Chemical Management Policy

Amendment Record

Version	Date	Section	Page	Change	Changed by
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02	24 Aug 2024	Preface	6	Align with Industry standards including AFIRM Restricted Substances List and Higg Index from Cascale	Hannah Hoang
02	24 Aug 2024	Section B	9	Update Industry tool for chemical management – Higg Index	Hannah Hoang
02	24 Aug 2024	Section C	10-11	Core Compliance requirements: replace 4 Must-do items with 17 Foundational Environment Performance questions of Higg FEM	Hannah Hoang
02	24 Aug 2024	Section C	10-11	Define Implementation plan	Hannah Hoang
02	24 Aug 2024	Section 1	12	Provide the guidance for Chemical management system policy establishment	Hannah Hoang
02	24 Aug 2024	Section 1	12-13	Adjust wording at point 2	Hannah Hoang
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02	24 Aug 2024	Section 3	23	Update point 1: RSL failure remediation process	Hannah Hoang
02	24 Aug 2024	Appendix 3	33	Update Chemical inventory list	Hannah Hoang
02	24 Aug 2024	Appendix 4	34	Update RSL Declaration of Conformity	Hannah Hoang

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PREFACE

Columbia Sportswear Company (CSC) and each of its subsidiaries and brands are committed to delivering safe, high-value products to our customers. We value sustainable manufacturing practices and are committed to working with manufacturing partners who share those values. The objective of our chemical management policy is to:

- Guide suppliers in developing their own chemical management system at manufacturing sites.
- Ensure compliance with CSC RSL requirements.
- Provide resources to enable continuous advancement of chemicals management best practices to protect workers, consumers, and environment. And align with Apparel and Footwear International RSL Management (AFIRM) vision.

We expect all suppliers to avoid the use of hazardous chemicals and implement chemical management best practices in their facilities. Suppliers are expected to establish their own policies and management systems to meet CSC requirements. We value and align with industry standards, including AFIRM Restricted Substances List, Higg Index from the Cascale, formerly Sustainable Apparel Coalition (SAC) and the chemical Management System Guidance Manual from Zero Discharge of Hazardous Chemical (ZDHC).

At its core effective chemical management relies on input stream management practices with the aim of eliminating hazardous chemicals from the beginning. Further, chemical management requires a systematic approach throughout all production stages from chemical inputs, usage and handling through all areas of a facility to outputs. Effective chemical management relies on traceability, transparency and continuous improvement practices.

Chemicals Management performance is measured annually through Higg FEM assessment and verification. CSC may require chemical management audits randomly or as part of a systematic program to evaluate supplier performance. Additional requirements are set forth in CSC policies and manuals such as the Columbia Sportswear Company RSL Manual.

CSC may introduce other requirements and processes in the future to support the elimination of hazardous chemicals and associated risks. We are committed to working with our vendors to promote sustainable manufacturing practices, phase-outs of hazardous chemicals throughout CSC's supply chain and efforts to reduce the impacts of our products.

A) INTRODUCTION

This chemical management policy aims to guide and support our suppliers to implement an effective chemical management system, provide safer working conditions for workers, support product compliance, and improve environmental performance.

1. Basic Chemical Management Principle

Input stream management is the core principle for cleaner and sustainable chemical management. With effective implementation of input stream management, hazardous chemicals can be identified and eliminated early and prevent them from entering the production cycle.

2. How to use this guideline

To better study and implement the policy in facilities, the chemical management practices in this document are classified into five sections: **Input, Process, Output, System and Communication**.

- **Input**

The Input section covers key practices in input stream management and highlights practices which are essential before chemicals enter the warehouse. It provides a practical guide for key practices such as chemical requirement awareness, chemical supplier assessment, chemical risk assessment and chemical inventory development.

- **Process**

The Process section covers key practices starting with chemicals entering the facility or warehouse to the end of the production lines. It also covers practices relating to manufacturing processes in the factory and provides a practical guide for aspects such as identification of hazardous chemicals in production, chemical hazard communication in the production facility, labelling, storage, transportation, chemical handling, and contamination prevention.

- **Output**

The Output section covers key practices from the end of the production lines and before any output of product, wastewater, off-gas, and solid waste leave the physical boundary of the factory. The Output section provides a practical guide for chemical management in products, effluent, air emission, waste, and communication of output results.

- **System**

The System section covers key practices essential to establishing a basic chemical management system. This section covers training, documentation, traceability, transparency, internal audit, management review, preventive and corrective actions, Plan Do Check Act (PDCA) and continuous improvement.

- **Communication**

The Communication section explains the need to ensure that chemical management requirements are effectively communicated within the factory and to suppliers. In particular, factories need to ensure up-to-date chemical requirements are communicated to their suppliers and that they maintain detailed records of this process.

This document must be reviewed in its entirety. However, certain sections are particularly relevant for specific work positions in the factory as shown in the table below.

Table 1 - Suggested Reading of Sections for Different Work Positions

Position	Input	Process	Output	System	Communication
Chemical Management Manager	●	●	●	●	●
Purchasing Manager	●	○	○	●	●
Chemical Storage Manager	●	●	○	●	●
Production Manager	○	●	●	●	●
Quality Assurance Manager	●	●	●	●	●
Waste (air, solid and wastewater) Manager	○	○	●	●	●
Note: "●" for 'Mandatory' and '○' for 'Recommended'					

To facilitate the understanding of these guidelines, each sub-section is composed of three parts:

What: Provides a brief interpretation of the content of the sub-section.

Why: Explains why the sub-section is important in chemical management.

How: Lists key practices and explains how to achieve the required outcome. It is the core content of each sub-section.

(B) INDUSTRY TOOL FOR CHEMICAL MANAGEMENT

In the manufacturing industry, there are varied initiatives and tools are available to assist with the responsible selection, management, and use of chemicals. At CSC, we use Higg Index suite of assessment tools, guidelines and a digital platform developed and owned by **Cascale** (formerly Sustainable Apparel Coalition). It serves as a standardized supply chain measurement framework that has become widely used within the apparel, footwear, and textiles; home furnishings; sporting and outdoor goods; bags and luggage.

The Higg Facility Environment Module (Higg FEM) assessment tool is one of five Higg Index tools used to assess the environmental impact of product manufacturing at facilities, including the chemical management and wastewater management. It provides the starting point and improvement framework designed to help facilities to evaluate current and potential risks and recognize the opportunities for sustainable improvement.

Cascale has also created a "How to Higg" Guide for Higg FEM users that provides guidance and information on the FEM self-assessment questions and requirements.

For details, please refer to the below link for the latest update and release from Cascale accordingly.

Higg Index

Higg FEM

How to Higg

(C) CHEMICAL MANAGEMENT POLICY IMPLEMENTATION PLAN

1. Supplier Responsibilities

Suppliers should make a full commitment to the CSC policy and follow the guidelines for chemical management implementation. Each must establish their own policies and management systems to meet the requirement of this policy. It is recognised that factories may be starting from various levels and that full implementation of this policy is a continuous process.

2. Core Compliance Requirements

Supplier must follow CSC Core Compliance Requirements that include 17 Foundational Environmental Performance questions (FEPs) of HIGG FEM Chemical Management section. Please refer to the current How to Higg FEM Guide for full guidance on applicability of this section. Chemicals FEP questions are listed in the following page.

Reference: **How to Higg FEM Guide – Chemical Management section**

3. Implementation plan

This policy is applicable to all raw material vendors (RMV*) and finished goods vendors (FGV*) of all types of CSC products including apparel, accessories, equipment, and footwear and will be **effective starting from Aug 26, 2024**

**Note: FGV and RMV definition please refer to Appendix.*

Foundational Environmental Performance questions (FEPs) of HIGG FEM Chemical Management section:

Chemicals	
Applicability Questions	All Applicability Questions apply.
Q1	Does your facility have a written Chemical Management System (CMS) policy?
Q2	Have you assigned the responsibility of implementing and maintaining the Chemical Management System (CMS) to a team/staff member?
Q3	Does your facility have a chemical purchasing policy?
Q4	Does your facility keep a Chemical Inventory List (CIL) and the suppliers of each chemical product?
Q5	Does your facility's Chemical Inventory List (CIL) include the following data?
Q6	Does your facility make Safety Data Sheets (SDS) available to employees for all chemicals used?
Q7	Does your facility train all employees who use chemicals on chemical hazards, risk, proper handling, and what to do in case of emergency or spill?
Q8	Does your facility have a chemical spill and emergency response plan that is practiced periodically?
Q9	Does your facility have appropriate and operable protective and safety equipment, as recommended by the Global Harmonization System compliant (or equivalent) Safety Data Sheet, in all areas where chemicals are stored and used?
Q10	Does your facility have chemical hazard signage and safe handling equipment in the areas of the facility where chemicals are used?
Q11	Does your facility select and purchase chemicals based on their hazards and MRSL requirements?
Q12	Does your facility select and purchase chemicals based on their hazards and RSL requirements?
Q14	Does your facility have well marked, designated chemical storage areas?
Q15	Does your facility have well marked sub-storage areas?
Q16	Does your facility train employees responsible for the chemical management system on Restricted Substance Lists (RSLs)?
Q17	Does your facility train employees responsible for the chemical management system on Manufacturing Restricted Substance Lists (MRSLs)?
Q18	Does your facility have an established process to investigate and resolve a potential RSL failure?

SECTION 1: INPUT

The Input section covers key practices in the input stream management and highlights practices which are essential before chemicals enter the warehouse. Below are the key practices which should be followed by CSC suppliers.

1. Chemical Management System policy establishment

A documented Chemical Management System (CMS) policy should address at least the following:

- Include a clear statement that outlines a facility's commitments to chemicals management;
- Comply with all applicable legal and customer requirements;
- Assign a team/staff member with appropriate competencies in chemical management and establish roles and responsibilities for implementing and maintaining the facility's CMS;
- The safe use of chemicals, to ensure Health and Safety for workers and minimizing environmental impact;
- Capacity building and training of staff on CMS/RSL/MRSL;
- For facility use chemicals in production, provide details on the practices of chemical management life cycle within the facility (i.e. purchasing, storage, etc.)
- Drive continuous improvement of CMS with implementation plan;
- A documented environmental and occupational health and safety program and procedures specific to chemical management should be in place to manage and control environmental, health and safety risks associated with chemical use at the facility.

Relevant Higg Index Facility Environment Module (FEM) 4.0 indicators:

Higg Index Chemical management module – Level 1: Question 1, 2, 13

2. Awareness of Regulations, RSL and MRSL

What: CSC suppliers must have knowledge and awareness of applicable laws, regulations, mandatory standards, including current updates, and CSC requirements including CSC RSL Manual (RSL), Manufacturing Restricted Substances list (MRSL)

Why: Awareness of requirements is the first step towards product compliance. Only with knowledge of relevant requirements are suppliers able to implement appropriate actions and practices to ensure product compliance.

How: The requirements of the CSC RSL Manual are the basis for chemical compliance for all products.

The following action items must be undertaken to comply with the requirements:

- **Senior management must make a commitment to comply with the CSC RSL and Product Safety Manual** and communicate this commitment to all employees in the factory.
- **An individual responsible for chemical management** must be assigned within the factory, ensuring he or she has the capability, the commitment, and the support from the leadership to achieve the requirements. This must be clearly identified within the corporate organisational chart.
- **The most updated CSC RSL Manual must be available in the factory**. The updated version can also be found from the CSC official website. If you are not sure whether you have the most update version, please contact your CSC local representative.
- **The commitment must be documented and available to interested parties**.
  Factory must provide training to the employees who is responsible for the RSL and MRSL management regularly. And document all the training records.

Relevant Higg Index Facility Environment Module (FEM) 4.0 indicators:

Higg Index Chemical management module – Level 1: Question 16, 17

2.1 Manufacturing Restricted Substances List (MRSL)

The purpose of the Manufacturing RSL (MRSL) is to limit the use of toxic chemicals that can be harmful to consumers, the environment and workers who may be exposed during manufacturing processes. CSC recognises the value of addressing hazardous substances potentially used and discharged into the environment during manufacturing and related process deep within our supply chain. Please refer to MRSL section in CSC RSL Manual

Sources: CSC RSL: http://www.columbia.com/About-Us_Corporate Responsibility_Product.html

(Available in several languages)

3. Chemical Purchasing Policy

What: This section covers chemical purchasing policy to ensure that only compliant or beyond compliant chemicals are used for any CSC materials or products

Why: The proper chemical purchasing policy and procedures is a key part of the manufacturer's strategy to effectively monitor compliance with regulations on restricted substances and phasing out any harmful chemicals from production.

How: A chemical purchasing policy and procedures should standardize and formalize a process for screening the required information of chemicals and approving them prior to purchase for the on-site use. This can be achieved by covering at least the following required areas:

- **The purchasing department must create a standard operating procedure** to ensure compliance with all RSL/MRSL requirements for CSC production.
- Establish a process to **communicate RSL/MRSL requirements to all chemical suppliers and upstream suppliers** including the required evidence from suppliers to confirm compliance (e.g., positive lists, certificates/declarations of MRSL conformance, certificates of analysis, or other relevant documentation).
- **Prior to purchase, regulatory requirements for each new chemical must be reviewed and approved by the Chemical Management Manager** who has the technical skills, education, and experience necessary to understand all legal and other requirements.
- **Promote the use of less hazardous or safer chemical alternatives.**
- **Relevant staff are trained** to understand chemical hazards, RSL, MRSL, and other legal requirements.

Relevant Higg Index Facility Environment Module (FEM) 4.0 indicators:

Higg Index Chemical management module – Level 1: Question 3,11, 12

4. Chemical Hazards and Safety Data Sheet

What: Some chemicals may possess physical, health or environment hazards, for example carcinogenicity, mutagenicity, reproductive toxicity (CMR), persistent, bio accumulative and toxic (PBT), very persistent and very bio accumulative (vPvB), etc. The Safety Data Sheet (SDS), formerly known as Material Safety Data Sheet (MSDS) is an important document to present chemical hazard information and provide proper procedures for the safe handling, storage, and disposal of hazardous chemicals.

Why: This information is essential for the factory to identify the hazard, carry out a risk assessment and make a preventive plan. Ignorance of hazard information makes it impossible to adopt appropriate storage conditions and chemical safe handling practices.

How: Suppliers have the primary responsibility to ensure employees are appropriately safeguarded in the workplace. Chemicals can represent a range of potential hazards which

may not be apparent to untrained individuals. For the factory to demonstrate compliance, the following actions should be undertaken:

- **The factory should collect all relevant hazard information relating to all chemicals**. Examples include hazard* information provided by chemical suppliers such as SDS, chemical labels, Technical Data Sheets (TDS) and certificates of analysis.
- An **SDS** for **every chemical** used in a facility is **accessible, in local language** for employees.
- **Establish a process** to ensure that SDS information is kept **up to date.**
- Employees should be trained on how to read and understand SDS information.

** Note: Hazard classification of chemicals can refer to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). According to GHS, hazards can be classified as physical, health or environmental. For different hazards and hazard categories, GHS pictograms can be used to label the hazards- Appendix 1 summarizes the information of GHS pictograms and the corresponding hazards. For more information about GHS, please visit GHS official website. http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html*

Relevant Higg Index Facility Environment Module (FEM) 4.0 indicators:

Higg Index Chemical management module – Level 1: Question 6

5. Chemical Supplier Assessment

What: Before placing any chemical orders, the background and overall performance of a supplier should be assessed.

Why: The chemical supplier assessment aims at determining whether suppliers have the ability to provide compliant chemical and the cooperation can be long-term and stable.

How: To effectively assess a chemical supplier, the following should be undertaken:

- **The factory should establish a process for supplier assessment** with criteria for acceptable performance or ranking rules.
- Besides routine indicators, such as price, quality and delivery cycle, factories should assess suppliers' chemical management practices by checking the following aspects and documentation of suppliers:
  - Qualified electronic versions of SDS
  - Electronic versions of Technical Data Sheet (TDS)
  - Chemical Positive List
  - Declaration of Conformity (DOC)

- Certificate of Quality and Environment Management System
- Nominated supplier by CSC
- bluesign® system partner and other certificates (E.g.: ZDHC ChemCheck)
- Environmental violation record (i.e. environmental testing report)

- **A list of approved suppliers** should be recorded and continuously maintained and periodically reviewed on at least an annual basis. Appendix 5 is an example of an approved supplier list.
- **The purchasing department should only select chemicals from the qualified supplier list** unless approved by the Chemical Management Manager.

6. Chemical Inventory Development and Maintenance

What: A Chemical Inventory is a list which shows basic information for each chemical and usually includes the chemical name, composition, hazard information, chemical risk assessment result, storage location, as well as other information.

Why: A Chemical Inventory List (CIL) is a tool to summarize useful chemical information covering all chemicals used in the facility within one document.

How: The factory should develop and maintain a chemical inventory that covers all items used in the production site. The following is required:

- **An individual must be assigned to be responsible for creating and maintaining the CIL.** This individual should work with the Chemical Management Manager to ensure the list covers all CSC production inputs and processes.
- **All purchased chemicals** including main ingredients for manufacturing and all processing chemicals including detergents, auxiliaries, solvents, and cleaners must be recorded in the CIL. **An up-to-date CIL must be maintained electronically.** Electronic versions can be, for example, in an excel table or in a real-time online ERP system.
- **The CIL must be updated periodically (e.g. monthly) and communicated to the purchasing department.** The factory can get the relevant information from SDS, chemical label, TDS, and certificates.

The key items in the CIL include Chemical product and chemical formulator name, manufacturer name, Safety Data Sheet (SDS), function, hazard classification, using locations/areas, storage conditions, quantity of chemicals used, CAS number, lot number (if applicable), MRSL compliance, purchase date, expiration date (if applicable)

See Appendix 3: Example of a Chemical Inventory List

Relevant Higg Index Facility Environment Module (FEM) 4.0 indicators:

Higg Index Chemical management module – Level 1: Question 4, 5

SECTION 2: PROCESS

The facility section covers key practices starting with chemicals entering the warehouse through to the end of the production lines. It also covers practices relating to all the manufacturing processes in the factory. Below are the key practices which should be followed by CSC suppliers.

1. Identification of Hazardous Chemicals in Production

1.1 Hazardous Chemical Identification and MRSL

What: For each production step, the utilization of different chemicals and materials may result in a potential risk.

Why: The identification of hazardous chemicals in each production step can reduce the scope of concerned chemicals and focus efforts on their management.

How: Hazardous chemicals used in each production step should be identified, reviewed, and cross-checked with chemical risk assessment results. Restricted and high-risk chemicals should not be used in any production step.

- Factory should identify the typical hazardous substances by
    - Chemical testing verification
    - SDS review
    - Certification review

1.2 Textile Production

Table 2&3 (Textile) and Table 4 (Footwear) are based on experiences and formulation review and show the most common restricted substances associated with different classes of chemicals. For more information about common restricted substances in the chemicals and raw materials, please refer to the ZDHC MRSL.

1.2.1 Dyeing and Printing

Table 2 Overview of some typical hazardous substance groups in pre-treatment, dyeing, printing and washing

WET PROCESS	CHEMICAL FORMULATION TYPE	HAZARDOUS SUBSTANCES GROUPS															
		AP & APEO	Formaldehyde	Chlorobenzens + Toluene	Chlorophenols	Carc. Aromatic Amines	Navy BlueDyes	Dye-Carc.Or Equiv.	Disperse Dyes	Flame Retardants	Glycols	Solvents, Halogens	Organotins	PAH	PFC	Phthalates	Heavy Metals (As, Hg, Cd, Pb, CrVI)	VOC
Pre-treatment	Pre-treatment Auxiliaries (De-sizing, scouring, oxidizing agents)	X									X	X					X	
Dyeing and Printing	Dyes and pigments	X		X	X	X	X	X	X*				X	X		X*	X	X*
	Textile auxiliaries for dyeing and printing	X	X								X			X*		X*		X*
Washing	Detergent	X		X							X	X						
(X*) Substances might be present, further information required to determine risk																		

1.2.2 Finishing, Coating and Lamination

Table 3 Overview of some typical hazardous substance groups in finishing, coating and lamination

WET PROCESS	CHEMICAL FORMULATION TYPE	HAZARDOUS SUBSTANCES GROUPS															
		AP & APEO	Formaldehyde	Chlorobenzenes + Toluenes	Chlorophenols	Carc. Aromatic Amines	Navy BlueDyes	Dye-Carc.Or Equiv.	Disperse Dyes	Flame Retardants	Glycols	Solvents, Halogen	Organotins	PAH	PFC	Phthalates	Heavy Metals (As, Hg, Cd, Pb, CrVI)	VOC
Finishing, Coating and lamination	Anti-electrostatic agent	X									X							
	Water, stain and oil repellents	X									X*		X		X			
	Anti-microbiotics agent										X		X					
	Optical brighteners (fluorescent brighteners)	X				X	X	X	X		X							
	Flame retardants									X	X		X			X	X	
	Coating and laminating agents as well as according additives									X*	X		X	X	X	X	X	X
	Resins		X									X		X				X
(X*) Substances might be present, further information required to determine risk																		

1.3 Footwear Production

Table 4 Overview of some typical hazardous substance groups in Footwear Production

CHEMICAL FORMULATION TYPE	HAZARDOUS SUBSTANCES GROUPS																	
	AP & APEO	Chlorobenzenes + Toluene	Chlorophenols	Carc. Aromatic Amines	Navy BlueDyes	Dye-Carc.Or Equiv.	Dispersе Dyes	Flame Retardants	Glycols	Solvents, Halogens	Organotins	PAH	PFC	Phthalates	Short chained chloroparifn	Heavy Metals (As, Hg, Cd, Pb,	VOC
1. Cleaners	X								X	X							X
2. Solvents		X	X							X							X
3. Adhesives	X	X	X						X	X	X		X	X		X	X
4. Adhesive solvents		X	X							X							X
5. Primers										X							X
6. Halogenation										X							X
7. Cross-	X	X							X	X					X	X	X
8. Latex	X							•			X					X	
9. Rubber	X										X	X				X	X
10. Vulcanisation compound																X	
11. Polyol																	
12. Di-isocyanate																	
13. Foaming Agents										X							X
14. Thermoplastic Rubbers	X										X	X		X	X	X	X
15. Natural Rubber												X				X	X
16. Printing	X		X	X	X	X	X	•	X	X	X	X		X	X	X	X
17. Edge Inking	X			X	X	X	X	•	X	X	X	X		X		X	X
18. Waxes / Finishing Operation	X	X	X						X	X		X	X	X	X	X	X
19. Oil (Cutting /											X	X					
20. Upper Materials	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
21. Outsole Materials			X			X	X				X	X		X	X	X	X
22. Metal Hardware																X	
23. Textile Prints	X			X	X	X	X		X	X	X	X		X		X	X

2. Labelling, Storage and Handling of Chemicals*

What: Chemicals are necessary for the manufacturing of products. Sometimes the same attributes that make a chemical useful in production can also have a detrimental impact on worker safety. Good chemical safety management requires effective communication and systems to control the hazards of chemical exposure.

Why: To ensure development and implementation of processes and procedures to reduce or eliminate the risk associated with the use of chemicals in the workplace.

How:

LABELLING AND HAZARD COMMUNICATION

- Factory should use the principles of the Global Harmonization System (GHS) in hazard communications.
- The SDS should be freely accessible and available in local language for review by all employees at the factory, and in the areas the chemicals are stored and used. In addition, safety instructions should be clearly visible (e.g. posted on the walls) and should include pictograms.
- All primary and secondary containers should have labels that indicate the chemical name and hazards. Labels should be in the language of the employees, readable and in good condition.

STORAGE

- Factory should install warning signs and chemical handling procedures in chemical storage and use areas.
- Factory should ensure storage areas are installed with firefighting equipment and in the case of flammable materials, anti-explosive lighting, and inherently safe switches whenever feasible.
- Chemical containers should not be stacked higher than three (3) meters (10 feet). Side-mounted drums should be chocked to prevent them from rolling.
- Chemical storage areas, including sub-storage areas should have the following safety features:
    - The chemical storage area is clearly marked, has easy entry, and exit in case of any emergencies.
    - Areas are secured and covered
    - Containers are stored on impervious surfaces
    - Adequate ventilation, dry and protected from the weather
    - Accessible safety shower/eye wash nearby (accessible in 10 seconds or less)
    - Restriction on drinking, eating and smoking
    - Spill kits with materials for containment and absorption
    - Fire-fighting equipment, fire hoses and/or fire extinguishers
    - Signs indicating PPE required to work in area
    - Factory should provide secondary containment for hazardous substances. Secondary containment should be at least 110% of the volume of the largest

container stored and greater than 10% of the total volume of the stored substance.
  - Aisles and forklift routes are clearly marked
  - Incompatible materials are segregated
  - Separate and properly shelter/cover chemical storage and/or chemical wase storage area from production and living area.
  - Flammable and combustible materials are stored away from ignition sources
  - First in first out (FIFO)
- Factory should maintain a documented spill response plan and equipment in areas where hazardous materials are used or stored and train to the workers who handle chemicals and what to do in case any emergency.
- Factory should have a chemical spill and emergency plan and practice regularly.
- Factory should routinely inspect areas where chemicals are stored and handled to make sure they meet the requirements.

<u>HANDLING</u>

- Pregnant women and nursing mothers should not work in areas where hazardous materials are used or there is a potential for hazardous chemical exposure.
- Employees that work with or are exposed to hazardous chemicals should be provided with an annual occupational health/medical check-up.
- Leaks or spills should be cleaned up immediately.
- Factory should provide workers, at no cost, with all the appropriate and necessary personal protective equipment (PPE) (e.g. gloves, eye protection, hearing protection, and respiratory protection) to effectively prevent unsafe exposure (e.g. inhalation or contact with solvent vapours, noise, dust) to health and safety hazards, including medical waste.
- Factory should ensure that all workers are using PPE where it is necessary.
- Safe handling and transfer equipment (e.g., trolleys, carts, pumps) should be available at relevant locations to ensure safe handling which can reduce the potential for spills, which can result in negative impacts to workers' health or the environment.
- Factory should provide workers with training on the use and maintenance of personal protective equipment.
- Factory should apply the following controls when transferring hazardous materials:
  a. Metal flammable material containers are bonded and grounded / earthed
  b. Drip trays / pans are placed under dispensing containers
  c. Dispensing occurs on impervious surface

Relevant Higg Index Facility Environment Module (FEM) 4.0 indicators:

Higg Index Chemical management module – Level 1: Question 7, 8, 9, 10, 14, 15

3. Prevention of Contamination

What: Contamination should be avoided during storage, transportation, movement, and handling of chemicals.

Why: Contamination may lead to the creation of impurities in qualified chemicals and impact the quality of final products but also may result in unexpected chemical reactions.

How: The factory should ensure contamination is avoided through appropriate housekeeping. The following steps should be taken:

- **Chemicals should be appropriately segregated** based on contamination and hazard risk. e.g. products containing highly volatile substances may cross-contaminate other materials if they are stored together.
- **All chemical containers should be properly sealed with a lid** to prevent chemical spillage and contamination during transport and movement.
- **Separate weighing accessories** such as spoons, scoops, bowls, etc. should be used and weighing balances should be clean and dry. After weighing the chemicals, the containers should be closed in a timely manner. Automatic weighing, mixing, and dispersing can also help prevent contamination.
- **Contamination risks from processing auxiliaries** should be assessed and avoided e.g. Alkylphenol Ethoxylates (APEO) from scouring and degreasing agents which may remain in greige fabric and even incoming water
- **Contamination potential from machinery** should be assessed and steps to mitigate the risk should be taken. e.g. Long-chain Perfluorinated Compounds (LCPFCs), including Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) from other brand production lines have the potential to contaminate CSC production lines. To avoid such contamination risk, machinery and production routes should be segregated, with clear labelling and marking.

SECTION 3: OUTPUT

The output section covers key practices in chemical management at the end of the production lines and before any output product, wastewater, off-gas and solid waste leave the physical boundary of the factory. Below are the key practices which should be followed by CSC suppliers.

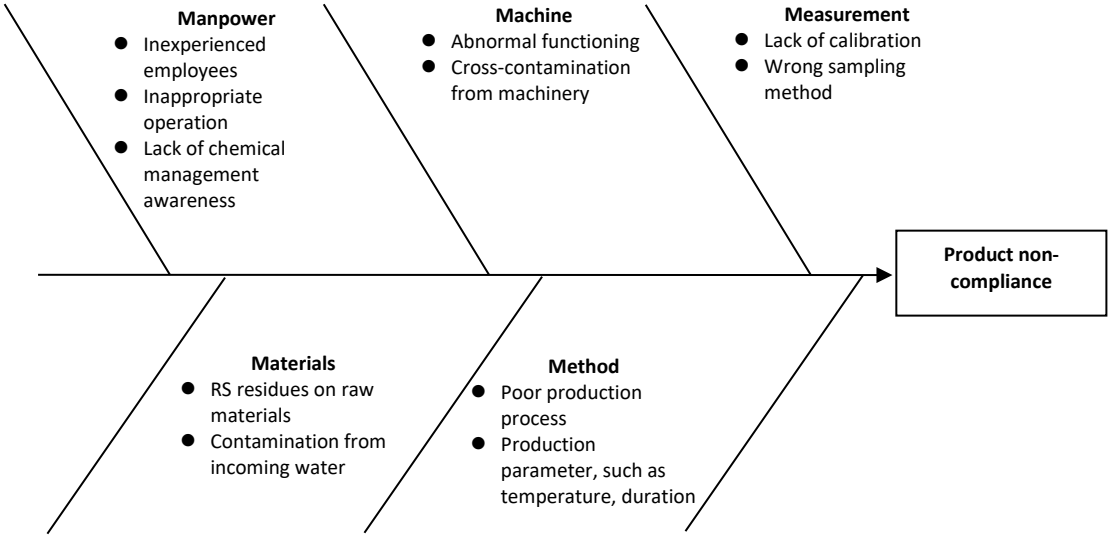
1. Restricted Substance List Implementation

What: Requirements in the CSC RSL should be integrated into internal quality assurance (QA) procedures of the factory to ensure proper implementation.

Why: The creation of effective QA procedures through the integration of chemical management requirements is essential to ensure final product compliance.

How: The factory should undertake the following steps to ensure that the CSC RSL is effectively implemented:

- **Quality assurance procedures** should be established to ensure final products manufactured at the factory can comply with the CSC RSL and other legal requirements. Quality assurance is one aspect of quality management which focuses on providing confidence that quality requirements will be fulfilled as defined within ISO 9000: 2015.
- QA procedures should include:
    - Evaluation of chemical quality and performance.
    - Ensuring process recipes are strictly followed.
    - Standard operation procedures for chemical storage, transfer and handling are implemented.
    - Ongoing assessment of production quality with supporting records.
- **The QA procedures can also cover** but are not limited to risk-based random sampling and testing, product inspection, annual self-audit, root cause analysis procedure etc.
- **For any RS failure problem, Root Cause Analysis** is a method of problem solving used to identify root causes of faults or problems and can help the factory to achieve continuous improvement. One useful tool for root cause analysis is a Fishbone Diagram as in the example below.
- **Factory should establish RSL failure remediation process and assign a person in charge to maintain, update and implement the process.**
- **Factory should track and document all the RSL failure records.** An example using the Plan Do Check Act (PDCA) approach can also be seen in Part E of this document.



Relevant Higg Index Facility Environment Module (FEM) 4.0 indicators:

Higg Index Chemical management module – Level 1: Question 18

- An effective way to achieve quality assurance is by following ISO 9000 family standards to establish, maintain and improve the quality management system. Consult the certification authorities or refer to official website for more information about quality management systems. The official website for ISO 9000 family standards is http://www.iso.org/iso/iso_9000
- **Where chemical, material, or product testing is performed**, the tests should be conducted according to the test methods in the CSC RSL Manual.

2. Wastewater Management*

What: Manufacturing processes can generate a significant amount of contaminated water or wastewater. Wastewater can be a significant cause of pollution if not handled, stored, transferred, treated, and/or disposed of appropriately.

Why: To ensure development and implementation of processes and procedures to ensure proper treatment and discharge of wastewater.

How:

- Factory should ensure all wastewater and sewage discharges from factories are properly monitored and treated on-site before being discharged to a receiving stream or should be discharged under proper authorization to an off-site public or private

wastewater treatment facility for proper treatment. Untreated wastewater or sewage discharges to the environment are prohibited.

- Each factory should have in place all current permits and authorizations required by law for the discharges. Copies of permits, authorizations, and applicable laws, regulations and standards should always be on file at the factory.

3. Hazardous Waste Management*

What: Wastes are substances or objects which are discarded, intended to be discarded or required to be discarded. . Hazardous waste is any waste or combination of wastes with the potential to damage human health, living organisms or the environment when improperly treated, stored, transported, or disposed.

Why: To ensure development and implementation of processes and procedures to track, reduce, and properly treat wastes.

How:

- Factory should ensure all industrial waste is maintained separately from washrooms and eating areas and waste area is not located near dormitories, childcare or medical clinic if applicable.
- Factory should ensure handling and disposal of solid and hazardous waste generated complies with all permits and applicable laws and regulations.
- Factory should maintain copies of all waste contractors' licenses and permits for review.

4. Air Emission Measurement*

What: Emissions to air are generated by manufacturing processes in numerous ways including boilers, chemical process exhaust, generators, etc.

Why: Ensure development and implementation of processes and procedures for proper treatment and discharge of emissions to air.

How:

- Factory should regularly test or monitor air emissions at the facility with a certified professional or laboratory.
- Factory should include the following on the inventory of Ozone Depleting Substance (ODS):
    - all sources of ODS, irrespective of their size.
    - the type and name of the ODS.

    - its usage (e.g. refrigerant, process use, or the equipment in which it is contained).
    - the quantities present; and
    - Frequency of leak detection (if required).
- Factory should retain records of maintenance and leak detection for ODS equipment.
- Factory should consider recording total annual air emissions of the following pollutants for the entire factory and for each major process, including boilers, furnaces, drying and curing ovens, etc.: nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter (PM), volatile organic compounds (VOCs), and hazardous air pollutants (HAPs), using accepted calculation methodologies as defined by the USEPA or local environmental protection agency. Where solvents are used, a mass balance should be used, and all emission ports should be known and documented.

**Reference of external sources listed in Appendix- definition and abbreviation*

SECTION 4: SYSTEM – (A) TRAINING PROGRAM DEVELOPMENT

Training should be given to understand the hazard and risk classifications of chemicals. All employees who come in to contact with chemicals should be trained to understand the potentials risks and should take the appropriate precautions in handling and usage. OBJ

What: This section explains team establishment, personnel capability, and relevant training for chemical management.

Why: The entire plan, implementation, check and improvement steps of chemical management should be carried out by qualified employees.

How: The factory should assign an individual who has overall responsibility for ensuring the factory follows procedures to meet CSC's requirements. The factory should also ensure that sufficient and appropriate training is given by:

- **Identifying training needs and allocating sufficient resources** for training. Each year, the factory should make an annual plan for chemical management training based on the previous years' experience. The training should be designed for workers appropriate to their different positions.
- **Top management should be trained** to ensure that the chemical management policy is implemented and that the chemical management objectives are met.
- **All employees should receive a basic chemical training** on chemical safety and hazards annually.
- **All chemical storage, movement and transportation**, handling and disposal staff should be trained and competent on the correct and standard handling of chemicals and chemical accident treatment.
- **The training content** must be focused to ensure the appropriate level of information is conveyed to the individuals and teams that require the training to undertake the associated tasks safely and competently.
- **Additional training should be developed where chemical management related incidents occur**
- **Training records and qualifications** should be recorded and maintained. Information about training, including training topic and content summary, signatures from all the attendees, exam papers and qualifications, etc. should be well recorded.

SECTION 4: SYSTEM - (B) TRACEABILITY AND TRANSPARENCY

What: Key Information for all the chemicals should be properly labelled, recorded, and archived. A good traceability system allows the facility to link each batch of end-products to the corresponding batch/lot of all chemicals used in the manufacturing processes. Transparency means that available chemical information, hazards, suppliers, and batch/lot numbers should be made available to CSC and key stakeholders upon request.

Why: Traceability can facilitate tracing back to information, hazard communication and finding the root cause if there is any chemical non-conformity. Transparency can facilitate hazard identification and subsequent chemical risk assessment.

How: The factory should create a chemical traceability system to include the following considerations:

- **Documentation of all relevant information according to the Chemical Inventory Table** of chemicals and raw materials is required.
- **Information should be easily accessible** regarding chemicals and raw materials used in each product including chemical name, hazard information, risk assessment results, supplier information and lot number, etc.
- Each chemical on the chemical inventory should be given a **Unique Identification code** (UID) which can facilitate the factory recognizing the right chemical among different chemicals quickly and easily.

If the chemical ingredient list in a formulation is not complete, i.e., the total composition on the SDS does not add up to 100%, chemical suppliers should be contacted to understand ingredient information and assess risk.

Note: Hazard classification of chemicals can refer to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). According to GHS, hazards can be classified as physical, health or environmental. For different hazards and hazard categories, GHS pictograms can be used to label the hazards- Appendix 1 summarizes the information of GHS pictograms and the corresponding hazards. For more information about GHS, please visit GHS official website. http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

SECTION 5: COMMUNICATION

1. Communication throughout the Supply Chain

What: After all the applicable requirements and updates are summarized and studied, the factory should pass all the information to their chemical and raw material suppliers to ensure clear understanding of the requirements in the upstream supply chain.

Why: Obtaining appropriate chemicals and raw materials which meet CSC requirements can only be ensured when upstream suppliers have been clearly informed of all relevant standards and requirements. This is particularly important for FGVs who are sourcing a number of different materials and components from a range of RMVs. As chemical suppliers operate at each stage of the supply chain, they are one of the most important partners. Their awareness, commitment and consistent quality control are critical for the compliance of chemicals and raw materials.

How: In order to ensure that the chemical compliance requirements are effectively communicated, the factory should demonstrate the following:

- **Factories should communicate up-to-date chemical requirements to their supply chain**. The latest CSC RSL Manual and any changes should be advised in a timely manner to all suppliers.
- **Records should be maintained to provide evidence of the communication process**. These records should record what information* was communicated, date of communication and confirmation from the supplier that they have received and consent to comply. All changes and updates should also be recorded.

** Appendix 4 is one example of a DOC and should contain details of what the factory declares compliance to the declaration date, period of validity and other related information.*

2. Chemical Hazard Communication in the Production Facility

What: Hazard information of chemicals should be shared with all relevant staff within the production facility.

Why: As chemicals may cause harm to workers and the environment, all relevant workers should be aware of the hazard to reduce the risk.

How: To ensure that chemical hazards are effectively communicated within the factory, the following is required:

- **Management must assign an individual responsible for chemical management who should keep the factory up to date with the latest hazard risks.** The requirements should be shared with appropriate teams and updated as required.
- **All relevant hazard information of chemicals, including SDS for each chemical should be kept on site and be available to all workers.** Hazard information should not only be kept in the factory offices but especially in the locations where chemical storage and handling occur to facilitate workers being familiar with chemical hazards. The factory should launch training programs for workers to improve their awareness and capability to understand chemical hazards and the importance of the utilization of Personal Protective Equipment (PPE).
- **Hazard symbols in SDS, appropriate PPE and safety requirements should be understood by all relevant staff.**
- **The Chemical Management Manager should provide the purchasing department with an approved list of chemicals and materials** that are approved for purchasing for CSC products. Only items on this list may be used in CSC products.

The Chemical Management Manager should provide the individual / team responsible for stockkeeping with a list of chemicals used in CSC production lines and ensure that levels of stock are regularly updated and communicated to the purchasing department.

(D) APPENDIX

Appendix 1: GHS Pictograms and Corresponding Hazards

GHS Pictogram	Hazard Classification	
	Flammable gases, Aerosols, Flammable liquids, Flammable solids, Self-reactive substances and mixtures, Pyrophoric liquids,	Pyrophoric solids, Self-heating substances and mixtures, Substances and mixtures, which in contact with water, emit flammable gases Organic peroxides Desensitized explosives
	Corrosive to metals, Skin corrosion/irritation, Serious eye damage/eye irritation	
	Exposives, Self-reactive substances and mixtures, Organic peroxides	
	Gases under pressure	
	Oxidizing gases, Oxidizing liquids, Oxidizing solids	
	Acute toxicity	
	Acute toxicity, Skin corrosion/irritation, Serious eye damage/eye irritation	Skin sensitizer, Specific target organ toxicity following single exposure, Hazard to the ozone layer
	Respiratory sensitizer, Germ cell mutagenicity, Carcinogenicity, Toxic to reproduction,	Specific target organ toxicity following single exposure, Specific target organ toxicity following repeated exposure, Aspiration hazard
	Toxic to the aquatic environment	

Appendix 2: Example of Safety Data Sheet (SDS)

Version number:
Date:
SECTION 1: Identification
SECTION 2: Hazards identification
SECTION 3: Composition / information on ingredients
SECTION 4: First aid measures
SECTION 5: Fire-fighting measures
SECTION 6: Accidental release measures
SECTION 7: Handling and storage
SECTION 8: Exposure controls / personal protection
SECTION 9: Physical and chemical properties
SECTION 10: Stability and reactivity
SECTION 11: Toxicological information
SECTION 12: Ecological information
SECTION 13: Disposal considerations
SECTION 14: Transport information
SECTION 15: Regulatory information
SECTION 16: Other information

Note: This example of an SDS follows the GHS, sixth revised edition. For more information on GHS, please visit http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

SDS is formally known as a Material Safety Data Sheet (MSDS).

Appendix 3: Example of Chemical Inventory List (CIL)

No.	Unique Identification Code / Internal code (UID)	Chemical (Commercial) Name	Chemical Supplier	SDS on File	Composition	CAS No.	Hazard Class	Function	Certificate[a]/ MRSL Conformance	Test report[b]	Application scope/Using location	Quantity of chemicals used	Storage condition and location	Approved by CM manager	Lot number (if applicable)	Purchase date	Expiration dates (if applicable)	Remark[d]
1	XXX-1023	XXX blue	A Co., Ltd	Y	Sodium,1-amino-4-[3-[[(2-chloroacetyl)amino]methyl]-2,4,6-trimethylanilino]-9,10-dioxoanthracene-2-	70209-96-0	Skin irritation, Category 1; Hazardous to the aquatic environment, Long-term,	Dye stuff	No	Y	Dyeing process	50 kg	Dry and protected from the weather	Y	12345	DD/WW/YYYY	DD/WW/YYYY	
2	XXX-2206	Waterproof agents	B Co., Ltd	Y	Fluoro-acrylate polymer 10%-11%;	24800-44-0	No hazard, based on GHS	Water repellent	bluesign® approved	N	Finishing process	100 liters	Dry and protected from the weather	Y	6789	DD/WW/YYYY	DD/WW/YYYY	
					Tripropylene glycol 1%-2%;	112-02-7												
					Cetyltrimethylammonium chloride 3%-4%;	9002-92-0												
					Fatty alcohol-polyoxyethylene ether	7732-18-5												
					Water 79%-80%													
3	XXX-2405	UV protection agents	C Co., Ltd	Y	2,2"-Dihydroxy-4,4"-2(hydroxypropane-1,3-diyldioxy)dibenzophenone 20%-	23911-85-5	Specific target organ toxicity following repeated exposure, Category 2	UV protection	No	Y	Finishing process	50 liters	Dry and protected from the weather	Y	12355	DD/WW/YYYY	DD/WW/YYYY	
					Diethylene glycol 14%-16%	111-46-6												

Remark: a. Certificate includes bluesign® approved and other certificates for chemicals.

b. Test report should include test results of hazardous substances in chemicals, e.g. MRSL test report.

c. Compliance means the compliance with any applicable MRSL and RSL

d. Above is the minimum requirement for CIL, and the factory can add other information into the CIL based on actual needs.

Appendix 4: Example of Declaration of Conformity (DOC)

Columbia Sportswear Company

Columbia | SOREL | MOUNTAIN HARD WEAR

Columbia Sportswear Company Restricted Substances List (RSL)

Declaration of Conformity

Company Name:
Company Address:
Telephone:
Chemical Management Contact:
Email:

We have received and understand the Columbia Sportswear Company Restricted Substances List (RSL). We accept the requirements set forth in this manual and are aware of our obligations and responsibilities regarding product compliance and safety. We ensure that we have and maintain adequate systems in place to control quality, safety, and chemical use in accordance with these requirements.

We shall ensure that chemical/material/finished goods sold or supplied to Columbia Sportswear Company and its affiliates are neither manufactured with nor contain:

a. any substance in excess of the restricted limit set forth in the Columbia Sportswear Company Restricted Substances List (RSL), which may be updated by Columbia from time to time upon notice to Vendor;
b. any other chemical, material, component, or finished goods that violates the standards set forth in the Columbia Sportswear Company Restricted Substances List (RSL) or we know or should know violates the laws or regulations of any country or that is otherwise unsafe.

We will indemnify and hold harmless Columbia Sportswear Company, it officers, directors, employees and agents from and against all losses, damages, liabilities, penalties, fines and assessments arising from any and all claims that (i) any chemical/material/finished goods we supply does not comply with the Columbia Sportswear Company RSL or (ii) from a breach of the certification above.

Printed Name

Job Title

Date

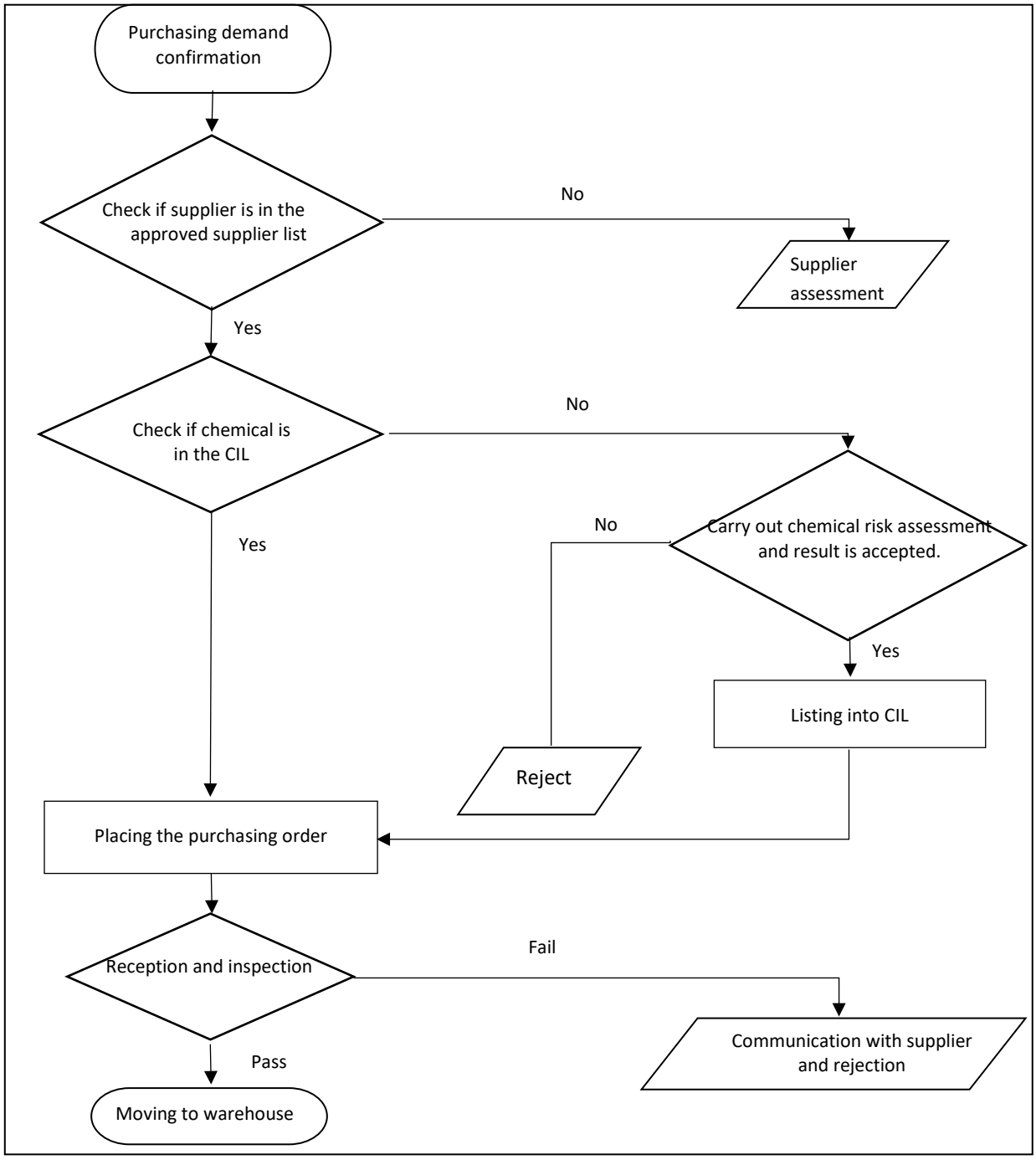
Signature

Version 3.0 – Reference from CSC Chemical Management Policy

Appendix 5: Example of Approved Supplier List

No.	Supplier name	Product category	Contact person	Phone	Mobile	Fax	E-mail	Address	Approval date	Remark
1	A Co., Ltd	Dyestuff	Jason Feng	XXXXX	XXXXX	XXX	XXX	XXXXX	Apr. 4, 2015	
2	B Co., Ltd	Finishing agents	Carl Zheng	XXXXX	XXXXX	XXX	XXX	XXXXX	Aug. 23, 2016	
3	C Enterprise	Dyestuff Auxiliary	Adam Lee	XXXXX	XXXXX	XXX	XXX	XXXXX	Sept. 12, 2016	

Appendix 6: Example of a purchasing procedure



Note: Supplier assessment can be based on approval process for qualified supplier (Section 1.5).

Appendix 7: Example of Failure Remediation Form

Must be completed in English

RSL FAILURE REMEDIATION FORM

Manufacturing Information

Date:

Finished Good Vendor (FGV) Name: FGV Code (Ex: ABC):

Raw Material Vendor (RMV) Name: RMV ID Number (CSC SMP No.):

FGV/RMV Representative: Title:

FGV/RMV Address:

Product Information

Brand: Columbia

Style No./s: SAP Material No./s (SAP Style):

Season: Fall

PO Buy Date:

Global Purchase Order No./s:

Regional Purchase Order No./s:

Number of units involved with failure: Production Status: Development Sample

Material/Chemical Information

Material PDM No. that failed:

Chemical No. (CAS No.):

Root cause (Why/Where material/chemical is used):

Testing Information

If product/material was tested enter test information. Attach copies of any test reports.

Corrective Action Plan (Attach additional pages if needed):

All corrective actions must be approved by Columbia Sportswear Company Product Safety and may include retesting, reworking or destroying product.

(E) DEFINITION AND ABBREVIATIONS

APEO	Alkylphenol Ethoxylates
CAS	Chemical Abstracts Service
CMRCIL	Carcinogenicity, mutagenicity, reproductive toxicity Chemical Inventory List
CRICMR	Chemical Responsible Individual Carcinogenicity, mutagenicity, reproductive toxicity
CSCCRI	Columbia Sportswear Company Chemical Responsible Individual
DOCCSC	Declaration of Conformity Columbia Sportswear Company
ETPDOC	Effluent Treatment Plant Declaration of Conformity
FGVETP	Finished product suppliers which directly provide products to CSC, including finished product factories, such as garment manufacturers and footwear assemblers, etc. Effluent Treatment Plant
GHSFGV	Globally Harmonized System of Classification and Labelling of Chemicals Finished product suppliers which directly provide products to CSC, including finished product factories, such as garment manufacturers and footwear assemblers, etc.
LCPFCGHS	Long-chain Perfluorinated Compound Globally Harmonized System of Classification and Labelling of Chemicals
MILLCPFC	Material Inventory List Long-chain Perfluorinated Compound
PPE	Personal Protective Equipment
RSL	Restricted Substances List
SAC	Sustainable Apparel Coalition
SOP	Standard Operating Procedure
TDS	Technical Data Sheet
UID	Unique Identification code/number
vPvB	very persistent and very bio accumulative
ZDHC	Zero Discharge of Hazardous Chemicals
GSCP*	Global Social Compliance Programme, *Audit Process and Methodology Reference Tools, Appendix 3: Reference Audit Checks*, October 2009 and *Environmental Reference Requirements*, October 2010
FLA*	Fair Labor Association, *Workplace Code of Conduct and Compliance Benchmarks*, October 2011

MRSLMIL	Manufacturing Restricted Substances List Material Inventory List
MSDSMRSL	Material Safety Data Sheet Manufacturing Restricted Substances List
RMVMSDS	Suppliers of FGVs, without supplying products directly to CSC, including textile and fabric manufacturers, such as dyeing, printing, finishing and washing mills, and footwear component manufacturers, etc. Material Safety Data Sheet
SDSRMV	Safety Data Sheet Suppliers of FGVs, without supplying products directly to CSC, including textile and fabric manufacturers, such as dyeing, printing, finishing and washing mills, and footwear component manufacturers, etc.
ODSSDS	Ozone Deleting Substances Safety Data Sheet
OIAODS	Outdoor Industry Association Ozone Deleting Substance
PBTOIA	persistent, bio accumulative and toxic Outdoor Industry Association
PDCAPBT	Plan-Do-Check-Action persistent, bio accumulative and toxic
PFOAPDCA	Perfluorooctanoic Acid Plan-Do-Check-Action
PFOS/PFOA	Perfluorooctane Sulfonate Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate

ASTM*	ASTM International
ANSI*	American National Standards Institute
ISO*	International Organization for Standardization
NFPA*	National Fire Protection Association
IBC*	International Code Council, *International Building Code*
IFC*	International Code Council, *International Fire Code*

(F) CASE STUDY – RSL FAILURE ROOT CAUSE ANALYSIS

Case Study: Using PDCA to find out the root cause of PFOA failure and set up a Corrective Action Plan / Preventive Action Plan

Factory A is a finishing mill which supplies water-proof fabric for CSC. According to the test report, a batch of fabric of waterproof jacket did not meet CSC requirements for PFOA. Factory A used PDCA approach to improve its chemical management performance.

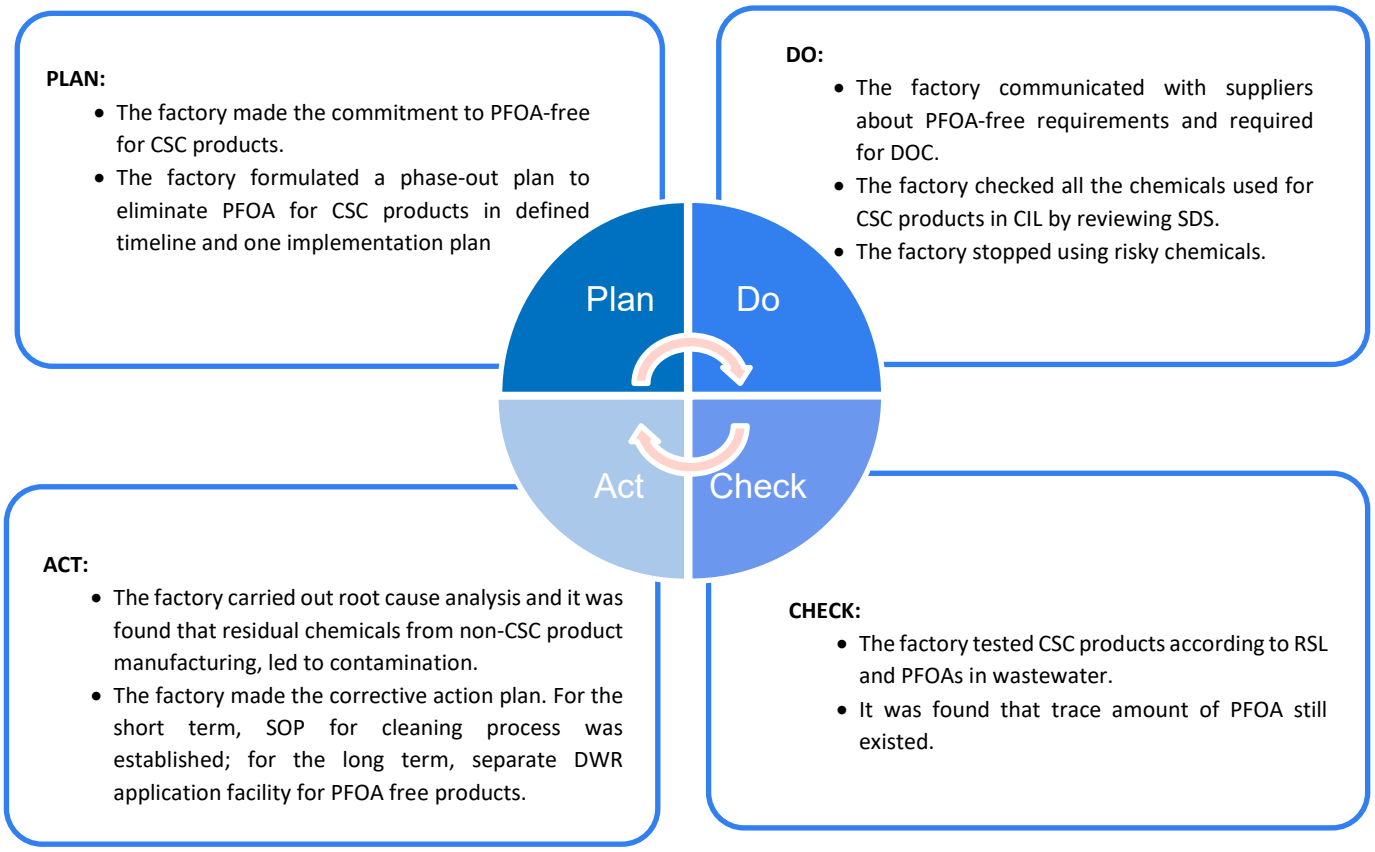


Figure 1 Example of PDCA approach

END