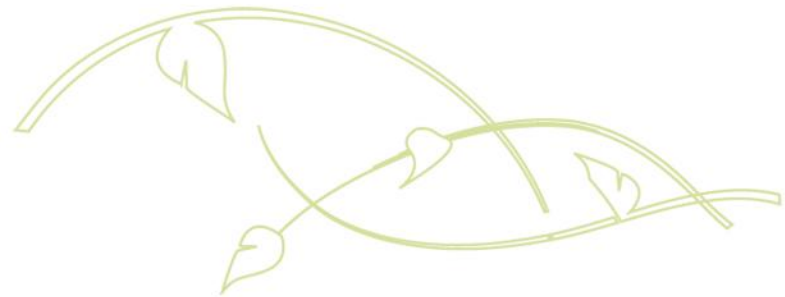




# A Dozen Things You Might Not Know That Make Vinyl Siding Green

Presented by Tad Radzinski, P.E., LEED AP



VINYL SIDING INSTITUTE  
**America  
Sides with  
Vinyl**<sup>SM</sup>

This webinar will use Voice over Internet Protocol (VoIP). Please make sure your speakers are turned on.

# What We Will Cover

- About the Vinyl Siding Institute, Inc. (VSI)
- What is sustainability?
- What is green building?
- The facts about vinyl siding and sustainability
- Resources
- Questions



# About the Vinyl Siding Institute



# About the Vinyl Siding Institute (VSI)

- VSI is the trade association for manufacturers of vinyl and other polymeric siding and suppliers to the industry
- Located in Washington, DC
- VSI priority programs
  - Product and color retention certification
  - Installation, including the Certified Installer Program
  - Technical work
  - *America Sides with Vinyl (ASwV)* marketing initiative
  - Code and regulatory projects



# Sustainability Research

- VSI established a Green Team consisting of members to help the industry's sustainability efforts
- Commissioned Sustainable Solutions Corporation to study vinyl siding's sustainability
  - Sustainable Solutions Corporation president, Tad Radzinski, is LEED AP and was formerly with the U.S. Environmental Protection Agency



# What is Sustainability?



# Sustainability Defined

- According to the U.S. Environmental Protection Agency:
  - “Sustainability has many definitions but the basic principles and concepts remain constant: balancing a growing economy, protection for the environment, and social responsibility, so they together lead to an improved quality of life for ourselves and future generations.”
  - “The principles of sustainability can stimulate technological innovation, advance competitiveness and improve our quality of life.”
- According to the 1987 United Nation's World Commission on Environment and Development report:
  - "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."
- Sustainability is of increasing importance in the construction industry.



# What is Green Building?





# Green Building Defined

- Wikipedia says:
  - “Green building is the practice of increasing the efficiency with which buildings use resources – energy, water, and materials – while reducing building impacts on human health and the environment, through better siting, design, construction, operation, maintenance, and removal – the complete building life cycle.”



# Environmental Footprint

- Building construction significantly alters the environment
- According to Worldwatch Institute, building construction consumes 40 percent of the raw stone, gravel, and sand used globally each year, and 25 percent of the virgin wood
- Buildings also account for 40 percent of the energy and 16 percent of the water used annually worldwide



# The Facts About Vinyl Siding and Sustainability



# Vinyl Siding ...

1. Can contribute to points in leading green building programs
2. Boosts a home's R-value (insulated vinyl siding)
3. Generates less waste during manufacturing
4. Produces little waste when installed
5. Requires few resources to maintain beauty
6. Is engineered to last
7. Offers better environmental performance
8. Balances economic with environmental performance
9. Contributes less to global warming than brick
10. Releases fewer toxic chemicals than other exterior cladding through its life-cycle
11. Emits less dioxin during manufacturing than other exterior cladding
12. Installs safely



# Vinyl Siding Can Contribute To Points In Leading Green Building Certification Programs

# Key Programs

- At the local level, residential green building certification programs have been in place for years
- In recent years, two organizations have spearheaded the development of national programs
  - National Association of Home Builders: ANSI approved ICC 700-2008 National Green Building Standard™ (NGBS)
  - U.S. Green Building Council: LEED® for Homes (H) and LEED® for New Construction (NC)
- Several local programs have grown into regional programs
  - Earthcraft Home (Southeast)
  - Built Green (Northwest)

# Rating Systems

- Programs have been based on points systems
- Points are accumulated to establish either a minimum threshold for compliance or a threshold to reach a specific level of performance
- Points can be achieved in the following areas
  - Lot preparation and design
  - Resource efficiency
  - Energy efficiency
  - Indoor air quality
  - Water efficiency and conservation

# Scoring Tools

- Online tools are available to help calculate points and performance levels
- Most programs require third party verification that the home has been built to the stated performance level

#	SECTION	DESCRIPTION	NAHB POINTS	GHBT POINTS	COMF	1	5
25	2.1.4	Create a detailed framing plan	7	7			
26	2.1.5	Use building materials that					
27	2.1.5.A	Pigmented and stamped concrete surfaced interior floors (of a slab-on grade foundation)	4	1			
28	2.1.5.B	Exterior trim not requiring paint or stain	4	1			
29	2.1.5.C	Windows with finished surfaces not requiring paint or stain	4	1			
30	2.1.5.D	Siding not requiring paint or stain	4	1			
31	2.1.6	Use pre-cut or pre-assembled building systems or methods					
32	2.1.6.A	Provide a pre-cut (joist) or pre-manufactured (truss) floor and roof framing package	3	3			
33	2.1.6.B	Provide a paneled wall framing system	0	0			
34	2.1.6.C	Provide a paneled roof system	0	0			
35	2.1.6.D	Provide a modular construction for the entire house	7	7			
36	2.1.7	Use a frost-protected shallow foundation (FPSF)	4	0			



# How Does Vinyl Siding Fare?

- Use of vinyl siding on a building can support certification through both LEED® for Homes (H) and LEED® for New Construction (NC)
- By using vinyl siding, points can be obtained for resource and energy efficiency in the ANSI approved National Green Building Standard™ (NGBS)
  - No additional finish on site
  - Termite-resistant materials
  - May contain recycled content
  - Indigenous materials
  - Life-cycle analysis
  - Innovative practices
  - Building energy efficiency
- Most green programs will qualify vinyl siding for points based on its durability and low maintenance



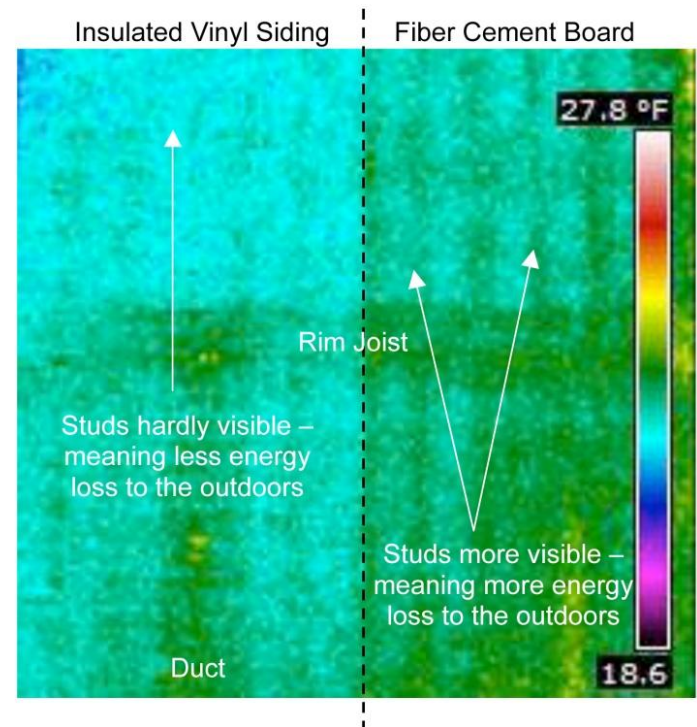
# Vinyl Siding Boosts A Home's R-Value



# Energy Efficiency

- Durable buildings need to be energy efficient to be sustainable
- In wood frame construction, energy escapes through studs by way of a process called thermal bridging
- Using insulated siding for continuous insulation on the exterior of a home is one way to increase the energy efficiency of the structure
- Insulated siding can increase the effective R-value of a wall by 10-16 percent
- The added R-value reduces the energy consumption over the lifetime of the building and reduces the carbon footprint

Thermal Imaging Side-By-Side Field Test



# The Future of Insulated Siding

- Insulated siding received initial approval from the International Code Council's International Energy Conservation Code Committee to be included in the 2012 edition of the *International Energy Conservation Code*
- Insulated siding has been added to the checklist of building products or methodologies that can help qualify homes under the *ENERGY STAR 2011 Qualified New Homes Program*



# Vinyl Siding Generates Less Waste During Manufacturing

# Material Efficiency

- Vinyl siding manufacturing is an extremely efficient process
- Vinyl siding production starts with two simple and abundant building blocks from nature – common salt (yielding chlorine) and natural gas (yielding ethylene)
- Natural gas utilized in the manufacturing process is domestically produced, which reduces consumption of imported oil
- Ability to immediately return scrap and off-specification materials (regrind) directly into the manufacturing process results in virtually no manufacturing waste





# Vinyl Siding Produces Little Waste When Installed

# Installation Efficiency

- Installation of vinyl siding generates very little waste compared to other exterior cladding
  - Based on NAHB studies for a typical 2,000 sq. ft. home, vinyl siding is approximately 1.9 percent of total construction waste, compared to brick at 12.5 percent
- Vinyl siding not listed as a typical constituent in the construction and demolition debris stream by the U.S. EPA benchmark report, *Characterization of Building-Related Construction and Demolition Debris in the U.S.*
- Source reduction techniques taught in the VSI Certified Installer Program ensure that minimal scrap is produced during installation





# Vinyl Siding Requires Fewer Resources To Maintain

# Low Maintenance

- Vinyl siding does not require painting, staining or caulking, ensuring it is not responsible for releasing harmful solvents into the environment
- Needs only periodic cleaning with mild soap and water, which lowers cost to maintain
- No painting or finishing helps to contribute to points in the green building certification programs



# Vinyl Siding Is Engineered To Last



# Durability

- As an engineered material, vinyl siding is undergoing constant improvement – expected service life continues to increase as improvements are made to color retention, impact resistance and other key aspects of durability
- Sustainability is not possible without durability
- The following make vinyl siding a durable product:
  - Energy efficiency
  - Low maintenance
  - Service life
  - Third-party product certification
  - Wind resistance
  - Color retention
  - Water resistance
  - Resistance to insect damage
  - Chemical resistance



# Programs to Help Ensure a Sustainable Future for Vinyl Siding

- Vinyl siding is the only exterior cladding with both third-party product certification and certified installer programs
  - *VSI Vinyl Siding Product Certification Program*
    - Certified vinyl siding is verified to meet or exceed *ASTM D3679*, the standard for vinyl siding quality in key areas including weathering performance, windload resistance, surface distortion and impact resistance, among others
  - *VSI Certified Installer Program*
    - The VSI Certified Installer Program is implemented by an independent administrator to ensure that individuals are properly trained and companies are properly staffed and managed to install vinyl siding (as well as soffit and accessories) consistent with *ASTM D4756*, the industry recognized installation standard
    - Installers learn how to minimize vinyl siding waste



# Vinyl Siding Offers Better Environmental Performance

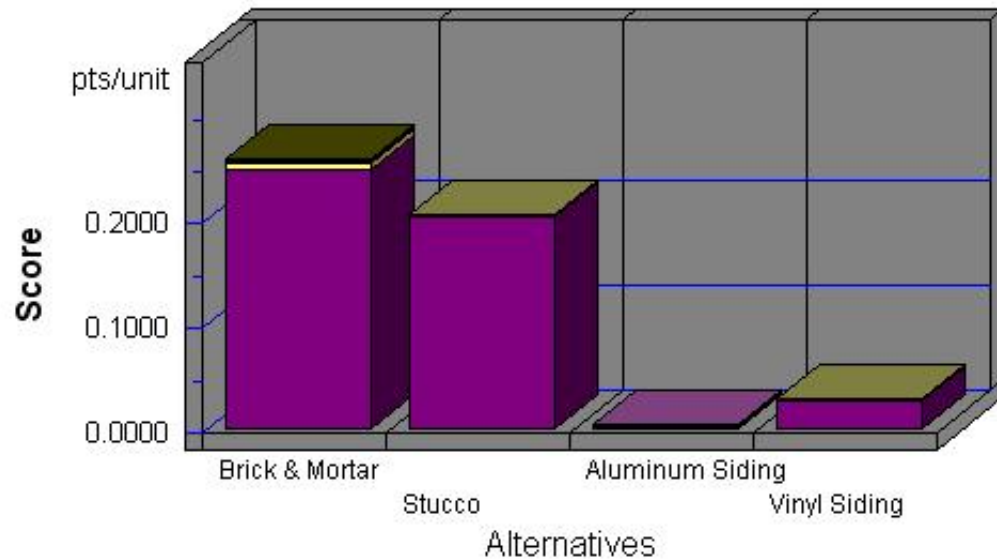


# Environmental Performance

- Compared with other exterior cladding, vinyl siding has excellent environmental performance

*Environmental Performance of Common Cladding Products*

Acidification
Crit. Air Pollutants
Ecological Toxicity
Eutrophication
Fossil Fuel Depletion
Global Warming
Habitat Alteration
Human Health
Indoor Air
Ozone Depletion
Smog
Water Intake



Note: Lower values are better

A two-story house with a porch and green foliage in the background. The house has a dark roof, white trim, and a porch with a railing. The background is a soft, green, watercolor-like wash of foliage.

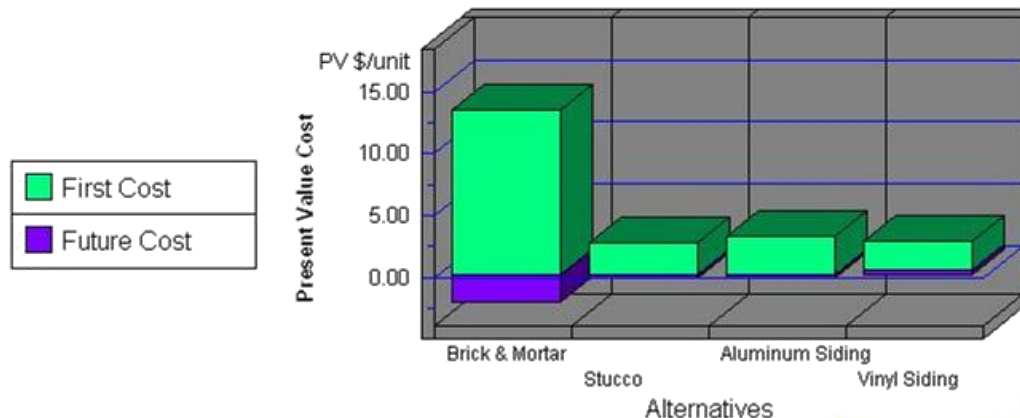
# Vinyl Siding Balances Economic With Environmental Performance



# Economic Performance

- Environmental and economic performance must be balanced
- A 2006 poll shows that 90 percent of U.S. consumers are willing to pay more to increase their home's environmental performance, but, only willing to pay 2 percent more

*Economic Performance of Common Cladding Products*



Note: Lower values are better

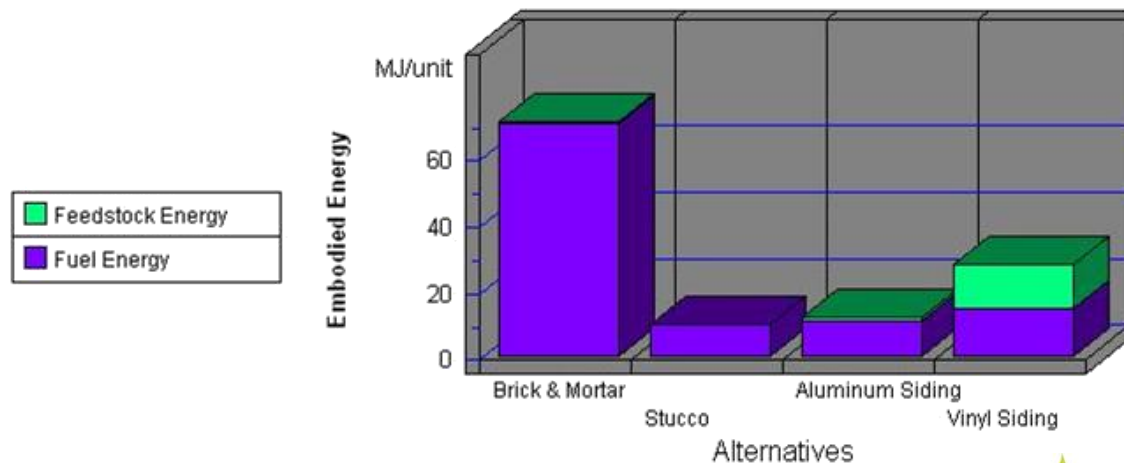


# Vinyl Siding Contributes Less To Global Warming Than Brick

# Embodied Energy

- Vinyl siding requires less water and energy to manufacture per square foot than fiber cement
- Vinyl siding requires less than half of the energy and fuel required for the process of manufacturing brick & mortar

*Embodied Energy of Common Cladding Products*

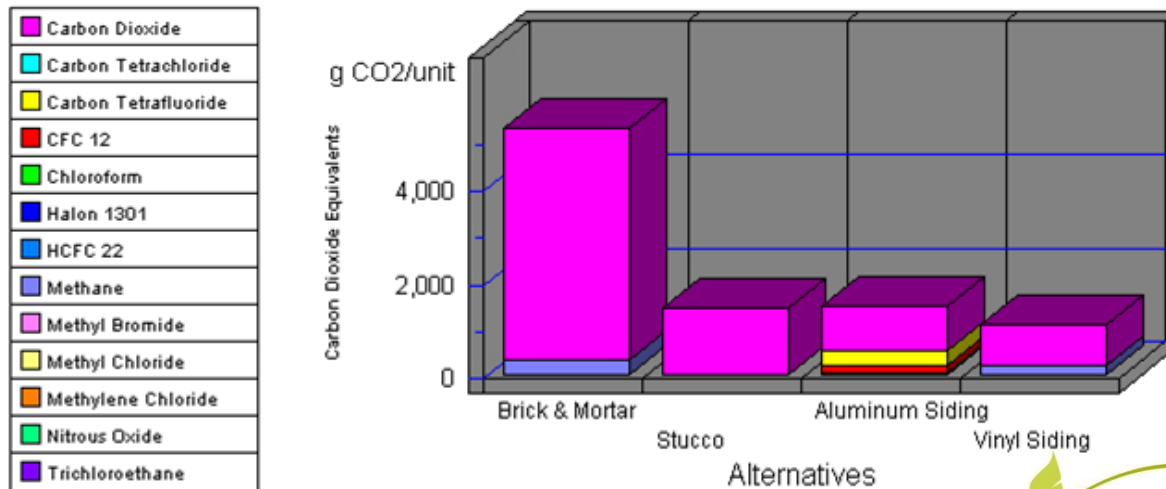


Note: Lower values are better

# Global Warming Potential

- Vinyl siding's lighter weight (especially compared to brick and fiber cement) requires less fuel consumption for transportation
- Thus, vinyl siding contributes significantly less to global warming than other exterior cladding

*Global Warming by Flow of Common Cladding Products*



Note: Lower values are better

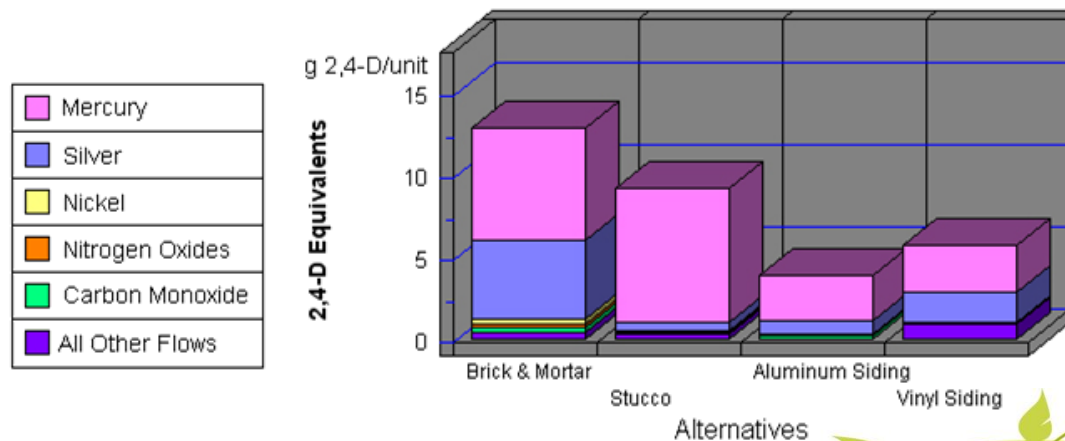


# Vinyl Siding Releases Fewer Toxic Chemicals Than Other Exterior Cladding Through Life-Cycle

# Toxic Chemicals

- Compared to other exterior cladding, vinyl siding is responsible for the emission of significantly lower levels of toxic chemicals, including mercury and silver
- The *VSI Vinyl Siding Product Certification Program* showed leadership by working with ASTM International to prohibit lead in the *ASTM D3679* standard for vinyl siding

*Ecological Toxicity of Common Cladding Products*



Note: Lower values are better

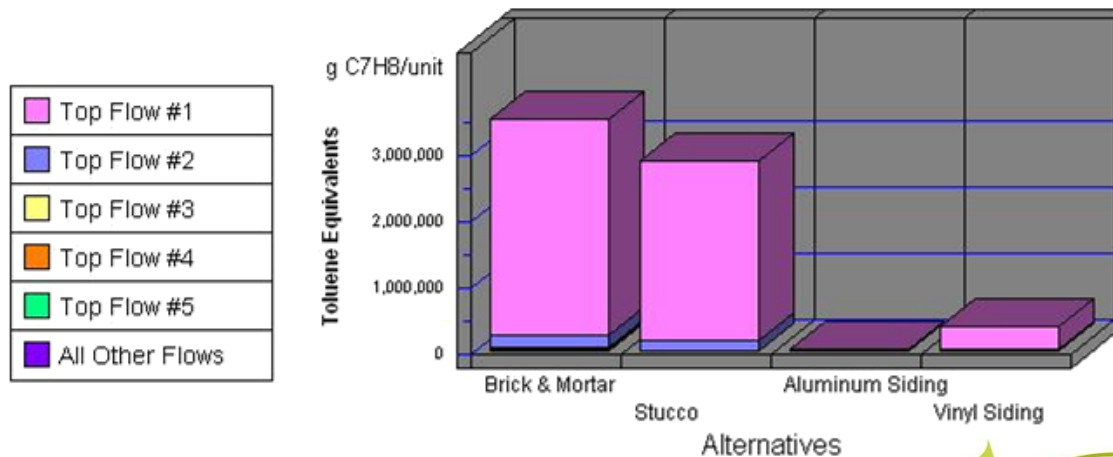
# Vinyl Siding Emits Less Dioxin



# Dioxin and Dioxin Emissions

- The production of cement creates more dioxin than the production of PVC
- Analysis using BEES<sup>®</sup> shows that the production of brick & mortar generates almost 10 times the dioxin of vinyl siding production

## *Human Health Effects of Common Cladding Products*

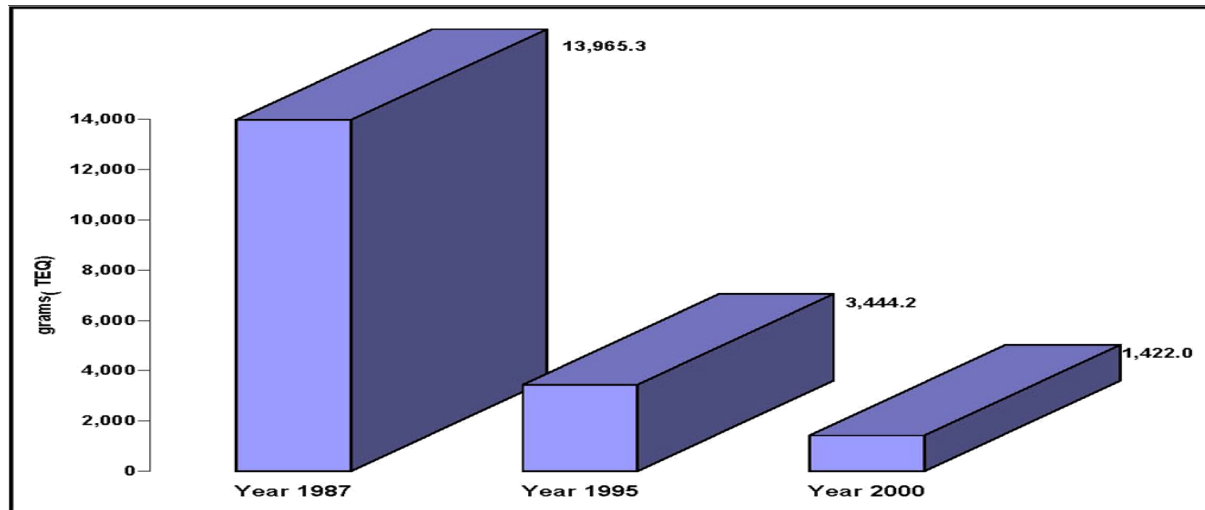


Note: Lower values are better



# Dioxin and Dioxin Emissions

- The level of dioxin released into environment has decreased by nearly 90 percent for all sectors reporting dioxin over the last 20 years, despite considerable growth in production of vinyl siding and other vinyl products over the same time period



Source: U.S. EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (EPA/600/P-03/002f, Final Report, November 2006)



# Vinyl Siding Poses No Serious Health Risks

# Health

- Vinyl siding does not utilize materials that can cause adverse health effects to the installers or to anyone
- The Material Safety Data Sheet (MSDS) for James Hardie Building Products specifically outlines the dangers associated with working with silica-based fiber cement
- Silica-based fiber cement, like James Hardie siding, may potentially cause adverse health effects such as silicosis (an incurable lung disease) to installers who do not use respirators



# Vinyl Siding vs. Silica-based Fiber Cement

- To date, fiber cement siding products have not submitted data so that they can be included in BEES software
  - Participation in BEES is voluntary
- Compared to silica-based fiber cement, like James Hardie siding products, vinyl siding is a greener exterior cladding in many categories, including:
  - Water and energy used to manufacture
  - Waste from manufacturing process
  - Embodied energy
  - Release of toxic chemicals
  - Transportation energy
  - Human safety (silicosis)
  - Job site finishing and maintenance

# Vinyl Siding is Green

- Vinyl siding has the potential to earn more points than other exterior cladding in leading green building certification programs
- Vinyl siding contributes significantly less to global warming than other exterior cladding
- Vinyl siding outperforms most other exterior cladding in almost all life-cycle stages for environmental and economic performance according to analysis conducted using BEES<sup>®</sup> software
- In short, vinyl siding is attractive, durable AND sustainable

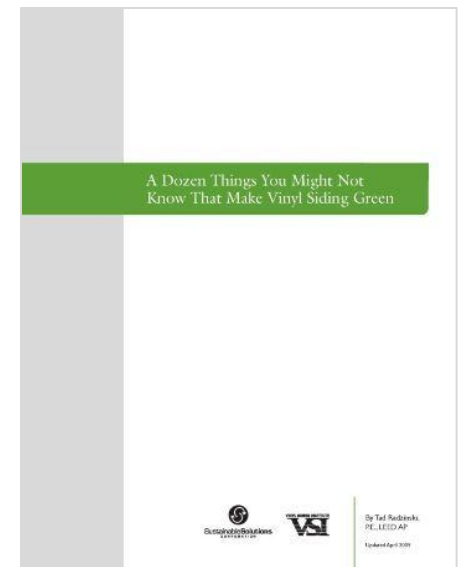


The background features a soft-focus image of a two-story house with a porch on the left side. The house has light-colored siding and a dark roof. The right side of the background is dominated by large, light green watercolor-style splashes and faint outlines of leaves. At the bottom, there are stylized green vine graphics with leaves.

# Resources for Additional Information

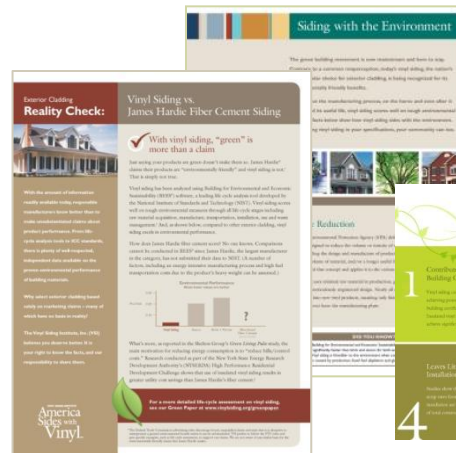
# Additional Resources

- “Green” Paper: *A Dozen Things You Might Not Know That Make Vinyl Siding Green*
  - Can contribute to points in leading green building programs
  - Boosts a home’s R-value
  - Generates less waste during manufacturing
  - Produces little waste when installed
  - Required few resources to maintain beauty
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  - Balances economic with environmental performance
  - Contributes less to global warming than brick
  - Releases fewer toxic chemicals than other exterior cladding thorough its life-cycle
  - Emits less dioxin than other exterior cladding
  - Installs safely



# Additional Resources

- Visit the VSI website, [www.vinylsiding.org](http://www.vinylsiding.org), for more information and to download the following publications:
  - *Reality Check: Vinyl Siding vs. James Hardie Fiber Cement*
  - *Siding with the Environment*
  - *A Dozen Things You Might Not Know That Make Vinyl Siding Green Handout*
  - *Side-by-Side: The Truth About Vinyl Siding and Brick*
  - *Side-by-Side: The Truth About Vinyl Siding and Fiber Cement Siding*





# What Can You Do?

- Share the contents of this webinar with others to help them understand the role of vinyl siding in green building
- Check the VSI website (public and *Members Only*) to learn more
- Find out what is happening locally and participate

**Help us get the facts out!**





# Questions?

## The Cladding of Choice for Green Building

For more information vinyl siding and sustainability,  
plus other benefits of vinyl siding visit

[www.vinylsiding.org](http://www.vinylsiding.org)

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