



BizNGO.ORG

FOR SAFER CHEMICALS AND SUSTAINABLE MATERIALS

The Business-NGO Working Group promotes the creation and adoption of safer chemicals and sustainable materials in a way that supports market transitions to a healthy economy, healthy environment, and healthy people.



Principles for Sustainable Plastics

Plastics provide benefits to people across the globe. Lightweight, durable, flexible and easy to form, their use continues to grow rapidly. Cell phones, baby car seats, blood bags, backpacks, chairs, cars and clothing are among the many products made with plastics and reflect their beneficial properties. Yet plastic litter, gyres of plastics in the oceans and toxic phthalates in plastic products are raising public awareness, consumer demand, retail pressure and regulations for a more sustainable material.

Businesses, hospitals and individuals are increasingly seeking plastics that are more sustainable across their life cycle: from raw material extraction and production to manufacturing to use and end-of-life management. They want to know the sources of a plastic's raw materials, if it contains chemicals of high concern to human health or the environment,¹ its carbon footprint, its recycled content and whether it is recyclable, compostable or biodegradable in the marine environment.

Current approaches to identifying more sustainable plastics tend to favor a single attribute, such as biobased content, reduced carbon footprint or recycled content. The sustainability of a plastic, however, cannot be accurately assessed by a single metric or life cycle stage. There is a need for a systematic, holistic and principle-based approach to identifying more sustainable plastics.

The purpose of the Principles for Sustainable Plastics is to provide the foundation for a BizNGO framework that evaluates, identifies and selects more sustainable plastics.² This framework will evaluate materials to the extent that they achieve the following five principles.

1. Sustainable Resources³

The growing, harvesting, sourcing and extracting of the natural resources used to manufacture a plastic should contribute to environmental quality, support biodiversity, build habitat and not compete with the production of food.

2. Closed Loop Systems

The life cycle of a plastic and its associated product should minimize the use of raw materials by maximizing its longevity through reuse, repair, remanufacturing, recycling, composting or extended producer responsibility.

3. Energy Efficient & Renewable

At all stages in the life cycle of a plastic, energy should be derived from renewable sources (including solar, wind, ocean, hydropower, biomass and biofuels) and energy use and carbon footprint should be minimized.





4. Safer Chemicals

A plastic should be manufactured using inherently safer chemicals and processes. The byproducts and waste streams from manufacturing along with the degradation and transformation products from use and end-of-life management should be inherently safer and in balance with natural systems.⁴

5. Healthy Workplaces & Communities

Industry practices at each stage in the life cycle of a plastic, from the growing or extracting of feedstocks to the manufacturing of a plastic and its end-of-life management should be healthy for workers, local communities and the environment.

It is important to note that the evaluation and selection of plastics will vary over time as the infrastructure and technology evolve for developing new materials and capturing and reusing existing materials at end of life.



The BizNGO Principles for Sustainable Plastics will guide the development of a robust framework that facilitates the selection of inherently preferable materials. By selecting inherently safer chemicals in the design of plastics we ensure the plastics of tomorrow do not trade increased toxicity for a lower carbon footprint or other environmental impact. Sustainable plastics will move the economy toward chemical, material and product systems that are safer and more sustainable for people, business and the environment.



1 BizNGO defines a “chemical of high concern” as having the following properties: 1) persistent, bioaccumulative and toxic (PBT); 2) very persistent and very bioaccumulative (vPvB); 3) very persistent and toxic (vPT); 4) very bioaccumulative and toxic (vBT); 5) carcinogenic; 6) mutagenic; 7) reproductive or developmental toxicant; 8) endocrine disruptor; or 9) neurotoxicant. Toxic, or T, includes both human toxicity and ecotoxicity. (Source: BizNGO Guiding Principles for Chemicals Policy, <http://www.bizngo.org/guidingPrinciples.php>).

2 The BizNGO Principles for Sustainable Plastics have been informed by and incorporate concepts from the: 1) 12 Principles of Green Chemistry, 2) Organization of Economic Cooperation and Development Sustainable Materials Management Principles, 3) Cradle-to-Cradle Design Principles, 4) Guidelines for Sustainable Biomaterials and 5) Lowell Center Framework for Sustainable Products. For sources of these principles and guidelines see:

- 1) PT Anastas and JC Warner, *Green Chemistry: Theory and Practice* (Oxford University Press: New York), 1998.
- 2) Organization for Economic Cooperation and Development (OECD) Environment Directorate, *Policy Report 1, Policy Principles for Sustainable Materials Management Working Document* (OECD Environment Directorate, <http://www.oecd.org/dataoecd/3/60/46111789.pdf> - accessed 11/17/2011), 2010.
- 3) WM McDonough and M Braungart, *Cradle to Cradle: Remaking the Way We Make Things* (New York: North Point Press), 2002.
- 4) Sustainable Biomaterials Collaborative, *Guidelines for Sustainable Bioplastics* (Sustainable Biomaterials Collaborative, <http://www.sustainablebiomaterials.org/criteria.guidelines.overview.php>—accessed 11/17/2011), 2009.
- 5) SA Edwards, *A New Way of Thinking: The Lowell Center Framework for Sustainable Products* (Lowell Center for Sustainable Production: Lowell, MA), 2009.

Also note that the BizNGO Principles for Sustainable Plastics are not meant to be a framework for evaluating company-wide sustainability practices—for that see the BizNGO Principles for Chemicals Policy (<http://www.bizngo.org/guidingPrinciples.php>).

- 3 “Natural resources” encompasses water, minerals (including both non-fuel and fuel minerals), land, soil and air.
- 4 Chemicals that are in balance with natural systems are those that do not cause eutrophication; do not bioaccumulate, deplete the ozone layer or contribute to climate change; and do not have the properties of a chemical of high concern as defined above.