

The Guide to Safer Chemicals

Implementing the BizNGO Principles for Safer Chemicals

Introduction

Ray Anderson, a visionary and practitioner of business innovation and environmental stewardship, spoke eloquently of the journey to Mount Sustainability. We designed *The Guide* to be a hands-on resource for all who want to make the journey to the summits of safer chemicals. It charts pathways to safer chemicals in products and supply chains for brand name companies, product manufacturers, architects and designers, retailers, and health care organizations. *The Guide* sets relative benchmarks for each of the four BizNGO Principles for Safer Chemicals, specifies actions for each benchmark, presents examples of business practices for each benchmark, and illustrates how downstream users are getting started and advancing on their paths to safer chemicals.

The Guide emerged from BizNGO's Principles for Safer Chemicals and sets performance benchmarks for each principle by specifying actions and examples to help users get started and advance along the paths to safer chemicals. The four principles are:

1. Know and disclose product chemistry.
2. Assess and avoid hazards.
3. Commit to continuous improvement.
4. Support public policies and industry standards that advance the above three principles.

These four principles emerged from the pioneers in safer chemicals implementation. In looking at best practices

across business sectors we saw a common set of actions. Company leaders were identifying chemicals in products and production processes as well as their feedstock sources, assessing the hazards of those chemicals, avoiding chemicals of greatest concern by substituting safer alternatives, disclosing their findings to the public, and advocating for greater adoption of safer chemicals.¹

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BizNGO² then developed the Principles for Safer Chemicals³ for “downstream users” of chemicals—those organizations that use chemicals by virtue of the products they purchase. In short, a downstream user is any organization that does not manufacture chemicals. Downstream users include: formulators, manufacturers, assemblers, original equipment manufacturers, brands, specifiers (for example, architects), retailers, health care organizations, and ultimately individuals.

Implementing the BizNGO Principles for Safer Chemicals

The question of how to implement the Principles for Safer Chemicals is the

inspiration for *The Guide*. As many a potential traveler has said to us: “We agree with the spirit of the BizNGO Principles. But what does it mean to implement them?” The writing of *The Guide* is our initial (v.1.0) answer to that question.

The starting point for *The Guide* is beyond legal compliance. We do not provide details on how to implement

programs for compliance with current laws and regulations. We assume organizations are legally compliant and set *The Guide* benchmarks for beyond compliance.

While no organization currently achieves all four Principles, any organization that addresses the use of chemicals in products and production processes beyond compliance is on a path to implementing the BizNGO Principles. Organizations move beyond legal compliance for many reasons. They do so to address consumer demands, to ensure product development stays far ahead of regulations, to grow current markets and capture new markets, and to guide innovation. These

organizations understand the importance of knowing the chemicals in their products. They also proactively outreach to environmental and public health advocates for insights and knowledge, and they demonstrate greater transparency to the public and their employees. They understand the need to change public policies and industry standards to support market moves to safer chemicals, and they create greater value for their brand by using safer chemicals in the products they make and sell.

Traditionally downstream users, especially brands and retailers, have not considered chemicals management as part of their responsibility. But this dynamic is rapidly changing. Downstream users are increasingly being held accountable for the chemical ingredients in their products and the environmental and human health impacts of chemicals in entire supply chains.

Few manufacturers, brands, or retailers are aware of all the chemicals in their products and their supply chains. That may be because chemicals have been popularly associated with “chemical intensive products”—mostly liquid or powder products like paints, cleaning products, detergents, and pesticides. Yet chemicals are very much a part of “hard” products—what the Europeans call “articles”—such as computers, cell phones, chairs, carpets, and clothing. The fact that chemicals are the foundation of every product presents significant management challenges for the vast majority of downstream users who do not know the chemicals in their products or supply chains, do not understand the hazards of those chemicals, or do not know the availability of safer alternatives. But ignorance is no longer tenable and in fact presents a very real business risk. Increasingly downstream users are the ones whose reputation is at risk when toxic chemicals are found in their products and in their stores. *The Guide* will help down-

stream users avoid this business risk and advance safer chemicals in our economy.

The Benchmarks in *The Guide*

The benchmarks are relative indicators of performance, not absolutes. They are indicators of a progression from relatively easier actions to progressively more challenging and comprehensive actions. Over the course of developing *The Guide*, BizNGO participants discussed many approaches to benchmarking the BizNGO Principles including developing a scoring system. BizNGO may revisit the comparative benefits of a scoring idea in the future, but for today, we offer the benchmarks as relative indicators of performance.

THE BENCHMARKS ADDRESS THE WHOLE LIFE CYCLE OF CHEMICALS ASSOCIATED WITH A PRODUCT.

Downstream users of chemicals are downstream because chemicals come to them in a product. The product

FIGURE I-1

Key Stages in the Life Cycle of a Chemical

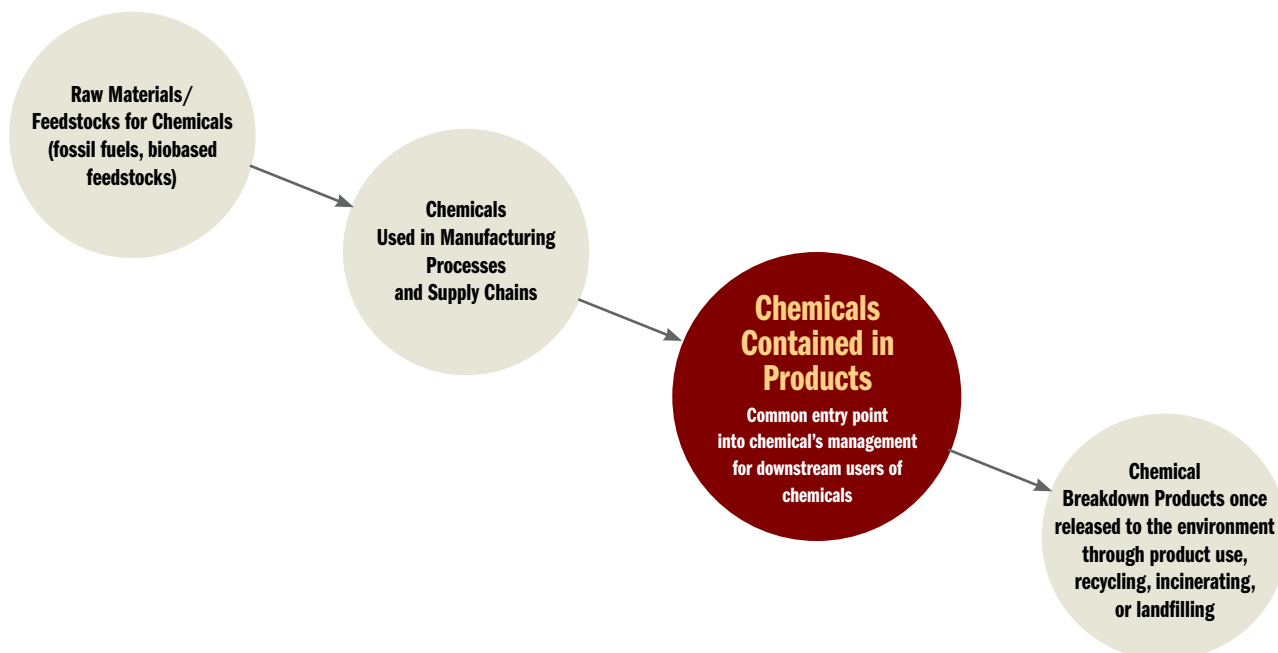


TABLE I-1

Relation of Chemicals along Life Cycle to Benchmarks in *The Guide*

Chemicals along the Life Cycle	BizNGO Guide Benchmarks			
	Trailhead	Base Camp	High Camp	Summit
Chemicals in Products	Chemicals of High Concern: Some	Chemicals of High Concern: All	Chemicals: All chemicals intentionally added to product and residuals of high concern	
Chemicals in Processes and Supply Chains	Chemicals of High Concern: Some		Chemicals of High Concern: All	Chemicals: All chemicals used in manufacturing processes
Feedstocks: The raw materials for a chemical, material, or product				Sources of feedstocks and chemicals used in extraction/growing

comes in many forms depending on where an organization sits in the supply chain. Some downstream users receive products directly from chemical manufacturers while others receive the chemical already embedded in an article. A common issue is that they

come) to what chemicals are used in the factories that manufacture the product. Chemical ingredients in a product continue to have impacts not only at the consumption stage but also downstream through the breakdown products that result from the release

from Trailhead, actions commonly taken by organizations first moving beyond compliance, to Summit, actions taken by only a few. Additionally the complexity increases as companies move from a few chemicals of high concern at Trailhead to all chemicals at the Summit.

The benchmarks increase in complexity and difficulty as they move upwards from Trailhead, actions commonly taken by organizations first moving beyond compliance, to Summit, actions taken by only a few.

do not know all the chemical ingredients in that product—be they a manufacturer that receives a chemical formulation or a retailer or health care organization that buys a final product for sale or use. As Figure I-1 illustrates, downstream users are positioned near the end of the lifecycle of chemicals. Upstream to them in the supply chain are a vast array of chemicals used in the various stages of manufacturing processes. This spans the trajectory of what feedstocks were used to actually produce the chemicals (for example, fossil fuels like natural gas or crude oil, or a biobased feedstock like sugar

of these chemicals into the environment through use, recycling, incinerating, or landfilling.

THE BENCHMARKS REQUIRE INCREASING KNOWLEDGE ABOUT A CHEMICAL'S LIFE CYCLE TO MOVE FROM TRAILHEAD TO SUMMIT.

For each of the four Principles, *The Guide* specifies a set of benchmarks based on a hiking analogy. Each principle is benchmarked against clear criteria attributed to Trailhead, Base Camp, High Camp, and Summit. The benchmarks increase in complexity and difficulty as they move upwards

In *The Guide*, Principle #1 “Know and Disclose Product Chemistry” is divided into two sections: Principle #1a, “Know Chemicals across the Life Cycle of Products” and #1b, “Disclose Chemicals across the Life Cycle of Products.” Each of the other three principles then has its own set of unique benchmarks for a total of five sections in *The Guide*.

Trailhead in Principles #1a, #1b, and #2 start with chemicals contained in products and for each higher level benchmark the scope of chemicals increases to include manufacturing chemicals and the feedstock sources of chemicals. Table I-1 summarizes where chemicals at each life cycle stage intersect with each benchmark.

Note that Principles #1 and #2 are product specific while Principles #3

TABLE I-2

Principles and their Application to Downstream Users

Principle	Downstream Users to whom The Principles Apply					
	Formulator	Manufacturer	OEM/Brand	Retailer	Specifier	Health Care Organization
#1a Know	●	●	●	●	●	●
#1b Disclose	●	●	●			
#2 Assess & Avoid	●	●	●	●	●	●
#3 Continuous Improvement	●	●	●	●	●	●
#4 Policies & Standards	●	●	●	●	●	●

and #4 apply to the entire organization. A question that emerged within BizNGO for the first two principles was, should we distinguish among the percent of products within an organization that meet the actions specified for each benchmark. For example, companies may start down the path of knowing all chemicals in products with new product launches. Thus for a few products the company knows all the chemicals in the product, but for over 90% of the products, the company does not know all the chemicals in the product. Should it get credit under Action 1a.5—requires suppliers to report all chemicals in products? Within BizNGO we decided not to develop detailed levels of compliance with the benchmarks because they are indicators of activity not standards.

“Chemicals in product” refer to the chemical constituents that encompass the mass of the product, both intentionally added and “residuals of high concern.”⁴ “Chemicals in process” or synonymously, “chemicals in supply chain” refer to the chemicals used to manufacture a material, a product, or another chemical. “Feedstocks” are the raw materials used to manufac-

ture a chemical, material, or product. Examples of feedstocks include crude oil, natural gas, sheep (for wool), and cotton. Downstream users face increasing challenges to secure chemical knowledge the further up the supply chain they go.

THE BENCHMARKS REQUIRE AN INCREASING SCOPE AND DEPTH OF KNOWLEDGE ABOUT CHEMICAL IMPACTS TO MOVE FROM TRAIL-HEAD TO SUMMIT.

In *The Guide* we distinguish how each benchmark requires a different depth of knowledge about a chemical’s life-cycle stage (products/processes/feedstocks) and the properties and scope of chemicals information. The scope of knowledge required about chemicals increases from “some chemicals of high concern” to “all chemicals of high concern” to “all chemicals.”

A “chemical of high concern” is one that meets internationally recognized high hazard properties, namely it is: 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” (T) includes both human toxicity and ecotoxicity. “All chemicals of high concern” are all chemicals that qualify as GreenScreen Benchmark 1. There are close to 2,000 chemicals that meet the [GreenScreen Benchmark 1 criteria](#).

“Some chemicals of high concern” refer to various lists of chemicals of high concern, including a company-specific restricted substance list (RSL) that includes some but not all known chemicals of high concern. RSLs range in scope from just a handful of chemicals to hundreds of chemicals (for example, [ChemSec’s SIN List](#)).

“All chemicals” denotes all chemical constituents in a product, process, or feedstock, and includes all intentionally added chemicals and residuals of high concern.

In general each Principle applies to each downstream user as highlighted in Table I-2. However, Principle #1b “disclose chemicals in products,” which requires the downstream user to provide information to the public,

is not directly applicable to some downstream users (such as retailers, specifiers, and health care organizations) when it is product specific information. For example, health care organizations cannot be expected to provide chemical information in every product in a hospital to every patient. Health care organizations as well as architects and retailers can prefer suppliers that provide information directly to the public through product labels or online. In comparison, Principle #1a “know chemicals in products,” applies to all downstream users as part of business to business information exchange (B2B).

The Uses and Structure of *The Guide*

The Guide is for brand name companies, retailers, and other downstream users of chemicals that are implementing, or plan to implement, a program to advance safer chemicals in their products and supply chains. Users of *The Guide* will learn how to:

- measure internal performance, identify areas of improvement, and track progress to safer chemicals.
- benchmark performance in comparison to other organizations.
- communicate to the public their organization’s performance in moving to safer chemicals based on an independent metric.


The first five sections of *The Guide* address each of the BizNGO Principles in detail, with Principle #1 divided into two sections as noted above. Each

Principle is explained by its: Ideal, Intent, Context, Benchmarks, and Vignettes. The “ideal” is the visionary goal. The “intent” is the purpose of the Principle or what it strives to achieve. The “context” is the practical reality in which the Principle sits. The “benchmarks”—Trailhead, Base Camp, High Camp, and Summit—are relative guide points on the path to each Principle. The benchmarks are relative rather than absolute because they are indicative of key actions, but their relevance will vary depending on organization and sector. The “vignettes” are short, detailed examples of best practices for each Principle.

The Guide closes with a summary section on steps downstream users are taking to advance safer chemicals in products and supply chains.

Introduction Endnotes


- 1 T. Greiner, et al, 2006, *Healthy Business Strategies*, Clean Production Action, <http://www.cleanproduction.org/library/CPA-HealthyBusiness-1.pdf> (accessed November 18, 2012).
- 2 BizNGO is a collaboration of downstream users of chemicals who promote 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, www.bizngo.org (accessed November 20, 2012).
- 3 “The Principles for Safer Chemicals” were originally titled “The Guiding Principles for Chemicals Policy.”
- 4 A “residual of high concern” is a chemical that is incidental to manufacturing. Residuals are not part of the intended chemical product, but are present because of factors such as the nature of the synthesis and engineering pathways used to produce the chemical. Residuals include: unintended by-products of chemical reactions that occur in product formulation and chemical synthesis, impurities in an ingredient that may arise from starting materials, incompletely reacted components and degradation products. A residual is a “residual of high concern” if it qualifies as a Green Screen benchmark “red” (or benchmark 1) chemical.



This is excerpted from *The BizNGO Guide to Safer Chemicals*, a hands-on guide that charts pathways to safer chemicals in products and supply chains for brand name companies, product manufacturers, architects and designers, retailers, and health care organizations.

To view and download the full report and other individual sections, go to www.BizNGO.org.

BizNGO is a project of Clean Production Action.



BizNGO
FOR SAFER CHEMICALS AND SUSTAINABLE MATERIALS

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