

### **Comments from the American Chemistry Council's (ACC) Plastics Division:**

Thank you for the opportunity to provide comments on the December 10, 2013 Discussion Draft of the *Biobased and Degradable Plastics in California Report* (“*Discussion Draft*”). Although we have not been able to thoroughly review the *Discussion Draft*, we provide these limited comments on behalf of the American Chemistry Council’s Plastics Division, which represents the leading manufacturers of plastic resins in the United States. Although “plastics” describes a vast range of polymeric compounds, most plastic packaging in the U.S. starts with natural gas. Two plastics used extensively in packaging applications, for example – polyethylene and polypropylene – are simply polymerized ethylene and propylene, themselves very simple hydrocarbon molecules of just hydrogen and carbon. This is a great place to start a discussion of “bioplastics,” because from a material standpoint, a plastic like polyethylene doesn’t differentiate where the ethylene came from.

With that in mind, we believe the Report serves several important functions. We agree that it is important to understand the sources and value of bio-based plastics, and of course to understand these materials in the context of ISO-standard Life Cycle Assessment. We likewise believe it is important that there is a clear public understanding about the difference between the source of raw materials used to make a particular plastic versus the end-of-life characteristics of the material (is it recyclable; how does it break down in the environment). Although materials experts may understand that the bio-based source of a material does not mean that it is degradable, we believe the general public frequently confuses these terms. And we further agree that it is essential to develop a better understanding of how the family of degradable additives functions in various plastics, and in particular, the potential implications that such additives pose for the integrity of the recycling stream and the safety and performance of consumer and other products made with recycled plastics, like decks and railroad ties.

We provide the following brief comments for consideration on the *Discussion Draft*:

**Definition of Bioplastics (p7).** The discussion of the meaning and definition of bioplastics is thoughtful, and it does distinguish between “biobased” and “biodegradable” plastics. That said, the source of the definition suggested for the working definition for the paper, the definition provided by the International Union of Pure and Applied Chemistry (IUPAC), itself discourages the use of the term “bioplastic,” noting the need to distinguish between sourcing and end-of-life performance. We believe it is more helpful to turn to accepted, working definitions of key terms agreed in the private markets, and because a single unifying (and academic) term creates more confusion than clarity, we urge that more specific terms like terms “biodegradable,” “degradable,” and biosourced” be used instead in the *Discussion Draft*, and the term “bioplastics” be avoided. “Biodegradable” is itself defined in ASTM D6400, ASTM D6868, ASTM D7081, ISO 17088 and EN 13432, and we would strongly encourage that definitions of these key terms adopted by voluntary consensus bodies such as ASTM and ISO be used to guide discussion.

**Demand for Bioplastics (p 12).** On page 12 and elsewhere, the *Discussion Draft* refers to the price of oil or reduction in use of oil as a driving factor in an increased demand for bioplastics. However, as shown in Life Cycle Inventories on the major polymers produced in the United States, approximately 70% of plastics are derived from natural gas. See ACC’s Plastics Packaging Facts, <http://www.plasticpackagingfacts.org/Plastics-101>. This is a critical distinction that should not be ignored because in recent years, the natural gas supply in the U.S. has surged, decreasing natural gas prices relative to oil prices, and at the same time, U.S. reserves of natural gas have dramatically

increased. See U.S Energy Information Administration, <http://www.eia.gov/todayinenergy/detail.cfm?id=14591>.

**Public Health Discussion** (*p.34 et seq.*)

**Discussion of Effect of Proposition 65 on New Materials** (*p 34*). The *Discussion Draft* notes on page 34 that Proposition 65 is “one of many public health-related mandates” that “may affect the introduction of bioplastics in the marketplace.” We urge that this statement be corrected. First, it is well known that Proposition 65 is not intended to (and does not) regulate the availability of materials used in consumer and other products. It is better described as a warning or labeling statute that is triggered by the presence of particular chemicals. A Proposition 65 label does not mean that a material or product is unsafe, or that exposures to the chemical at issue present a health risk. With respect to biosourced plastics that are chemically identical to natural gas sourced plastics, Proposition 65 would of course have no impact at all. With respect to degradable or biodegradable plastics, the listing of a chemical on Proposition 65 contained in a degradable additive would not, per se, have any direct effect on the introduction of the additive (contained in a plastic) in the marketplace. It is true that some manufacturers may wish to avoid a labeling obligation (or the need to make a safe harbor calculation via a separate process) and reformulate, but this is better described as a market response to avoiding statutory obligations as opposed to the direct function of the statute.

**Discussion of the Federal Toxic Substances Control Act** (*p 34 et seq.*). We suggest the *Discussion Draft* use the more common, four-letter acronym favored by EPA, “TSCA.” <http://www.epa.gov/enviro/facts/tsca/>

**Discussion of “Emerging Chemicals of Concern** (*p 35 et seq.*). This section wrongly implies that a number of chemicals that have been in commercial use for decades and which supported by extensive databases of toxicological testing, such as many phthalate esters and bisphenol A (BPA) are “new chemicals” recently introduced. The phrase, “find their way into plastics” with respect to these chemicals is also incorrect and misleading, intimating that they are something other than highly desirable features of the manufacturing process or finished plastic. BPA, for example, is absolutely essential to the manufacture of polycarbonate and epoxy resins; it is not an additive but a component of the finished material. Phthalate esters do not “find their way” into vinyl (a phrase which suggests a contaminant, not a valuable and important additive delivering performance benefits); they are added to make vinyl flexible. In all cases, these compounds are either essential and integral to the manufacture of the plastic, or they are added because they impart specific characteristics. This should be revised.

This section should further explain what is meant by “Emerging Chemicals of Concern.” Many have used this or similar terms to identify or discuss emerging areas of scientific inquiry. It is inappropriate, however, to imply that a compound under study or review (which describes a great many, as science is iterative) is necessarily of “concern” in a way that has regulatory meaning. Many chemicals deemed safe for an intended use by a regulator may be under study, for example, and the study does not obviate the safety determination. If the term “Emerging Chemicals of Concern” does not have discrete legislative or regulatory meaning here, and is merely meant as shorthand for current review or study, the discussion should be omitted.

**Composition of Plastic Bottle** (*p 35*). Page 35 of the *Discussion Draft* states, “A bottle made from naturally occurring PHB, for instance, could be an alternative to its counterpart made from phthalate-containing vinyl” (emphasis added). We found this note surprising, as some 96 percent of bottles in the U.S. are made from PET or polyethylene (PE). See 2012 United States National Postconsumer Plastics

Bottle Recycling Report, available at <http://plastics.americanchemistry.com/Education-Resources/Publications/2012-National-Post-Consumer-Plastics-Bottle-Recycling-Report.pdf>. PVC bottles are generally used where certain performance requirements are needed; one application we are aware of is charcoal lighter fluid bottles, which it should be noted are rigid vinyl, and not plasticized (soft) vinyl that has had phthalate esters or other plasticizers added to impart flexibility. For an application of this type where rigidity is needed, it is unclear that PHB could meet necessary performance requirements and offer an acceptable alternative. Unless the authors are aware of a specific example that would properly support the discussion in this section, we suggest it be deleted.

**Discussion of Life Cycle Assessment (p 71).** We are pleased to see a very important discussion of the meaning and importance of Life Cycle Assessment (LCA) in the *Discussion Draft*. The use of LCA is promoted by the U.S. Environmental Protection Agency (see, e.g., <http://www.epa.gov/nrmrl/std/lca/lca.html>) and LCA was considered as part of Cal EPA's Green Chemistry Initiative (see, Life Cycle Assessment Support for California EPA's Green Chemistry Initiative, available at [http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/upload/20110411\\_horvath\\_chester\\_gcilca\\_final\\_report.pdf](http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/upload/20110411_horvath_chester_gcilca_final_report.pdf)). We note that LCA should be performed in accordance with ISO standard criteria set out at ISO 14040 and 14044, and that to the extent that any "limitations" to a particular review are noted, these should be reflected in the criteria of the current standards. This caveat should be included in the *Discussion Draft*. Further, we suggest that a discussion be added of the value and use of LCA conducted in accordance with ISO standards, including the proper use of LCA for comparative purposes with respect to materials. We also suggest that the authors consider the use and role of ISO 14025 Environmental Product Declarations (EPDs) as the next step beyond LCAs. See, for example, [http://gryphon.environdec.com/data/files/6/7705/EPD%20CF05S\\_20100929\\_ver3.1.pdf](http://gryphon.environdec.com/data/files/6/7705/EPD%20CF05S_20100929_ver3.1.pdf)

Thank you for the opportunity to share these comments.

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