



*Improving the Economic and Environmental Performance of  
the North American Automotive Industry Supply Chain*

National Environmental Sustainability Summit

June 7, 2011

Detroit, Michigan



# Greening Automotive Supply Chains A Review

- Started here in Detroit with the Automotive Industry
- Origin of the Suppliers' Partnership for the Environment organization
- Collaborative effort between USEPA and the Manufacturing Extension Partnership Program of the U.S. Department of Commerce
- Expands lean definition of waste to include environmental considerations: *Lean and Clean Advantage*
- Hands-on training on shop floor





# Greening Automotive Supply Chains A Review

- Measurable business and environmental impacts
- Customized solutions to manufacturing challenges
- Improved supply chain relationships
- Trains employees - “learn to see” environmental opportunities





# Learning to see “Green”

- 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**



# Combining Lean and Green

## Traditional “Lean” Eliminates...

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

## “Clean” adds...

- **F**ull use of Raw Material
- **E**nergy Efficiency
- **W**ater conservation
- **E**liminating Toxic Material
- **R**eduction of:
  - Packaging Wastes
  - Emissions to Air and Water
  - Solid & Hazardous Wastes
  - Regulatory obligations and risks



## The Value of Lean AND Clean

Cost Savings from Environmental Impact Opportunities	<b><u>\$35,979,115/yr</u></b>
Energy Conservation (MM Btu)	2,956,765
Water Conservation (gallons)	98,600,949
Water Pollution Reduction (lbs)	21,301,320
Air Emissions Reduction (lbs)	7,224,261
Solid Waste Reduction (lbs)	31,090,186
Cost Savings from Lean Opportunities	<b><u>\$41,055,373/yr</u></b>
Cost Savings from Other Opportunities	<b>\$2,300,000/yr</b>
<b>Total Potential Cost Savings</b>	<b>\$79,334,488/yr</b>

Results for 166 reviews





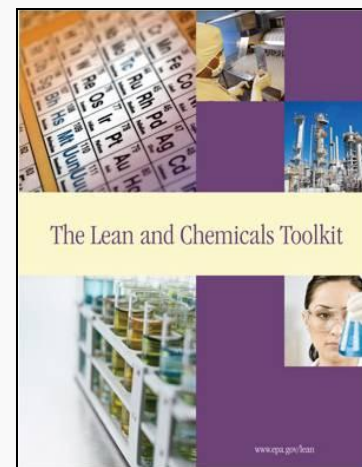
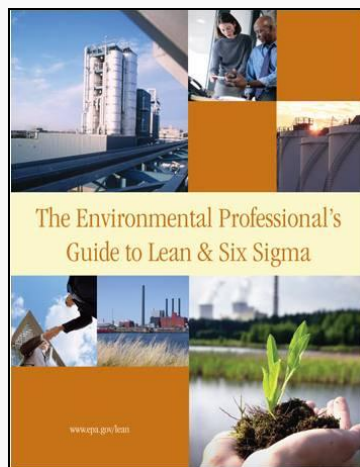
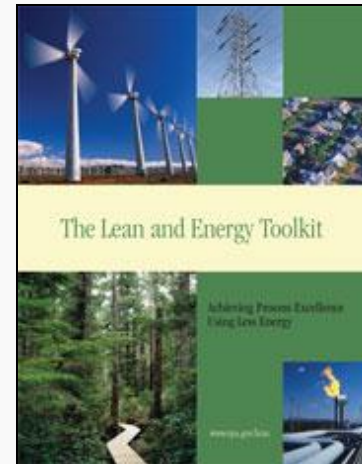
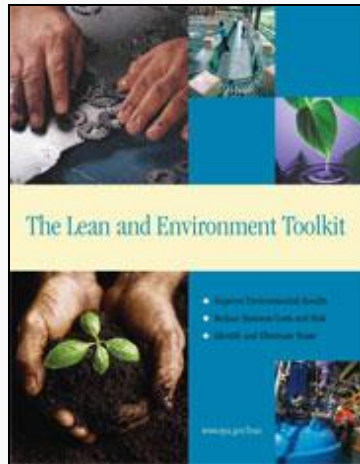
# *Greening Automotive Supply Chains in North America*

## Lean and Green Tools and Training





# EPA's Lean & Environment Toolkits





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**GREEN SUPPLIERS NETWORK**

## Welcome to the Green Suppliers Network

As a manufacturer, you work hard to keep costs down, profits up, and your customers happy. But can you stay competitive and reduce your environmental footprint at the same time? The answer is yes.

By partnering with the Green Suppliers Network, you will learn lean manufacturing techniques coupled with sound environmental strategies, which we call the *Lean and Green Advantage*.

**GREEN SUPPLIERS NETWORK**

**What Industry Is Saying – Steelcase**

**Mary Ellen Mika, Supply Chain Manager**



[Green Suppliers News](#)

[Materials Handling World Magazine - HFT Forklifts sign up to Green Achiever scheme](#)

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Green Suppliers Network is a joint effort of the U.S. Environmental Protection Agency and the U.S. Department of Commerce, National Institute of Standards and Technology, Manufacturing Extension Partnership Program. The Green Suppliers Network is a component of the E3 Initiative.



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## Green Suppliers Network Training

### Welcome to the Green Suppliers Network Review Team Online Training Course

This online training course was developed to help you prepare for the Green Suppliers Network technical review. The course will explain the *Lean and Green Advantage*, demonstrate value stream mapping techniques, and introduce you to tools that capture real results.

The training course modules contain videos and exercises to help you see how the Green Suppliers Network review process is put into practice. At the end of each module, you will find a brief quiz, which you must complete in order to receive a certificate of course completion. If you are a new Review Team participant and have never conducted a Green Suppliers Network technical review, you must complete this course and submit your certificate of completion to EPA prior to conducting the onsite review. We also encourage you to use parts of this training in your own presentation to suppliers.

If you have any questions or comments about the Online Training Course, please contact: [green\\_suppliers@epa.gov](mailto:green_suppliers@epa.gov).

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# Building Infrastructure & Training Trainers

- Taller “Manufactura Esbelta y Limpia (Lean & Clean) Tecnológico De Monterrey
- October 27-29, 2008
- Ford Motor Plant in Chihuahua
- Instructors:
  - Kurt Middelkoop, Texas MEP
  - Julio Lugo, Puerto Rico MEP





# Expanding the Conversation and Tool Box

🚧 E3: Economy, Energy and Environment

🚧 Working with the U.S. Department of Energy and other U.S. Federal Agencies

🚧 Working with Utilities

🚧 Expands lean and green to include more robust energy efficiency tools

🚧 Green House Gas profile using EPA calculators



ECONOMY  
ENERGY  
ENVIRONMENT

# E3 Metrics

## Economic Metrics:

- Environmental savings identified
- Lean savings identified
- Other cost savings
- One time potential cost savings identified
- Individuals trained
- Jobs created
- Jobs retained
- Total annual potential impact identified
- Number of small businesses engaged
- Percentage of small businesses engaged
- Number and value of SBA loans granted
- Capital infusion dollars invested
- Hours of counseling provided

## Energy Metrics:

- Energy conserved (MM BTU/kWh)
- Energy intensity per unit of production
- Carbon reductions (tons)
- Carbon intensity per unit of production

## Environment Metrics:

- Air emissions reduced (lbs)
- Solid waste reduced (lbs)
- Material intensity per unit of production
- Hazardous waste reduced (lbs)
- Hazardous materials reduced (lbs)
- Water pollution reduced (lbs)
- Water used/conserved (gal)
- Water intensity per unit of production