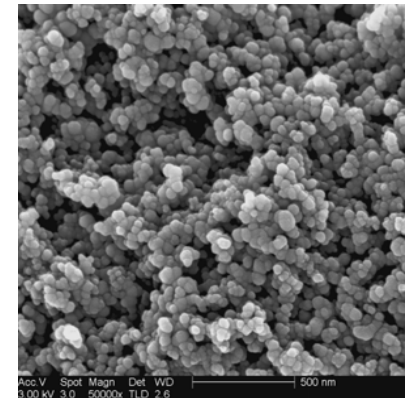


Delta-Energy

- **Phoenix Black[®]**, recovered carbon black based reinforcing agent
- Performance comparable to virgin carbon black
- 75% less carbon foot print than virgin carbon black
- Recycle without polymer compatibility issues



Phoenix Black



Commercial N326

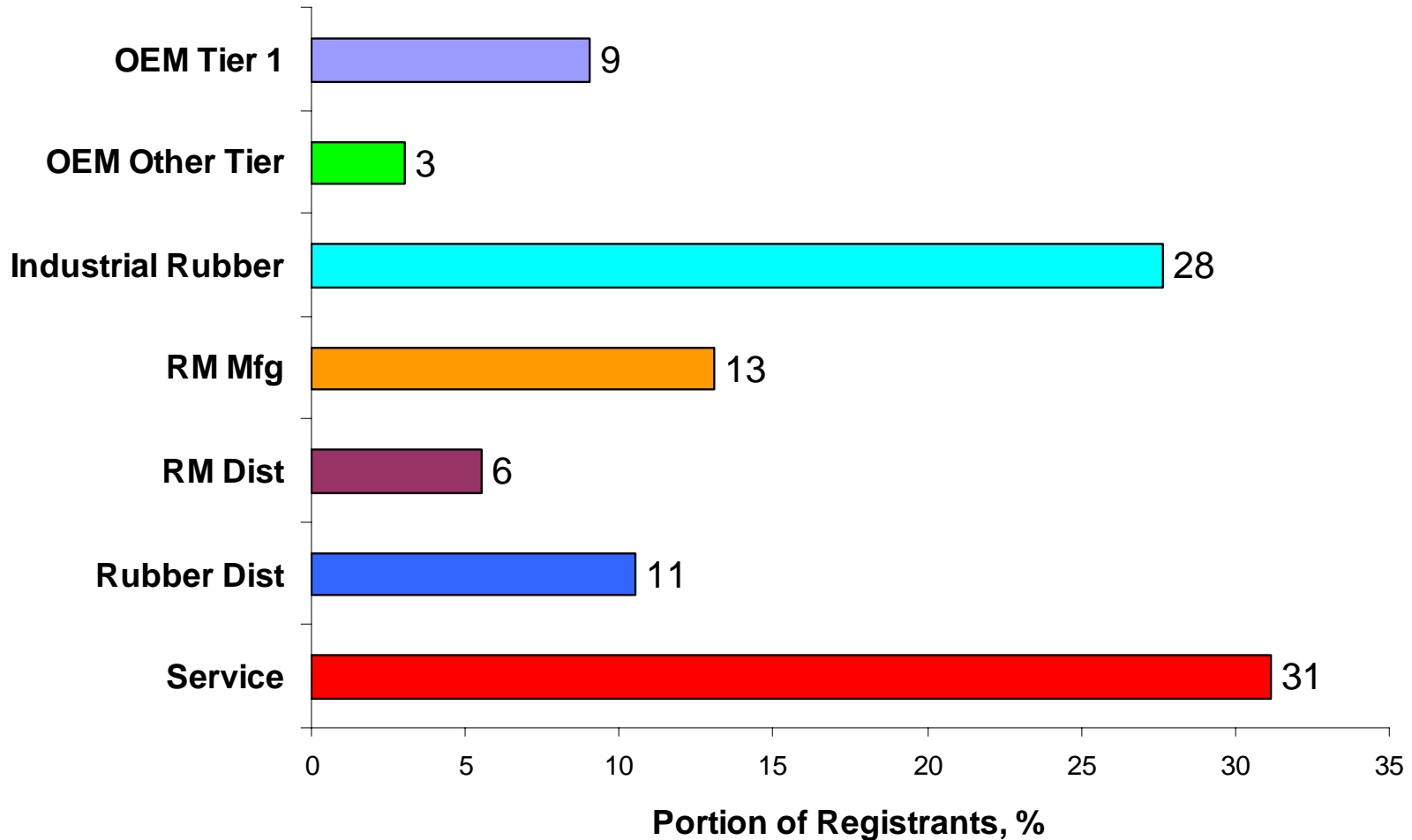


Going Green in Rubber

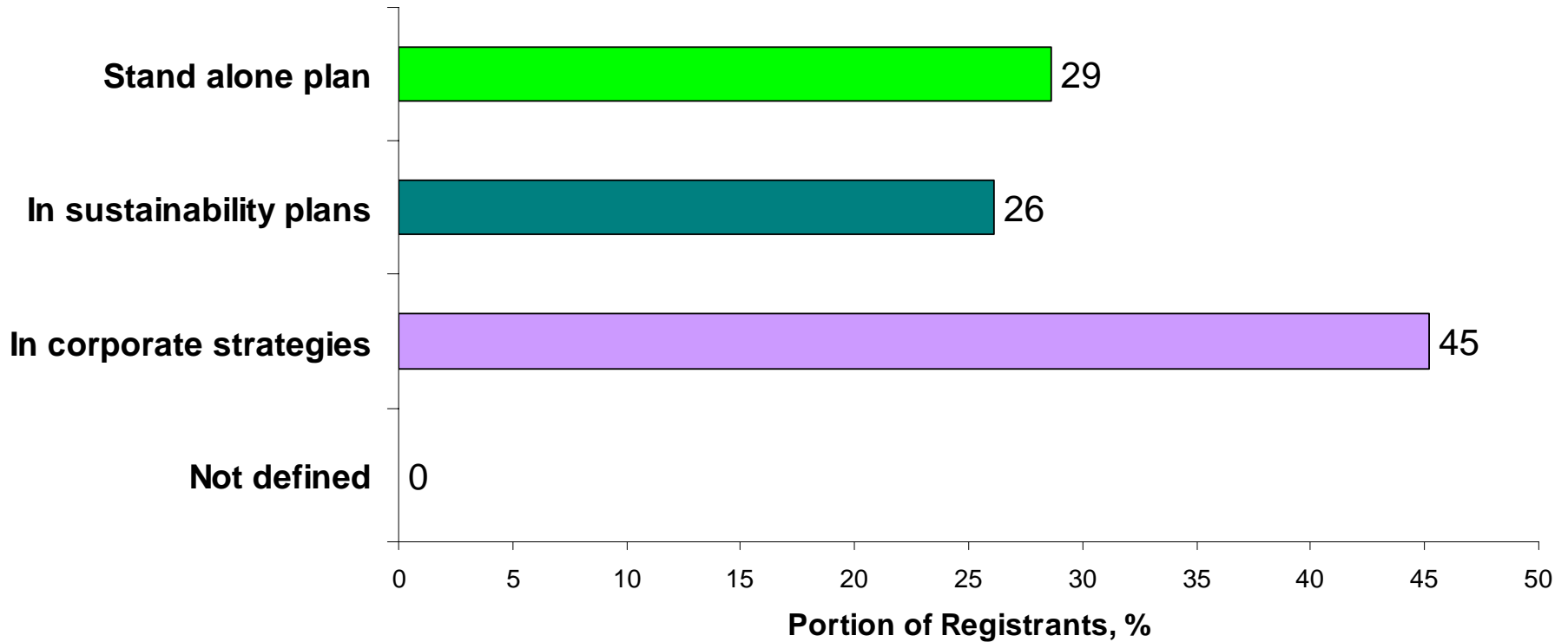
Audience Demographics



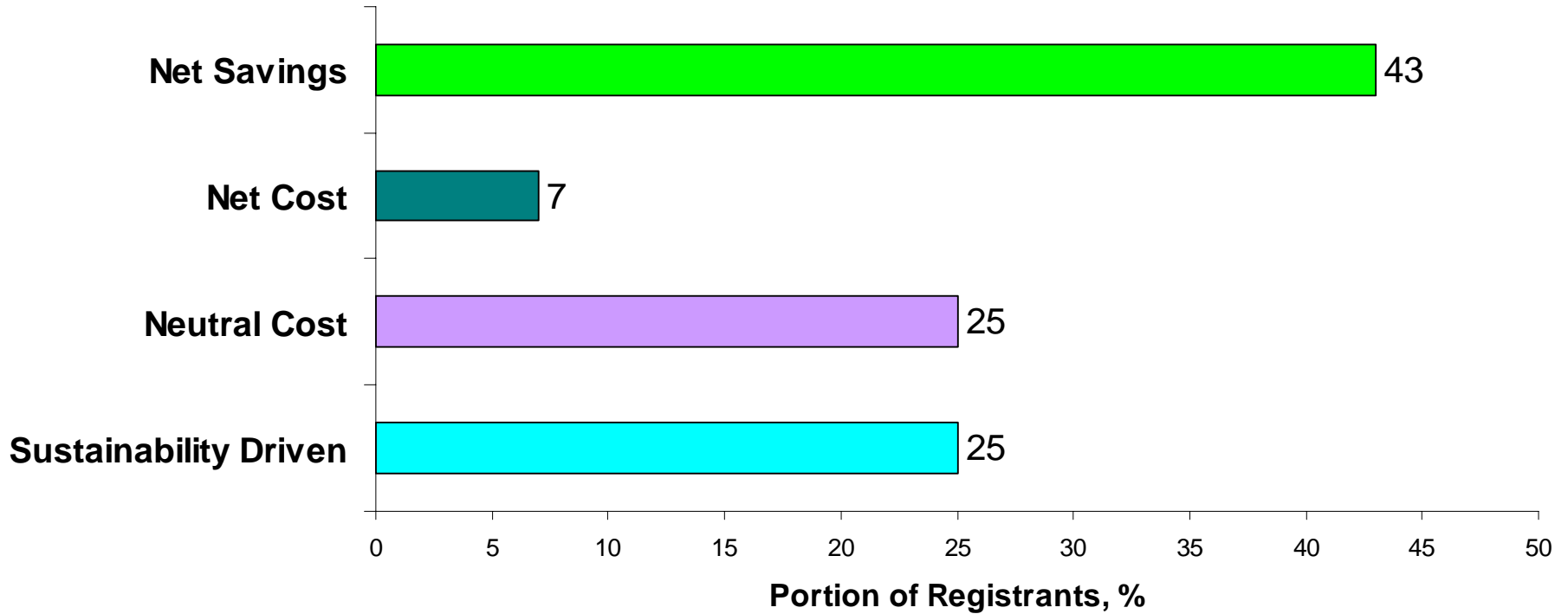
Types of Companies Represented



Where Green Initiatives Defined



Impact of Corporate Green Initiatives



Objectives of Webinar



- Transfer information
- Identify available resources to assist
 - Tom Murray
 - EPA, Green Suppliers Network
- Green initiative market opportunities
 - Steve Hellem of Suppliers Partnership



Green Suppliers Network

GOING GREEN

August 12, 2009



Current Trends

Suppliers need environmental technical assistance to meet customers' needs

- 59% of CEOs believe their companies should incorporate sustainability into supply chain management
- Only 27% currently do
- CEOs identified primary obstacle - difficulty in changing suppliers' practices

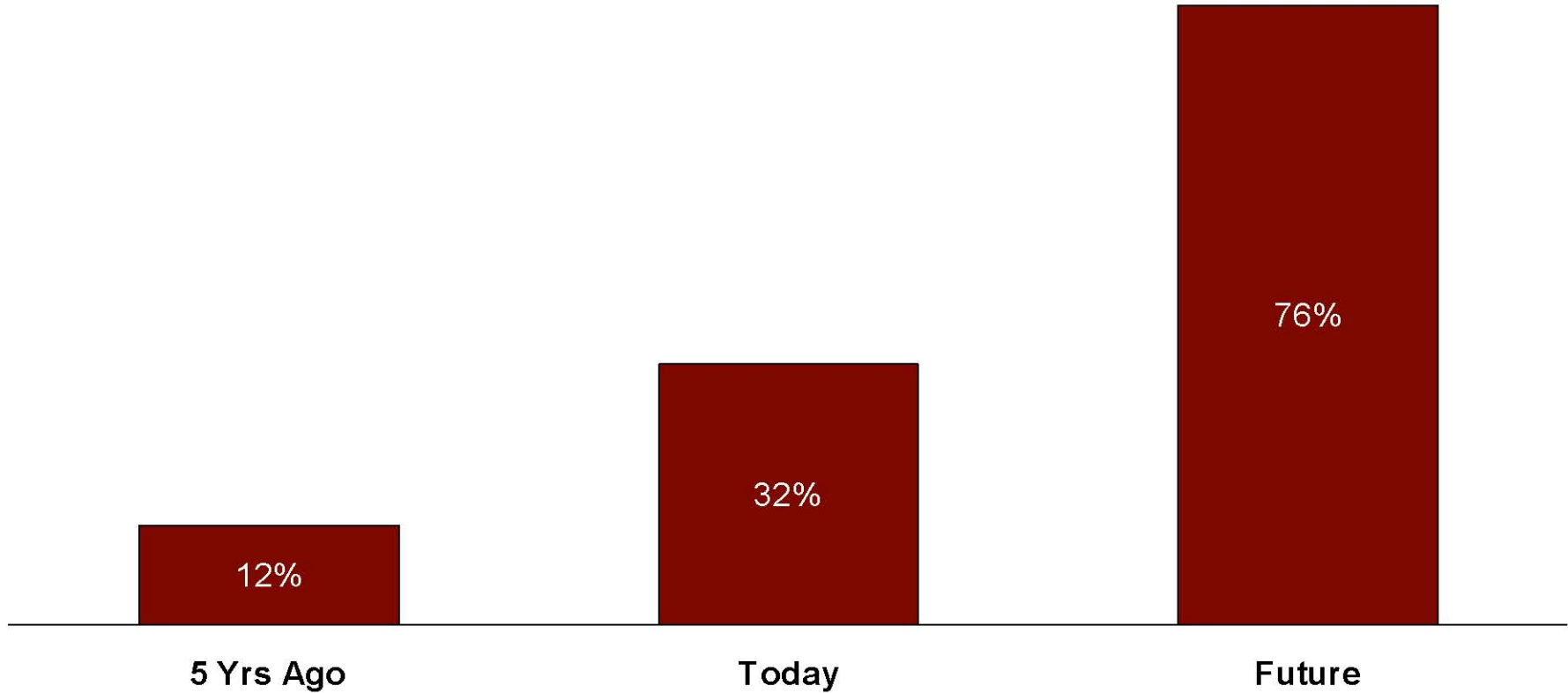
Source: McKinsey & Co. survey of 391 CEOs at global companies, October 2007





Being “green and ethical” will no longer be an option, it will be a necessity for all participants in the supply chain

Companies Deselecting Suppliers for Failing to Meet Sustainability Criteria⁽¹⁾
(% of Respondents)



Note: (1) For more than 5% of sourcing events
Source: A.T. Kearney Sustainability and Supply Management Survey, 2007 & 2008

Overview

- What is Green Suppliers Network?
- Why Go Beyond Lean?
- How the Program Works
- Success Stories



What is the Green Suppliers Network?

Strong first step on path to sustainability

How:

- Expands lean definition of waste to include environmental considerations: *Lean and Clean Advantage*
- Hands-on training on shop floor
- Measurable business and environmental impacts
- Trains employees - “learn to see” environmental opportunities
- Customized solutions to manufacturing challenges
- Improved supply chain relationships



Why Go Beyond Lean?

- Optimize Material Use → Less Scrap = **Reduced Solid Waste**
- Reduce Inventory → Less Chemical Spoilage = **Reduced Hazardous Waste**
- Reduce Overproduction → Less Runtime = **Energy Savings**
- Reduce Transportation → Less Fuel Consumption = **Reduce Air Emissions**



Why Go Beyond Lean?

Cost Savings from Environmental Impact Opportunities	\$23,144,225/yr
Energy Conservation (MM Btu)	857,431,725
Water Conservation (gallons)	77,355,558
Water Pollution Reduction (lbs)	19,839,848
Air Emissions Reduction (lbs)	1,825,721
Solid Waste Reduction (lbs)	7,081,044
Cost Savings from Lean Opportunities	\$34,864,155/yr
Cost Savings from Other Opportunities	\$1,146,947/yr
Total Potential Cost Savings	\$59,155,327/yr
Average Savings per Review	\$505,600/yr

Results for 117 reviews



Program Roles

- U.S. Environmental Protection Agency
- National Institute of Standards and Technology's Manufacturing Extension Partnership (NIST MEP)
- State Environmental Experts
- Large Manufacturers
- Suppliers



How the Program Works

- Corporate Champions join program
- Champions nominate suppliers
- Review team conducts assessment
- Supplier implements opportunities
- Champion can get aggregated data in five-supplier increments



How the Program Works



Lean & Clean Approach

Lean Eliminates...

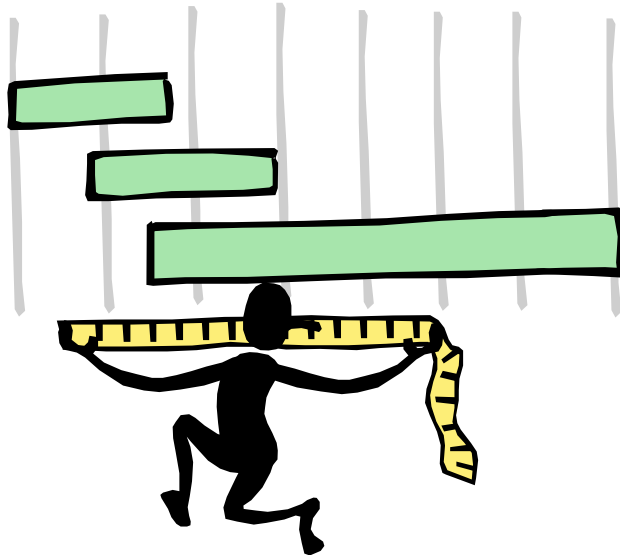
- **D**efects
- **O**verproduction
- **W**aiting
- **N**on-utilized People
- **T**ransportation
- **I**nventory
- **M**otion
- **E**xtra processing

Clean Strives For...

- **N**ature-friendly Substitutes
- **O**ptimized Material And Energy Efficiency
- **W**aste Elimination
- **A**ir/Water Emission Reductions
- **S**olid/ Hazardous Waste Reduction
- **T**oxic Material Reduction Or Substitution
- **E**fficient Packaging



How the Program Works



Baseline Metrics

Lean Metrics	Clean Metrics
Annual revenue	Hazardous materials used
Cost per unit product	Non-hazardous/Solid Waste generated
Labor overhead	Energy use
Materials overhead	Water use
Operating margin	Wastewater discharged
Amount of Inventory	Water pollution discharged
Inventory turnover time	Material purchasing costs
Percent on-time deliveries	Disposal costs
Percent rework	Recycled materials
Annual revenue	
Actual machine run time and available machine run time	
Percent available machine run time	
Number of employees	
Average employee turnover	
Amount annual revenue per employee	
Average employee pay	



Review Specifics

- Reviews first come, first served
- Reviews focus on single process
- On-site reviews take 2-3 days
- Cost
 - \$7,500 Total cost to supplier
- Return on Investment is generally 3:1



Success Story

Summit Corporation of America

- Metal finishing company
- 121 employees, \$18M in annual sales
- Nickel barrel plating line -- 3% of business

Green Suppliers Network Review Results

- \$980,000 in potential annual savings
- \$95,000 in potential energy savings



Success Story

HAR-CONN Chrome Company

- Metal finishing company
- 55 employees, \$6M in annual sales
- Hard chrome plating line -- 15% of business

Green Suppliers Network Review Results

- \$425,000 in potential annual savings
- \$77,750 in potential energy savings



For More Information

www.greensuppliers.gov

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Suppliers Partnership for the Environment (SP)

Going Green Webinar

Rubber and Plastics News

Steve Hellem, Executive Director, SP



Suppliers Partnership for the Environment

Vision:

Association of automotive OEMS and their suppliers working in partnership with the EPA to find creative ways to improve the environment while providing economic value to the members.

Mission:

A forum for large, medium and small service and product vendors and vehicle manufacturers to develop and share tools, information, knowledge, good practices and technical support to ensure that the suppliers' products and their processes provide environmental improvement and cost savings to SP participants.



What is SP?

- 40 Member Companies
- Non-profit 501(c)(6) Organization
- Member Driven Work Group Activities
- Advocacy Organization



Current SP Members



Advanced Environmental Management Group



allegiant global



Atwater Steel Trading Corporation



CHRYSLER



Crystal Filtration

DeltaInstitute

DENSO North America



FEDERAL MOGUL



fts Technologies
ATmaP™ Surface Treatment Technology



Johnson Controls

Merit Laboratories Inc.



SUPPLIERS PARTNERSHIP FOR THE ENVIRONMENT™





What is EPA's and NIST's Role in SP?

- SP is in a partnership with the U.S. EPA
- EPA provides topics for special projects, information, tools and resources
- EPA brings to SP additional opportunities, including providing financial resources from the National Institute of Standards and Technology's (NIST) Manufacturing Extension Partnerships (MEPs) to provide counsel and guidance for facilitation of SP Member "Lean and Green" Technical Assistance Workshops.



Value of SP Membership

- Provides a common auto sector approach to greening the supply chain.
- Provides a forum for companies to work together to share “good practices” through work groups to address specific issues.
- Provides facility-specific technical assistance workshops.
- All cost savings realized through SP – MEP workshop activities are retained by the SP member company.



SP Work Groups

- Energy
- Materials Efficiency
- Technology and Networking
- Chemical Issues Management



Energy Work Group

- Goal:* Identify ways to provide energy cost savings to SP companies in a way that those companies can:
- Utilize more efficient technologies, practices and services
 - Quantify the results of their energy efficiency or energy reduction activities
 - Achieve some or all of the cost reductions that will be required by their customers.
 - Reduce the carbon footprint of SP member companies

Co-chairs: Reg Modlin, Chrysler LLC
Rahul Naik, ARCADIS



Energy Work Group Resources

- U.S. EPA

- <http://www.energystar.gov/>

- DOE

- http://www1.eere.energy.gov/industry/saveenergynow/energy_experts.html

- Chrysler Energy Manual

- Available to SP members at no cost!



Success Stories

Chrysler:

Through May 2007, from a 2006 baseline, the Chrysler Group has reduced energy consumption by 3% per vehicle built, eliminating approximately 600,000 MMbtu's or 112,500 metric tons of CO₂.

Federal-Mogul:

Federal-Mogul has 729 projects from 98 plants. These projects have saved \$9.4M since 2004. Have \$9M more in open projects. Estimate this at 60,900 Metric Tons of Greenhouse gas reduction.

General Oil Company:

- Steam/Natural Gas – 13% natural gas savings from February to May 2007 over same time period in 2006.
- Lighting/Electricity - electricity savings of 3% or 5,000 kWh in 2008
- Water - 17% reduction in water usage in 2008.



Materials Efficiency Work Group

Goal: Serve member companies by finding creative relationships and technologies that will reduce packaging by-product environmental impacts and create a multi-tiered environmental approach to managing packaging by-products.

Co-chairs: John Bradburn, GM
Susanne Fredericks, Goodwill International



Success Stories - Goodwill

- Earth Day Events –60,000 lbs. (e-waste & household goods)
 - DENSO (and Affiliates)
 - GM
- Reconnect E-Cycling –2,391,439 lbs.
 - 5,094,439 lbs. since October 2005
- 20 jobs created
- Wooden Heat Treated Pallets -2125
- Plastic (caps, plugs, totes, trays, pallets and vehicle parts) –1,063,674 lbs. *
- Cardboard (OCC) –360,000 lbs.
- Vehicle Batteries Re-charged -2336
- Gaylords –15/week
- Aluminum –4354 lbs from obsolete dunnage



Success Stories – Federal-Mogul

Quiet Shield G Project

- Developed a process to convert Asian/ U.S cardboard and recycled textile fibers into a non-woven substrate for use as an acoustic material.

Objectives:

- To reduce waste in the assembly plants and turn it back into usable parts in the vehicle.
- Final non-woven substrate to contain 25-75% Cardboard.
- Material must meet technical, commercial, and economic targets

What's Next:

- Working with GM on the Volt and Epsilon II platform.
- Continuing to explore use of alternative materials
- Exploring incorporation of additional processes



Success Stories - GM

GM Warren Technical Center

Project Overview: 2 x 250,000 Gallon Fuel Oil Storage Tanks

- Clean, decommission tanks, piping and pits which was abandoned in place 15 years ago.

Environmental Benefits

- Reused 44 K Gallons within Company
- Recycled 74 K Gallons
- Limited landfill volume to < 1%
- Avoided Land filling 106 K Net Oil Gallons of High Water fuel. Representing 1,200 Metric Tons of CO₂.

Economic Benefits

- Reuse-Saved corporation \$150,000 in Material Costs•Recycling-Saved an additional \$15,000 over Landfill Costs



Technology and Networking Group

Goal: Providing a forum through which member companies share opportunities and processes for SP's Tier II and Tier III companies to communicate directly and effectively with the OEMs and Tier I suppliers in the organization and automotive industry.

Co-Chairs: David O’Ryan, Asset Recovery & Management Gr.
Russell Brynolf, FTS Technologies



U.S. Automotive Industry Roadmap Activity

Goal: Identify specific strategies, technologies and policy recommendations for ways that the United States' automotive industry can utilize technology, innovation and creativity to enhance the economic and environmental performance of the automotive manufacturing industry and its supply chain, while improving its environmental footprint.

Task Force: John Bradburn, GM
Dave O'Ryan, Asset Recovery & Management Gr.
Russell Brynolf, FTS Technologies
Jimmy Gayle, Gayle Technologies Inc.



Chemical Issues Work Group

Goal: Forum for discussing emerging chemical issues of potential impact to the automotive manufacturers and supply chain; creating a Materials Assessment Process to address and assess chemical issues in the interior of an automobile as well as addressing chemical impacts outside the vehicle, such as wear parts.

Chair: Pat Beattie, General Motors



MAS Development Team Participants

- General Motors
- Ford Motor Company
- Chrysler
- Honda
- Hyundai
- Nissan
- Subaru
- Lear Corp
- Eagle-Ottawa
- Denso
- JCI
- Allegiant
- Federal-Mogul
- Quaker Chemical



The Approach

The SP MAS is structured into 4 Phases:

- **Phase 1** – Principles and preliminary project scope
- **Phase 2** – Develop common risk assessment parameters and identify appropriate tools for human exposure in vehicle interiors
- **Phase 3** – Build upon Phase 2 to include environmental risks from vehicle wear debris (brakes, tires) or other exterior materials
- **Phase 4** – Build upon Phase 3 to include health and environmental risks from vehicle end-of-life activities



MAS Drivers

- REACH and its increased attention to exposure/risk
- TSCA reauthorization
- California Green Chemistry Rule efforts
- United Nations Environment Program
 - Workshop in Geneva - February 2009
 - Sweden and Japan sponsors
 - Auto industry is a leader
 - GM presentation
- NGOs, Investors and other stakeholders



Current Status

- *MAS Principles complete*
- *MAS Program Guidelines complete*
 - Hazard & Dose Response Assessment Guidelines
 - Exposure Assessment Guidelines
 - Risk Assessment Guidelines
 - Business Process Management Guidelines
- *Assessment Process Automation via Web-based software*
 - Subset of companies working with Science Strategies, LLC & SciVera, Inc.
 - Piloting and optimization
- *Implementation*
 - Voluntary, company-specific approach



MAS Recommendation at the CEC Council Meeting

- On June 24, 2009, Pat Beattie, GM and Barbara Boroughf, Lear, urged members of the CEC Council, to support the implementation of the SciVera Lens™ process for assessing and managing chemicals used by the North American Auto Industry.
- Utilizing CEC as the facilitator and coordinator of the program, it was recommended that Canada, Mexico and the United States each provide \$1 million dollars a year for two years, as seed money, in order to provide the M-A-S software to North American auto manufacturers and their suppliers for two years.
- Program has potential to impact chemical characteristics of all articles (parts) and process chemicals used in the North American auto industry.
- Copies of statement are on SP's website, www.supplierspartnership.org



Projected Achievements

Program Duration -- Jan 2010 through Dec 2011

- >10,000 Industrial Chemicals (CAS Registry Numbers) Researched and Assessed for Properties, Hazard Attributes and relevant data for exposure estimation and calculating characterization
- >500,000 Automotive Components Assessed for Hazard and Risk
- 300 Substances of Concern substituted or eliminated from over 100,000 automotive components
- Reporting mechanism of general program achievement metrics for supporting countries to track progress of the program
- Engine for innovation toward better products for humans and the environment resulting in enhanced competitive advantage for the North American automotive industry



MAS Phase 3 Scope

- Build upon Phases 1 & 2 (Principles & Auto Interior Materials)
- Incorporate Friction Materials & Wear Debris (e.g, Brakes, Tires, Belts, etc.)
- Explore Hazards, Exposure, and Risks
 - Multi-pathway
 - Human and Environmental
- Deliverable is a Supplement to Existing Guidelines for Friction Components



MAS Phase 3 Timeline

- Begin 3rd Quarter 2009
- Engage Tire and Friction Component Suppliers
- Complete work by 1st Quarter 2010



For More Information on SP

Suppliers Partnership for the Environment

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Going Green

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Questions?



Going Green in Rubber

Next for Going Green in Rubber? - Summer 2010

- Rubber company case studies - General
- Rubber company case studies – Recycle
- Traditional raw material suppliers – Efforts to reduce carbon foot print
- Round table - rubber automotive, appliance, consumer markets
- Regulatory updates



Going Green

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Thanks for participating!

This Webinar will be archived for 3 months at
RubberNews.com

