



The Dow Chemical Company

- 108 Years Old
- Sales of \$46 Billion Annually
- 42,000 employees
- Customers in 175 countries
- 7 Sites in California

Sustainable Development at Dow

The “Triple Bottom Line”

- Economics
- Environment
- Society

...where companies impact the quality of life.



2015 Sustainability Goals

Available at www.dow.com

- Local Protection of Human Health & the Environment
- Contributing to Community Success
- Product Safety Commitment
- Sustainable Chemistry
- Products Designed to Solve World Challenges
- Energy Efficiency & Conservation
- Addressing Climate Change

Product Safety Commitment

- Publicly Accessible Safety Assessments
- Protection of Human Health & Environment throughout Product Lifecycle
- Principles for Chemical Management Systems
 - Objective: Safe management of chemicals while maintaining benefits for society and ensuring competitive industry
 - ✓ Risk-based
 - ✓ Tiered screening to determine further information needs
 - ✓ Initially leverage available information
 - ✓ Share responsibility with each party in value chain
 - ✓ Promote transparency

Sustainable Chemistry

- Specific Revenue Targets from New / Enhanced Products that Deliver Sustainable Chemistry Benefits
- Externally Validated Sustainable Chemistry Screening Criteria over Life Cycle of Products & Processes
 - ✓ Increased energy efficiency
 - ✓ Increased efficiency of raw material use
 - ✓ Decreased use of scarce resources
 - ✓ Decreased emission of extracted or man-made substances to nature
 - ✓ Improved social, health, and security risk profiles

Sustainable Chemistry - Global Examples

Biodiesel Fuel from Soybeans

- Biodegradable & “non-toxic”
- Reduces CO₂ emissions 78%
- Cuts dependence on foreign oil
- Supports renewable feedstock - agriculture industry

Sustainable Chemistry - Global Examples

World's Largest Fuel Cell Project

- ❑ Dow & GM Collaboration
- ❑ Cleaner, more efficient than coal, natural gas, fossil fuels without greenhouse gas generation
- ❑ Ultimately designed for 35 Megawatts – equivalent to usage of 25,000 homes

Sustainable Chemistry - Global Examples

Natreon® Oil

- No trans fats
- Fights the “toxicity of obesity”



Sustainable Chemistry at Dow

Practical Question:

What does a company do while it searches for its next “break through” discovery?



Sustainable Chemistry at Dow

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What does a company do while it searches for its next “break through” discovery?

Answer:

Continuous improvement, efficiency / optimization, technology modernization, pollution prevention, exposure minimization, new application development

Sustainable Chemistry - Dow Pittsburg, CA

Vikane[®] & ProFume[®]

- ✓ *EPA Stratospheric Ozone Award* winners

Fully-integrated manufacturing facility

- ✓ Manufacturing downstream value-added crop protection products from what would otherwise be waste
- ✓ Reduced waste significantly through process integration, recycle, re-use. Molecular yield >95%

Sustainable Chemistry

Practical Questions?

What about trade-offs? Are there different shades of green?

What about a product or technology that touches only some of the 12 principles of Green Chemistry? Should incremental improvement be ignored?

Must the “perfect” be the enemy of the “good?”

Sustainable Chemistry at Dow

Some potential for mutual exclusivity –

What takes priority and who decides?

- Safer product - made by potentially more hazardous route?
- Lower waste - made with more energy?
- Lower conversion process - made with renewable feedstock?
- Lower efficacy - more biodegradable?
- Where do economics fit in?



Sustainable Chemistry at Dow

Dow has a philosophy of aggressively pursuing perfection through continuous improvement while *simultaneously* striving for “break-through” advances in chemistry and processing.

Dow believes the pursuit of perfection through concepts of sustainable development and “green” chemistry complement one another.