SUSTAINABLE CHEMISTRY GUIDANCE

Programs and tools to help reduce and eliminate hazardous chemicals, and drive Sustainable Innovation.

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INTRODUCTION TO GREEN CHEMISTRY

The reduction and/or elimination of hazardous chemicals in products and processes is one aspect of Nike's long-term sustainability goals. We ask every supplier to better understand their chemical impact and to search for more environmentally friendly ways to manufacture. The Nike Chemistry team encourages all suppliers to use the Principles of Green Chemistry, listed in Figure 8, to inspire innovation. Designing and producing materials using these principles at any stage in the supply chain can help increase sustainability as well as protect consumers, employees, communities and the environment.

FIGURE 8. PRINCIPLES OF GREEN CHEMISTRY

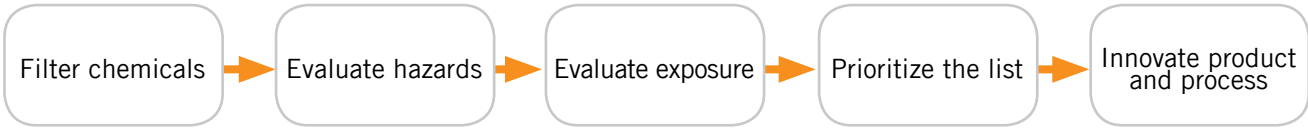
1. Prevention
2. Atom economy
3. Less hazardous chemical syntheses
4. Designing safer chemicals
5. Safer solvents and auxiliaries
6. Design for energy efficiency
7. Use of renewable feedstocks
8. Reduce derivatives
9. Catalysis
10. Design for degradation
11. Real-time analysis for pollution prevention
12. Inherently safer chemistry for accident prevention

Source: Anastas, P. T.; Warner, J. C.; Green Chemistry: Theory and Practice, Oxford University Press: New York, 1998, p.30. (Retrieved from www.epa.gov/greenchemistry/pubs/principles.html)

NIKE GREEN CHEMISTRY PROGRAM

The Nike Green Chemistry Program is designed to drive innovations in product chemistry, particularly those around several of the Green Chemistry Principles. The effort to reduce hazardous chemicals uses a systematic, risk-based approach to assess chemicals in product or processes, as outlined in Figure 9. With the goal of protecting consumers, employees, communities and the environment, the program relies on the evaluation of both hazard and exposure potential. Assessing hazard and exposure potential allows chemicals with the greatest risk (risk = hazard x exposure) to be prioritized for elimination by reformulation, or for control via the Nike RSL.

FIGURE 9. NIKE GREEN CHEMISTRY PROGRAM APPROACH



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Chemical Hazard Criteria

The approach to assessing chemical hazard is based upon the Green Screen for Safer Chemicals (version 1.2) benchmarking tool, which uses the toxicology endpoints in Table 4.

TABLE 4. TOXICOLOGY ENDPOINTS FOR ASSESSING HAZARD

Carcinogenicity	Chemical interactions/reactions (For example: explosive, flammable)
Mutagenicity/genotoxicity	
Reproductive toxicity Developmental toxicity	Environmental fate Bioaccumulation Degradability/persistence
Endocrine activity	
Neurotoxicity	
Acute mammalian toxicity	
Skin irritation	Eco-toxicity Aquatic toxicity — Acute Aquatic toxicity — Chronic
Eye irritation	
Skin sensitization Respiratory sensitization	
Systemic toxicity/organ effects	

Exposure

Exposure evaluation allows chemicals to be prioritized. Higher hazard chemicals with higher exposure potential are targets for alternatives assessment and reduction/elimination.

The assessment of exposure is based upon realistic scenarios for consumers, workers and the environment. The consumer exposure scenario is most often based on an apparel model, since it has the greatest skin coverage and is usually more conservative than a footwear or equipment model.

Exposure scenarios for employees and the environment are less standardized and are developed as needed. Exposure scenarios vary for workers and the environment due to differences in how a chemical is used in production and the chemical's physical properties (boiling point, solubility, etc.).

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BETTER CHEMISTRY RESOURCES

In support of our goal of Zero Discharge of Hazardous Chemicals, and to minimize the chemical footprint of manufacturing, Nike strongly encourages the use of better chemistry and efficient manufacturing processes across our supply chain. Several programs, partnerships and collaborations in support of these goals are listed below.

bluesign® bluefinder Tool

In 2013, Nike announced a strategic partnership with bluesign® technologies ag as part of our ongoing effort to drive innovation in sustainable materials and eliminate harmful chemistry in our supply chain — all while delivering the high quality and performance for which our products are known (find more at www.nikeresponsibility.com/innovations/bluesign-bluefinder). The agreement gives Nike suppliers access to online databases developed and managed by bluesign® technologies ag that contain details of positive chemistry, as well as bluesign® approved textiles and accessories in the bluesign® blueguide for assemblers.

In the bluesign® system, every chemical product receives a rating based on its ecological and toxicological properties and risks. The criteria used to assign these ratings are derived from extensive risk assessments according to the bluesign® methodology and the best available technology (BAT) principle. Chemical products are classified into three categories:

- **blue.** These chemical products may be used for all applications and meet all the criteria of the bluesign® system. Whenever possible, blue chemical products should be selected.
- **grey.** These chemical products may only be used in production under certain required conditions. A potential environmental impact is associated with these chemical products. As a consequence, such chemical products must be applied in well-managed processes including well-managed end-of-pipe solutions. The required conditions are described in the bluesign® bluefinder.
- **black.** The chemical products do not meet the criteria of the bluesign® system and must be eliminated from the manufacturing process.

The bluesign® bluefinder is an online database containing chemical products that comply with the criteria of the bluesign® system. The database only contains the blue and grey classified chemical products. By means of this database, manufacturers can quickly select chemical products that comply with the newest environmental, occupational health and safety (EHS) requirements. The database also contains guidelines on how to incorporate the approved chemical products into the manufacturing process.

By using the online bluesign® bluefinder database, Nike suppliers are able to access a list of pre-screened chemicals that meet the bluesign® criteria. By signing up for the tool, Nike suppliers also achieve points under the Nike Material Sustainability Index (Nike MSI).

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Nike Validation of a Greening Effort

Validation of a Greening Effort (VGE) enables suppliers to receive points in the Nike MSI program based on selecting better chemistries in the production of materials. The VGE chemistry review process ranks the chemistry improvement, and a specific material or materials can be awarded up to seven (7) Nike MSI points depending on the nature of the improvement. The review process may include a third-party toxicology review depending on the specific process, material or chemical change submitted. Examples of chemistry improvements which may receive points include:

- Adoption of bluesign® bluefinder chemistries or bluesign® certified materials.
- Procurement and use of formulations that meet specific Nike goals.
- Phasing out hazardous chemistries for less hazardous alternatives.
- Development of a new material with a lower hazard profile.
- Reduction in the use of solvents.

All Nike vendors are strongly encouraged to participate in this program and should complete and submit the VGE form on page 75 to begin the review process.

Better Chemistry Tools and Industry Collaborations

Nike is committed to protecting workers, consumers, athletes and the environment. Although we are the largest sportswear company in the world, we also recognize that we are a single brand within a vast global supply chain. Global Footwear and Apparel brands must collaborate to drive meaningful change. Consequently, we continue to highlight the importance of collaborative efforts in reducing the discharge of hazardous chemicals across the broader supply chain. Key tools and industry collaborations relating to chemicals management are outlined in the two tables below.