



BioAmber Inc.
3850 Annapolis Lane
North, Suite 180
Plymouth, MN 55447
www.bio-amber.com

Chairman Paul Broun, M.D.,
House Committee on Science, Space and Technology
Subcommittee on Investigations and Oversight
2321 Rayburn House Office Building
Washington, DC 20515

Chairwoman Renee Ellmers
House Committee on Small Business
Subcommittee on Healthcare and Technology
2361 Rayburn House Office Building
Washington, DC 20515

April 24, 2012

Joint Hearing: How the Report on Carcinogens Uses Science to Meet its Statutory Obligations and its Impact on Small Business Jobs.

Chairman Broun, Chairwoman Ellmers, and other members of the Committee,

Thank you for the invitation to speak today. This is the first time I've been before the Committee. With your permission, I will submit my written testimony and then briefly summarize it for you.

My name is Ally LaTourelle. I am the Vice President of Government Affairs for BioAmber, a renewable chemical company. My work with BioAmber includes renewable chemical manufacturing project finance; federal, state and local financial incentive analysis; and renewable chemical and economic policy development. In addition, I manage BioAmber's global sustainability initiatives.

BioAmber is a next generation chemicals company. BioAmber's proven, proprietary process uses economically-viable, sustainable feedstocks to produce platform chemicals for a diverse range of chemical applications.

For example, we produce a non-toxic, biobased succinic acid that is used in many applications from food additives to fabrics, and we can do so at lower cost than succinic acid produced using traditional methods. In addition to biobased succinic acid, we have developed biobased butanediol (BDO) technology that will be deployed at our first commercial scale facility in Ontario, Canada.

In combination, these two chemicals make a polymer, or plastic, modified polybutylene succinate (mPBS) that is used in numerous applications, including building materials. The technology enables a 100% biobased route to the polymer, making this non-toxic, biobased alternative to petrochemicals "drop in" ready to existing manufacturing equipment. This polymer is high temperature heat resistant, yet also biodegradable within 90 days.

Respectfully, I would like to present a few different reactions to the issues of concern before the committee today.

**THE REPORT ON CARCINOGENS (ROC) PROVIDES A LOGICAL BASIS FOR SOLUTIONS
BASED INNOVATION**

The Report on Carcinogens (ROC) that styrene is "reasonably anticipated" to be carcinogenic is not

detrimental to our small business, nor was it a shock. While ongoing reporting is important to the consumer, those industry stakeholders most concerned with sustainability have already responded to issues in these reports using innovative solutions.

Possible toxicity of styrene has been reported since the mid 1980's when the World Health Organization's International Agency for Research on Cancer (IARC) moved Styrene from "not classifiable" to "possibly carcinogenic to humans" in 1987.¹ It considered styrene again and found the same conclusion in 1994 and 2002. Styrene as a "possible human carcinogen" was also identified in 2007 by the Agency for Toxic Substances and Disease Registry at the US Department of Health and Human Services in a toxicology facts sheet.² The US EPA already regulates styrene after detection of the chemical in drinking water which leached into groundwater supply from spills and products that biodegraded in landfills. And where Health Canada concluded that styrene is "non-toxic" and therefore not regulated by Environment Canada and Public Works, California has considered a total ban on polystyrene containers as recently as last year.

Clearly, perceived risk of a direct competitor's product will drive business our way, since our mPBS is a direct replacement for styrene in some applications. However, we know that consumers are already on alert and this update on the US Report on Carcinogens will not guarantee our success. All chemical companies face the larger concerns of the 21st Century, and that is where our business acumen is focused. We are focused on cost concerns related to energy supply price increases, shipping and supply chain costs associated with radical swings in the price of oil, and increased demands for transparency from a more health and environmentally conscious consumer base.

These larger drivers have been the real boon for our small business. Our renewable chemical production design is 51% less energy consumptive than incumbent processes. Our adipic acid process provides an 84% emission reduction compared to petro-derived adipic acid. Our biobased succinic acid is non-toxic and non-hazardous. These benefits amount to real cost reductions that garner competitive advantage in the market place.

All that said, there is a definitive need for the Report on Carcinogens (ROC) and reports like it because they spur innovative solutions. This has clearly been the case with the green chemistry industry. In addition, these reports provide critical information for businesses to determine their strategic path while giving consumers tools to make more informed choices.

Separating the two issues – reporting for informational purposes and market response – is critical. From my perspective, the market is sorting this business out in the right way. It is putting downward pressure on the businesses that are bringing less value to the market (suspected harmful products) and responding with higher costs to insure them. And, in turn, it is responding favorably to the businesses that are implementing innovation spurred in part by readily available data of reports like the ROC. This is exactly what we want, especially where human health is concerned. We want businesses to respond as soon as the health risk is identified, or fail.

Business owners must learn to take the health of workers and product safety more seriously. If they are currently feeling economic pain, in my professional opinion, at least in this particular case, it is deserved. This is the right market response with regard to health risks.

As long as the Federal Government ignores the Toxic Chemical Safety Act reform and allows chemical companies to put products on the market without proving that the chemicals used to make them are safe, reports like the ROC are critical. A higher standard of care must be taken by businesses with regard to chemical products. After bankruptcy, a business owner or corporation can start again. After cancer, a consumer or worker might not be so lucky.

AD HOC REGULATION LEADS TO SUPPLY CHAIN RISKS AND CONSUMER DEMANDS FROM THE INDUSTRY FOR TRANSPARENCY; SAFER ALTERNATIVES MITIGATE THIS RISK

Irregularity of regulatory regimes is part and parcel of our business today. As a small chemical and

¹ http://www.styrene.org/regulatory/intl_regulation.html

² ATDSR Styrene CAS# 1000-42-5

manufacturing company, we are connected to a global supply chain and manage the irregularity of regulatory regimes as well as ad-hoc chemical reporting across the globe.

Sony learned a hard lesson in the late 90's when shipping Playstations for distribution across Europe during the holiday buying season. A component of their product contained a material that was banned in the specific country where the distribution was to originate. They were prevented from distributing their product to the rest of Europe and lost hundreds of millions of dollars. In response to this 21st Century business challenge, where component parts are shipped globally for assembly in one country before going to another, our customers and partners are looking to avoid disruptions altogether in their supply chains.

We are innovating applications with less toxic materials in order to withstand this increasing transparency and meet the demand for safer, environmentally favorable alternatives. Our own mPBS can be used as a non-toxic, non-off-gassing replacement binder in construction materials. This advantage captures a segment of a green building materials market that is expected to grow from \$7 billion in 2009 to \$230 billion by 2030. This amounts to an annualized growth rate in the sector of 18% per year.³

LARGE COMMERCIAL PARTNERS SUPPORT A SHIFT IN THIS INDUSTRY TO SAFER ALTERNATIVES

The growing market demand for lower cost alternatives and technology readiness at commercial scale in biobased chemicals has many forward thinking incumbent chemicals businesses looking to biobased chemical production for growth in their portfolios. We have enjoyed an increase in valuation as a privately held company, our workforce has increased by 450%, and many of our strategic and innovation partners are familiar names: Dupont, Cargill, Lanxess, Mitsubishi Chemical, Mistui. Lanxess, for example, has strategically partnered with us to produce non-phthalate esthers (as in PVC piping). I believe that we are not an anomaly in this growing industry, but that we are at the beginning of a dramatic shift toward biobased alternatives.

We are providing our partners with new low cost processes, innovative high performance materials and competitive pricing. This amounts to market entry and economic sustainability. But we also provide them with an answer to the larger 21st Century concerns regarding energy consumption, environmental degradation and toxicity. From my perspective, these partners are making not the 'right' choice but the sound business decision. They are focused on long term risk mitigation and increased value creation in a changing business landscape.

They are not fighting against the current changes. Our partners are remaining competitive by accepting the shift in the fundamentals of business and customer preferences. They have moved on to innovating new solutions as they should in a market-based society. An argument can be made that decreasing information regarding toxicity and other potential risks stifles innovation and science. If the problem is ignored, a solution will not emerge.

“RETAIL REGULATION” DRIVEN BY CONSUMER DEMAND PICKS UP WHERE GOVERNMENT LEAVES OFF – CONSUMERS ARE THE ULTIMATE REGULATORS

The rising tide of consumer demand for products with a better environmental and toxicological profile has far surpassed “trend” status. In 2009 JD Ford & Company Investment Bankers reported that the \$600 billion global health and wellness industry has held up well in the face of the global economic downturn. Health & wellness' share of the food, beverage and healthcare market has grown significantly and is expected to continue to do so. The American Sustainable Business Council, a growing coalition

³ The Economic Benefits of a Green Chemical Industry in the United States. Renewing Manufacturing Jobs While Protecting Health and the Environment. James Heintz and Robert Pollin, Political Economy Research Institute, Univ. Of Mass; Blue Green Alliance.

over 120,000 business and more than 200,000 business leaders, reports that in an independent poll released in February 2012 by Lake Research, 80% of small business owners were in favor of disclosure and regulation of toxic substances that are used in products.

In 2010, DuPont surveyed more than 800 customers globally in industries spanning food and agriculture, transportation, chemicals and manufacturing, plastics, packaging and electronics to better understand if there is long-term demand for sustainable products. 89% of the customers surveyed said that delivering products with environmental benefits is a long-term market opportunity. And 95% of those surveyed reported customer demand as a key driver for developing products with an enhanced environmental footprint. "The results of this survey reinforce our belief that there is broad market demand for products with an enhanced environmental profile and that demand is coming from customers," DuPont Vice President and Chief Sustainability Officer Linda J. Fisher told participants at the New York Stock Exchange and Yale Green Summit in 2010. She continued, "This trend is here to stay and offers significant growth opportunities for companies which can deliver sustainable solutions. DuPont, with its market-driven science and broad global industry reach, can help address this growing trend."

ENERGY AND ENVIRONMENTAL COST CONCERNS TRUMP THE ONGOING REPORTING OF THE ROC FOR PETROCHEMICALS

Ninety-seven percent of all products -- building materials, fabrics, food service ware, computer parts, auto parts -- almost everything we use in life is made from chemicals. The U.S. chemical industry is the largest industry in the world and, as reported by the Berkeley National Laboratory, consumes approximately 20% of the total industrial energy in the US.⁴ It is one of America's oldest industries responsible for 11% of US industrial production with a value estimated at \$720B per year. However, oil producing countries increasingly build the manufacturing value chain in proximity to their petrochemical feedstocks. This has reduced US chemical jobs by 12% since 2002.⁵ While some petrochemical industries attack the science behind the ROC and other reports, others are starting to avoid toxicity altogether by collaborating on alternatives and problem solve the larger issues -- like energy costs. Increases in energy prices mean increases in the cost to produce materials and lower margins.

We currently produce succinic acid at a 3,000 metric ton capacity or demonstration scale and will break ground on a commercial plant with capacity for 35,000 Metric Tons on May 16th. Biobased succinic acid is cost competitive at commercial scale even with oil prices dropping to \$50 per barrel.

Increased regulation of emissions in the chemical and materials industry is a driver to our small business. While incumbent players are required, for example, to employ expensive abatement technology in the production of the chemical adipic acid -- a main ingredient of Nylon -- because of carcinogenic NOx emissions, our biobased adipic acid technology will reduce emissions by 84.5%. In addition, by comparison, this technology uses 51.2% less energy and no fossil resources as feedstocks. This lack of correlation to the price of oil creates the competitive cost to market entry.

Many more changes in business fundamentals are to come. We are actively preparing for the following and believe these actions reduce risks and costs, and increase value across a full spectrum of current challenges:

- Supply Chain scrutiny and demands for increasing transparency across suppliers.
- An expectation of analysis of water stress risk.
- Energy supply price volatility.
- Transportation price volatility.

⁴ *Energy Use and Energy Intensity of the US Chemical Industry*; Ernst Worrell, Dian Phylipsen, Dan Einstein, and Nathan Martin, Energy Analysis Department, Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory, University of California, California 94720, April 2000.

⁵ "Biobased Chemicals and Products, A New Driver of US Economic Development and Green Jobs," BIO, March 2010.



Climate change risk planning.
Life Cycle Analysis requirements from customers.
Environmental Product Declaration development in multiple applications.
Meeting emergent business standards like the Carbon Reporting Initiative.

Our innovations underscore both the critical need and consumer support for reports like the Report on Carcinogens. With this information, we can transition away from the use of toxic chemicals and pave the way to a better, safer future. We think this makes long-term economic sense.

Thank you for your time and attention and for this opportunity to bring to you the small business perspective of a renewable chemical company.

Sincerely,

Ally LaTourelle, esq.
VP Government Affairs,
BioAmber, Inc.
3850 Annapolis Lane North
Plymouth MN 55447
Ally.latourelle@bio-amber.com