



# CHEM-IQ<sup>SM</sup>

Chemistry Innovation and Quality Program

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## Executive Summary

VF recognizes that chemicals are necessary to manufacture a wide variety of apparel and footwear products. While many chemicals<sup>1</sup> are safe when used appropriately, it is essential to identify those that may pose a risk to human health and/or the environment and eliminate them from use. Chemical management requirements have often been complex and confusing for our manufacturing partners. We believe our CHEM-IQ<sup>SM</sup> Program is an opportunity to simplify and clarify VF's requirements for chemical use throughout our supply chain<sup>2</sup>.

VF's many brands source hundreds of thousands of products from multiple countries. Our supply chain is often cited as the most complex in the apparel industry.

Our CHEM-IQ<sup>SM</sup> Program seeks to achieve responsible chemical management throughout our supply chain and thereby improve workplace safety, environmental protection, and VF product quality. We first require disclosure of an accurate chemical inventory for all VF product suppliers. From that chemical inventory, we conduct analytical screening to identify which chemical formulations<sup>3</sup> used by our manufacturing partners are rated VF "Preferred," "Allowed," or "Prohibited." In addition, we have established a fourth rating, "Due Diligence Required," associated with handling and application of the chemical formulation. This rating is used when chemical formulations may possess an inherent hazard, but actually pose little or no risk when handled and applied in accordance with good chemical management practices and the supplier's instructions. VF recognizes that factories using chemical formulations with Due Diligence Required ratings must operate their manufacturing and wastewater treatment processes correctly, and we will have programs in place to assess these practices. As a result, some factories may not be allowed to use Due Diligence Required chemical formulations until their operations have been improved.

VF requires our partners to take follow-up action regarding their chemical inventories; this includes eliminating the use of certain chemical formulations and promoting the safe use of others.

VF's CHEM-IQ<sup>SM</sup> Program incorporates three major elements:

1. A system of four (4) chemical ratings that apply to all factory chemical formulations; this system employs VF's chemical screening analysis methodology to provide actionable information.
2. A requirement that our manufacturing partners select better chemical formulations, in accordance with the VF "Preferred, Allowed, Prohibited" ratings; this may involve implementing corrective action plans to comply with prohibitions on specific chemical formulations.

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<sup>1</sup> Chemicals as used throughout this document define the general universe of chemical substances, mixtures and formulations in commerce.

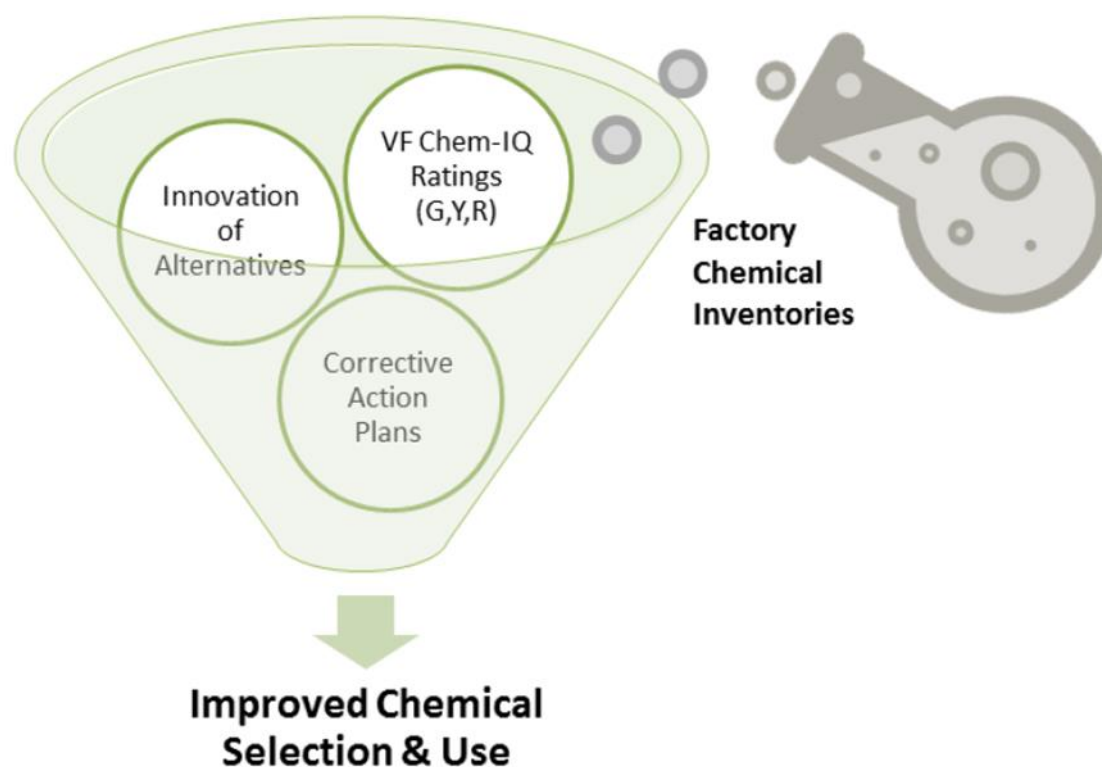
<sup>2</sup> "Supply chain," for purposes of this document, refers to the vendors who make or assemble final VF products ("first-tier vendors") and to any parts/materials suppliers that VF requires these vendors to use ("nominated second-tier suppliers").

<sup>3</sup> Chemical Formulation means the actual liquid or powder purchased by and used within a VF supplier factory. These chemical formulations typically contain numerous unique chemical substances, either as intentional ingredients or as impurities or byproducts.

3. A commitment to innovation where existing chemical formulations indicate a reasonable opportunity for improvement but there are, as yet, no readily substitutable alternatives.

These elements, and the anticipated outcome, are depicted in Figure 1 below.

**Figure 1: VF CHEM-IQ<sup>SM</sup> Program Model**



## Vision and Guiding Principles

In the design, sourcing, and manufacture of our products, VF seeks to avoid the use of substances demonstrated to be harmful to the environment or human health.

We endeavour to stay informed about the latest research on chemical substances<sup>4</sup> that are used in or may apply to our industry, and to take appropriate action.

VF considers a "Substance to Avoid" to include those chemical substances (or groups of chemicals) for which there is reputable, peer-reviewed, scientific evidence demonstrating that the intended use would be harmful to the environmental or human health<sup>5</sup>. When we become aware of such evidence, VF takes action to avoid using such substances.

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<sup>4</sup> Chemical Substances mean an individual chemical structure, as identifiable by the assignment of a unique Chemical Abstract Services (CAS) number.

<sup>5</sup> VF defines "Substance to Avoid" as those chemicals with intrinsically hazardous properties (persistent, bio-accumulative and toxic (PBT); very persistent and very bio-accumulative (vPvB); carcinogenic, mutagenic and toxic for reproduction (CMR); endocrine disruptors (ED); or equivalent concern. See *Appendix: Substances to Avoid List*, for a comprehensive list of all VF "Substances to Avoid," including each substance's corresponding rating thresholds.

VF strives to eliminate not just the *residues* of a Substance to Avoid in our final products, but also the *use* of such substances during production by:

- Using a screening analysis to evaluate chemical formulations in VF's supply chain
- Clearly identifying Substances to Avoid with a Prohibited rating
- Choosing designs and materials that do not include Substances to Avoid
- Substituting viable alternate substances
- Maintaining a Banned and Restricted Substance Program (RSL)
- Requiring (by contract) supplier compliance with the RSL

We collaborate with our business partners and industry groups to share chemical information and encourage innovation to create viable, improved chemistry.

If alternatives are not yet viable, VF works with chemical manufacturers and our other supply chain partners to:

1. Require the safe use of existing chemicals/formulations,
2. Restrict the release of chemicals into the environment, and
3. Develop effective, environmentally sound, and economically scalable technical solutions.

VF has developed the simplified CHEM-IQ<sup>SM</sup> ratings described in this program to clarify the requirements for chemical selection by our supply chain. We will provide our manufacturing partners with training on CHEM-IQ<sup>SM</sup>, the RSL, and other chemical management requirements to ensure our requirements are clearly understood.

VF maintains an ongoing commitment to continually improve the environmental, health, and safety performance of our manufacturing supply chain.

We strive to eliminate prohibited concentrations of Substances to Avoid in advance of regulation. We have already banned the use of several substances in *all* applications. We regularly review available scientific information, seeking technical, environmental, and scalable solutions to update our chemical management programs. VF collaborates with numerous stakeholders in the development of our chemical management programs. For example, the VF CHEM-IQ<sup>SM</sup> Program was developed with guidance from the University of Leeds (UK), the University of Massachusetts Lowell (US), and the Natural Resources Defense Council (NRDC).

## Education, Innovation and Leadership

The success of VF's CHEM-IQ<sup>SM</sup> Program depends upon open collaboration with our manufacturing partners and product designers. VF has therefore developed education programs. All partners receive regular education on the VF CHEM-IQ<sup>SM</sup> program.

Supply chain partners work with VF CHEM-IQ<sup>SM</sup> staff to identify formulations they use which receive a Prohibited rating. Our partners are then required to comply with corrective action plans to phase out use of these chemicals or chemical formulations. We believe this process creates demand for cleaner alternatives and drives innovation. To support innovation, VF funds various initiatives that aim to reduce the environmental footprint of our partners' manufacturing processes and increase product performance.

We anticipate full implementation of the CHEM-IQ<sup>SM</sup> Program will provide a platform to evolve chemical selection and use to a new level. While VF is just one participant in the apparel and footwear manufacturing industry, we intend to share what we learn from implementing this program with various industry leadership groups to improve industry-wide environmental, health, safety, and product performance.

## VF CHEM-IQ<sup>SM</sup> Ratings

Choosing the correct chemical formulation to use in manufacturing presents a key challenge. Factory managers may not have the knowledge to accurately evaluate tradeoffs between two comparable options. Years of work with supply chain partners have shown VF that it is critical to simplify the chemical selection process. We have therefore created the four chemical ratings defined below: **Preferred** (green), **Allowed** (yellow), **Due Diligence Required** (orange), and **Prohibited** (red). Our sense is that this quick and straightforward identification method will reduce uncertainty and confusion among manufacturing partners regarding whether or not specific chemical formulations may be used during the manufacture of VF products.

The VF CHEM-IQ<sup>SM</sup> ratings cannot contemplate all concentrations, quantities, and uses of chemical formulations by a factory. It is important for factories to note that **applying a CHEM-IQ<sup>SM</sup> rating to a chemical formulation does not remove a factory's obligation to comply with the VF Restricted Substance List (RSL) and with applicable environmental, health, and safety requirements (e.g., wastewater treatment).**

VF relies on the screening analytical results and SDS information, if available, to determine which chemical formulations are preferred in our product manufacturing, which are allowed, which require enhanced diligence, and which are prohibited and therefore must be phased out.

### Preferred Chemicals (Green Rating)

Green-rated chemical formulations are preferred for use in the manufacture of VF products because they meet or exceed all EHS regulatory requirements, may be safely used in the workplace, may be managed and responsibly discharged into wastewater, and assure

excellent product performance. They also do not contain a prohibited concentration of a Substance to Avoid.<sup>6</sup>

### **Allowed Chemicals (Yellow Rating)**

Yellow-rated chemical formulations are allowed for use in the manufacture of VF products, but their use should be minimized. Included in this category are some chemicals that may be phased out in future years and some for which there is incomplete EHS information.<sup>7</sup> Should a green-rated chemical formulation be available to accomplish the same result during manufacture, the green-rated chemical formulation should be selected instead.

### **Due Diligence Required (Orange Rating)**

Orange-rated chemical formulations are allowed for use in the manufacture of VF products, provided the VF nominated third-party laboratory and the VF CHEM-IQ<sup>SM</sup> Program Manager have conducted appropriate due diligence regarding the handling and application of such formulations within the factory. Their use should nonetheless be minimized. Orange-rated chemical formulations may contain a Substance to Avoid which, when handled and applied appropriately within the factory, does not result in an emission of such “Substance to Avoid” to the environment. In most cases, such a substance is converted to another substance through a chemical reaction during the application, and the original substance no longer poses its hazard to the environment. Should a green-rated chemical formulation be available to accomplish the same result during manufacture, the green-rated chemical formulation should nonetheless be selected.

### **Prohibited Chemicals (Red Rating)**

Red-rated chemical formulations are those that VF will eliminate from use in the manufacture of our products. Such chemical formulations may contain concentrations of a Substance to Avoid above the red threshold. VF and each factory will develop a corrective action plan for all red-rated chemical formulations, requiring the factory to phase out use of such chemical formulations as soon as feasible, but no longer than two (2) months out in time.

### **Prohibited Substances (Red Rating at *any* concentration)**

VF has identified eleven (11) unique substances prohibited in chemical formulations in *any* concentration<sup>8</sup>. These substances are listed in *Appendix: Substances to Avoid List*. Identification of such a Prohibited Substance during a VF CHEM-IQ<sup>SM</sup> screening will result in the entire chemical formulation receiving a prohibited classification.

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<sup>6</sup> It is possible that some chemical formulations may contain trace concentrations (such as impurities) of substances VF does not desire. Over time, VF will investigate the best ways to continually reduce unintended trace impurities, while focusing our resources where we can achieve the most significant chemical hazard reduction.

<sup>7</sup> Yellow-rated chemical formulations may contain a trace, unintended amount of a Substance to Avoid, however such concentration shall be well within safe and regulated levels.

<sup>8</sup> Any concentration means any detected concentration above a reasonable, de minimis laboratory detection level.

## VF CHEM-IQ<sup>SM</sup> Screening Analysis

VF's intention is for all chemical formulations used within a factory to be screened and receive a corresponding rating: green, yellow, orange, or red. To address sometimes significant information gaps in chemical ingredient information, VF has collaborated with chemistry experts to develop our own chemical screening analysis. Screening is performed at a nominated laboratory that is capable of analyzing a chemical sample using the VF CHEM-IQ<sup>SM</sup> methodology. Chemical samples are analyzed for over 400 Substances to Avoid. Each set of results is compared to pre-determined concentration thresholds for each substance. The resulting rating is determined as **Preferred** (green), **Allowed** (yellow), **Due Diligence Required** (orange), or **Prohibited** (red). See *Appendix: Substances to Avoid List*, for a comprehensive list of all VF Substances to Avoid, including each substance's corresponding rating thresholds and the eleven (11) Prohibited Substances.

## CHEM-IQ<sup>SM</sup> Implementation

### Factory Obligations

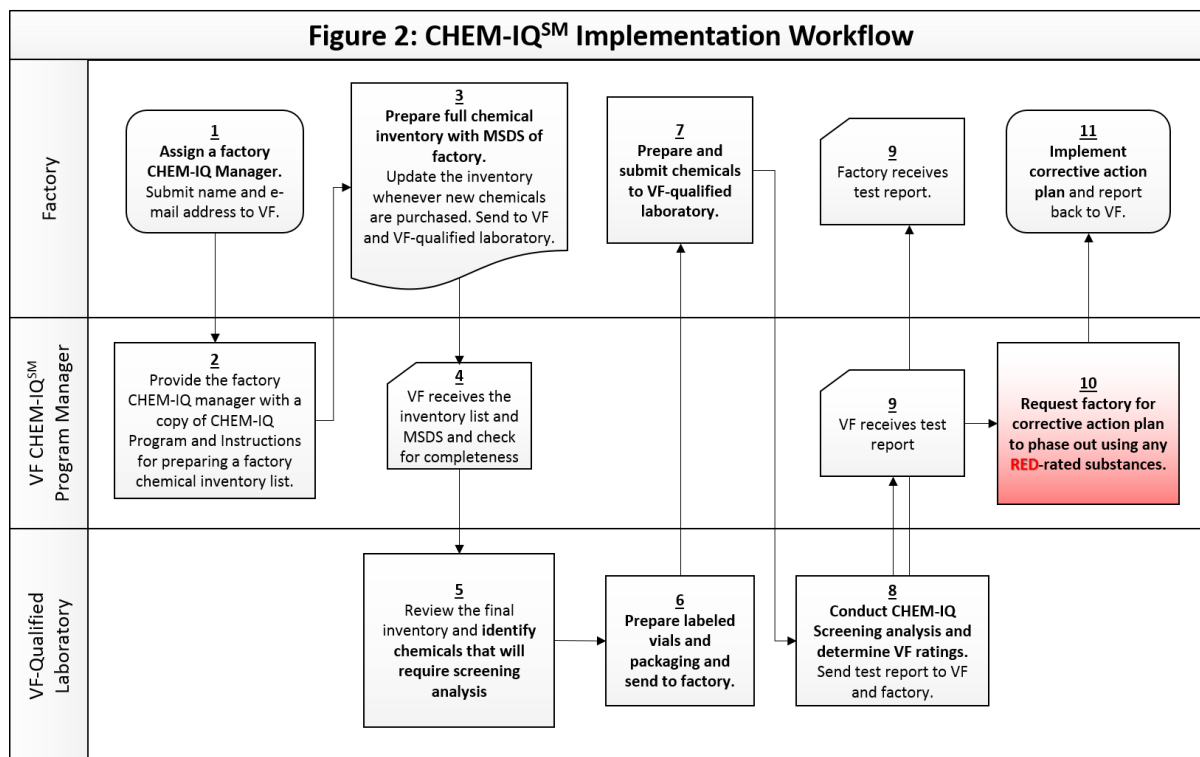
Our CHEM-IQ<sup>SM</sup> Program requires comprehensive implementation at the supply chain factory level. Each material and product supplier to VF must build an internal process to manage chemical selection. Each factory must maintain an updated chemical inventory, specifying the VF CHEM-IQ<sup>SM</sup> rating for each chemical formulation. Each factory must also implement a corrective action plan to phase out the use of any red-rated substances. Should a factory wish to continue use of an orange-rated chemical formulation, that factory shall submit detailed information regarding its use, application, and processing. Moreover, wastewater discharge must meet each requirement of the VF wastewater effluent requirements. The factory may be subject to onsite reviews by VF or other designated personnel to confirm acceptable handling and application of an orange-rated chemical formulation.

### Collaboration among Factories, VF, and Laboratories

The flowchart in Figure 2 (below) shows how factories, the VF CHEM-IQ<sup>SM</sup> Program Manager, and the VF-qualified laboratories work together to implement the CHEM-IQ<sup>SM</sup> Program. Factory obligations are shown in the top row.

1. Factory management assigns a "CHEM-IQ<sup>SM</sup> Manager," who has control over chemical purchasing and is knowledgeable regarding alternative sources of chemical supply. The factory submits this individual's name, phone number and email address to the VF CHEM-IQ<sup>SM</sup> Program Manager.
2. The VF CHEM-IQ<sup>SM</sup> Program Manager provides the Factory CHEM-IQ<sup>SM</sup> Manager with a copy of the CHEM-IQ<sup>SM</sup> Program, training materials, and instructions for preparing a factory chemical inventory.





3. The Factory CHEM-IQ<sup>SM</sup> Manager prepares a full chemical inventory and sends it to the VF CHEM-IQ<sup>SM</sup> Program Manager, with a copy of Safety Data Sheet of each chemical formulation. The Factory CHEM-IQ<sup>SM</sup> Manager builds a process to regularly update this chemical inventory whenever new chemicals are purchased.
4. The VF CHEM-IQ<sup>SM</sup> Program Manager receives the factory's chemical inventory, reviews for accuracy and completeness, and pass the final inventory list to VF-qualified laboratory.
5. The VF-qualified laboratory reviews the final inventory list and identifies chemical formulations that require CHEM-IQ<sup>SM</sup> Screening Analysis will be identified.
6. For each chemical formulation that requires screening, VF-qualified laboratory emails the Factory CHEM-IQ<sup>SM</sup> Manager with a Sample Submission Form (final chemical inventory list), instructions and packaging materials for preparing and sample shipment to the VF-qualified laboratory for analysis.
7. The Factory CHEM-IQ<sup>SM</sup> Manager prints out the Screening Analysis Sample Submission Forms and corresponding Safety Data Sheets, prepares the samples (following the instructions provided by VF), and sends these to the VF-qualified laboratory. **For the chemicals requested by VF-qualified laboratory, the Factory CHEM-IQ<sup>SM</sup> Manager sends the following to the laboratory:**
  - Sample Submission Form (final chemical inventory list)
  - Chemical samples
  - Corresponding copy of Safety Data Sheet

8. The VF-qualified laboratory conducts a VF CHEM-IQ<sup>SM</sup> Screening Analysis for each submitted sample and determines the appropriate VF rating.
9. The laboratory issues a summary report containing the CHEM-IQ<sup>SM</sup> ratings to (a) VF CHEM-IQ<sup>SM</sup> Program Manager and (b) Factory CHEM-IQ<sup>SM</sup> Manager.
10. Should any chemical formulation receive a red rating, the VF CHEM-IQ<sup>SM</sup> Program Manager contacts the Factory CHEM-IQ<sup>SM</sup> Manager to implement a corrective action plan to cease using identified red-rated chemical formulations.
11. The factory implements the corrective action plan and reports back to VF when all red-rated chemical formulations have been phased out.

## Continuous Improvement

The VF CHEM-IQ<sup>SM</sup> Program will be regularly reviewed and updated to ensure changes in chemical hazard information, chemical regulations, and analytical capabilities (among other factors) are incorporated into the screening analysis and rating criteria. We expect regular re-evaluation of factories' chemical inventories, re-submission of chemical samples for screening analysis, and changes to the CHEM-IQ<sup>SM</sup> corrective action plans will be necessary as the program (and the body of knowledge it generates) evolves.

VF believes that continual review and improvement of the CHEM-IQ<sup>SM</sup> program will promote improved knowledge among our manufacturing partners regarding the quality of the chemicals they procure and use in the manufacture of VF products.