

# Green Chemistry's Place in the Sustainability Movement

*~ Steelcase Perspective ~*



**“greenUp”**

Michigan Green Chemistry Conference

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# About Steelcase...

- q Office furniture leader committed to sustainability.
- q \$3 billion annual revenue, FY2013.
- q Global manufacturer with global supply chain.
- q Wide variety of raw materials: plastic, wood, steel, aluminum, fabric, foam, electrical & lighting products, and much more.

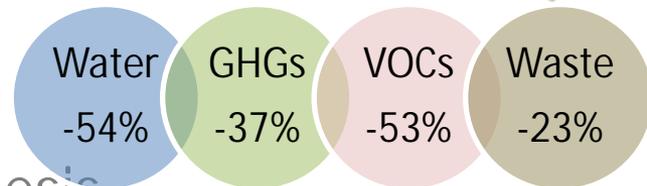
# How does "green chemistry" relate to sustainability at Steelcase?



## Principles of Green Chemistry

1. Prevent waste
2. Maximize atom economy
3. Design less hazardous chemical synthesis
4. Design safer chemicals and products
5. Use safer solvents and reaction conditions
6. Increase energy efficiency
7. Use renewable feedstocks
8. Avoid chemical derivatives
9. Use catalysts, not stoichiometric reagents
10. Design chemicals and products to degrade after use
11. Analyze in real time to prevent pollution
12. Minimize the potential for accidents

Reducing our global footprint



Lean manufacturing

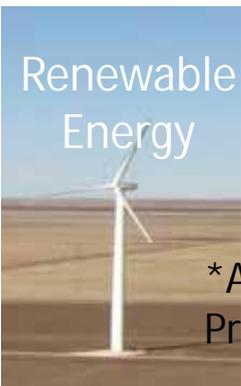
returnable packaging

Powder coatings in place of solvent-based

Non-chemical antimicrobial



\*Anastas, P. T.; Warner, J. C. Green Chemistry: Theory and Practice, Oxford University Press: New York, 1998, p.30.



# Since we're not making chemicals, how can we influence the growth of green chemistry?

## If "Green Chemistry" is...

*"the utilization of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products..."*

[Green Chemistry: Theory and Practice by Paul Anastas and John Warner]

*...the ultimate **user** of the products has the greatest potential influence. Our customers expect high-value products made from safe, quality materials -- so we expect the same from our suppliers.*

# What is green chemistry relative to materials at Steelcase?

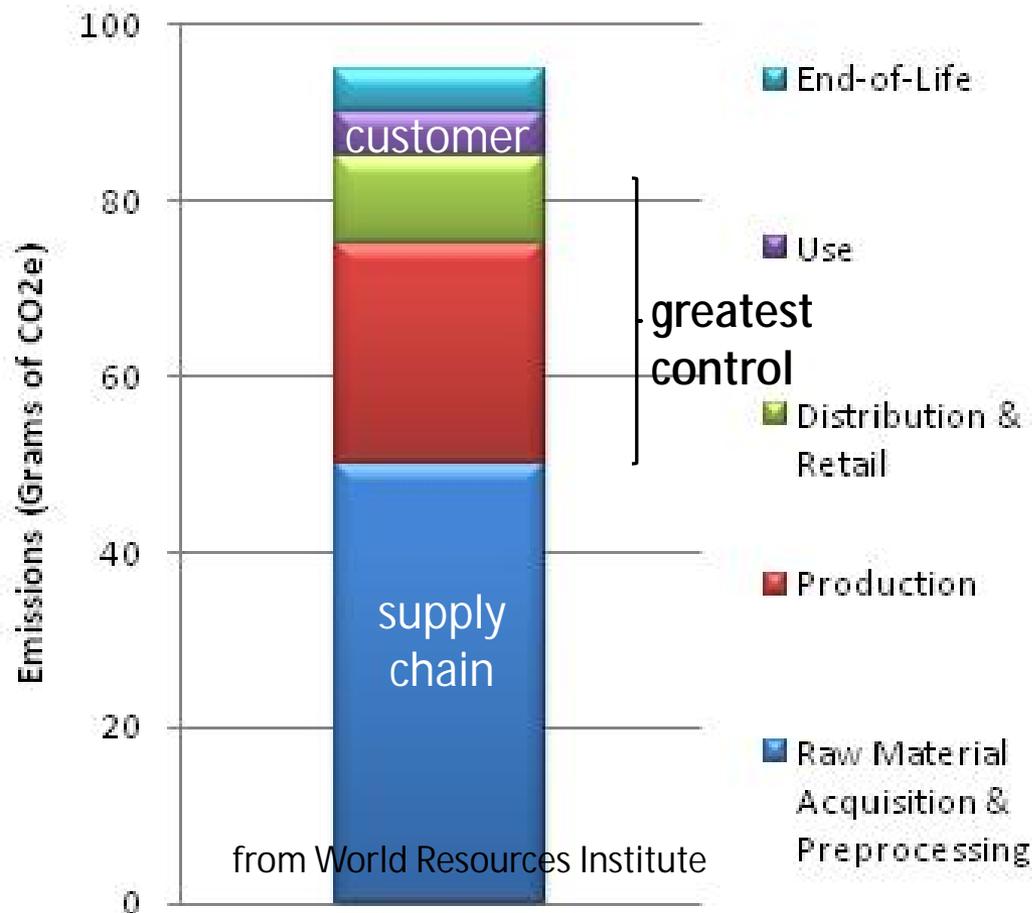
It's about the use of better, leaner, safer materials and processes.

- We want to know the chemistry of our raw materials to continuously improve our products and create the greatest value for our customers.
- But green chemistry doesn't stop at assessment of our materials.
- The challenge is to implement improvements in our materials – to act on our assessment results.



# What is the “vertical” scope of our green chemistry application?

Though this slide shows GHG impacts across a product’s life cycle – it could also represent chemical impacts.

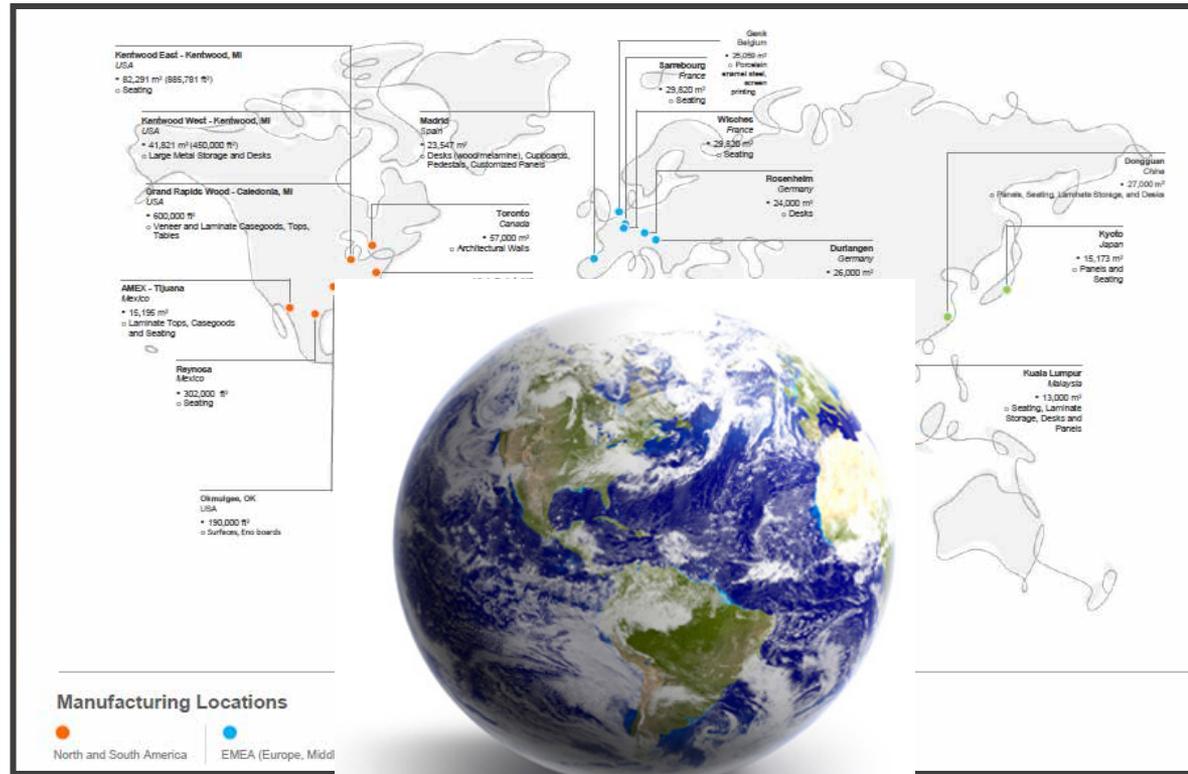


*One of our biggest challenges since we are so far downstream from chemical manufacturers is to influence their chemical choices – to create a demand for green chemistry that is actually heard.* <sup>6</sup>

# What is the “horizontal” scope of our green chemistry application?

...wherever we source materials, manufacture, and sell our products.

Geographic distances often reduce our influence on upstream suppliers, making our ability to “demand” greener chemistry more challenging.



# In Summary...

*Our customers expect high-value products made from safe, high quality materials and processes.*

*We expect the same from our suppliers.*

*Transparency of information throughout the supply chain is critical for continuous improvement.*

*The ability to exert influence on upstream suppliers is key.*

*Green chemistry at Steelcase consists of innovative material and product development and leaner processing throughout our supply chain.*

# Steelcase

Love how you work.

Thank you.

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