Linda S. Adams, Secretary
California Environmental Protection Agency
1001 I Street
Sacramento CA, 95814

Re: California Environmental Protection Agency's Green Chemistry Initiative

Dear Secretary Adams:

The Dow Chemical Company (Dow) applauds the goals of California Environmental Protection Agency's Green Chemistry Initiative. We appreciate the transparent process that Department of Toxic Substances Control (DTSC) Director Gorsen has adopted and look forward to contributing to the broad collaboration now known as a "Conversation with California." In that spirit, we offer these initial comments as part of that conversation. We were pleased to speak at the DTSC's first Green Chemistry Symposium in October 2006 in which we mentioned just some of the ways Dow is developing greener products and processes.

Green Chemistry is a framework that has driven numerous improvements over the past decade resulting in a variety of products and processes with a lighter environmental footprint in numerous organizations including at Dow. Dow is the recipient of several Presidential Green Chemistry Awards recognizing Dow innovations in products and processes. In California, Dow recently received one of the first Pollution Prevention awards from DTSC's Chemical Industry Challenge Program. Globally, Dow, through its 10 year "2005 Goals," achieved reductions of 1.6 billion pounds of solid waste, 183 billion pounds of wastewater and 900 trillion BTUs of energy – enough to power 8 million U.S. homes for a year - just as examples. The $1 billion investment to achieve these results saved $5 billion in return.

Dow's experience, through its 2005 goals and other activities, has demonstrated the strength of science and technology to solve problems, the positive relationship between green chemistry and economic prosperity, and the power of innovation when the intent is clear and the approach is flexible. It was based on this success that Dow established its 2015 Sustainability goals focused on three areas:

We will collaborate with people in our communities and others to help create stronger, safer communities. Our goals:

- Local Protection of Human Health and the Environment
- Contributing to Community Success

We will innovate to improve confidence that our products are managed safely throughout their lifecycle and develop products that will make a lasting, positive improvement on the world. Our goals:

- Product Safety Commitment

- Sustainable Chemistry
- Products Designed to Solve World Challenges

We will elevate our understanding of our impact on global ecosystems and work towards the efficient and effective use of our precious resources. Our goals:

- Energy Efficiency and Conservation
- Addressing Climate Change

More details on all of the goals are available at
http://www.dow.com/commitments/goals/index.htm

One goal, the sustainable chemistry goal, is of particular relevance to California's Green Chemistry Initiative. This goal uses green chemistry as its foundation and incorporates a life cycle approach. Using a life cycle perspective is critical if we are to stop creating solutions that have unintended consequences in other areas. History abounds with these examples: One such example is the use of tetraethyl lead in gasoline to improve performance and fuels efficiency. Although and effective additive in gasoline, emission of lead and the corresponding human heath effects are well documented. Society then turned to methyl-tert-butyl ether (MTBE) which again met the performance needs of gasoline, but raised groundwater contamination concerns. Now the fuel additive of choice is ethanol which is creating disruptions in the food supply, particularly for economically disadvantaged people. Each of these products could have been considered green chemistry if not viewed from a life cycle perspective.

In addition, Dow is working to incorporate the social value of a product or service into the assessment. Not all solutions are of equal value to society. Those, which meet basic human needs for food, shelter, water, health and security on terms the poor can afford, are clearly of greater value than luxury items, iPods versus water pipe for example. Measures of social value are a challenging, but critical and evolving area, of sustainability.

Inherent in any life cycle approach, which looks across a broad array of dimensions, environmental and social, is an acknowledgement of trade-offs. It is highly unlikely that one product or service will perform better across all dimensions. Today these tradeoffs, while being made, may not be acknowledged up front. For example, corn to produce transportation fuels may improve the country's energy security, but corn also has issues with topsoil erosion and fertilizer runoff. Compact florescent bulbs are lower energy and longer lasting than incandescent, but they also contain mercury which can be released into the environment if not recycled. In manufacturing processes, there are trade-offs that must be made on a much more basic level: renewable feed stocks vs. energy consumption vs. inherent hazards vs. efficacy of the product vs. cost to produce vs. waste production, etc. Some green processes can improve several of these dimensions, but rarely can they all be improved. If we are to make better decisions for the long term, these tradeoffs need to be understood and communicated from the start.

Dow views our 2015 sustainable chemistry goal as integral to refining our decision making as a company using a sustainability perspective which drives innovation throughout the company. We would applaud DTSC using green chemistry to promote innovation in California as well. Innovation is a process that can be fostered through incentives and clear visions. It does not lend itself well to regulation or mandates. Flexibility will allow organizations to apply their full capabilities and unleash the creativity of their people to develop solution not yet imagined. And we need to remember that "breakthrough" innovations and discoveries are hard-fought, difficult and time-consuming undertakings. We should not lose sight of the incremental improvements in safety, toxicity, energy consumption, waste, etc., being made every day.

Incentives clearly could be used to reward innovators and early adopters of new products and services. While incentives can be constructive in nurturing new technology, they are not a long-term solution. Dow feels that products, processes and services must ultimately be profitable on their own to be truly sustainable.

We caution DTSC against prescriptive approaches and approaches which are narrowly focused. Many would frame the Green Chemistry Initiative very narrowly, with a focus on toxics use reduction or renewable feed stocks promotion, etc. Green chemistry is about using chemistry in safer and more novel ways to deliver solutions.

Dow encourages DTSC to approach green chemistry as an opportunity to

- spur innovation through incentives
- incorporate life cycle perspectives into decision making
- account for the social impacts and benefits that products and services provide and
- be transparent about the trade-offs made across the dimensions of the life cycle as we improve our solutions over time.

Again, thank you for the opportunity to engage in open and frank dialogue on an issue of such importance. We look forward to continuing the discussion and we are available to clarify any of these comments or offer opinions on the Initiative as it advances. I can be reached at (925) 432-5122 or fischback@dow.com

Randy Fischback
Public & Government Affairs

Cc: Maureen Gorsen, DTSC
Jeff Wong, DTSC