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INTRODUCTION TO RSL AND MRSL



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INTRODUCTION



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What you will learn

You will learn and understand

- The RSL and the MRSL
 - Definition
 - History
 - How it is updated
 - How supply chain actors adhere to requirements
- The key differences between the RSL and MRSL

THE RESTRICTED SUBSTANCES LIST (RSL)



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DEFINITION AND OVERVIEW

Definition of a Restricted Substance List

A RSL is a list of hazardous chemicals that must not be present above a certain *threshold limit* on a finished textile article.

The RSL provides information related to regulations that restrict or ban certain chemicals and substances in finished home textile, apparel, and footwear products sold and manufactured around the world.

A RSL helps brands adhere to chemicals regulations and laws.

Objectives of a Restricted Substance List

1. Ensures a brand complies with chemical content and chemical exposure laws in each country in which its products are fabricated, manufactured, processed and distributed.
2. Protects the health and safety of workers and consumers that make and use its products.
3. Reduces the use of hazardous chemicals in the apparel supply chain.

How a Restricted Substance List is organized

Most RSL's are organized into groups of chemicals defined by chemical class or the function the chemical performs.

The RSL will contain

- The CAS number if known
- The limit value allowed on the final product.
- Some will also include an acceptable test method.

A CAS number is a unique chemical identifier. CAS numbers contain digits separated into 3 groups by hyphens. 50-00-0 is the CAS of formaldehyde

How a Restricted Substance List is organized

Examples of groups of chemicals by function or class

- Colorants (aromatic amines from azo dyes and sensitizing dyes)
- Flame retardants (function)
- Solvents
- Metals
- Phthalates (chemical class)

Some brands include a section on VOLUNTARY restrictions.

Because many brands sell items above and beyond apparel and footwear, their RSL's will have different sections for different product categories such as toys, electronics, jewelry etc.

How a Restricted Substance List is organized

Ideally, an RSL includes:

- A Change Log – summarizing latest changes made
- Materials Overview – to provide a list of materials in which restricted substances are likely to be found
- Guidance on how to read and use the document
- Different limits by Age Range if applicable
 - Age Range differentiates between Babies, Children and Adults

Scope of the Restricted Substance List

The scope considers

- The finished article (leather jacket, jeans etc.)
- All the components used to make that article (e.g. leather, denim, zippers, thread, packaging, labels)
- The chemicals used in the manufacture of the components (dyes, pigments, metals, detergents, etc.)

The RSL is applicable to the brand, its suppliers and its licensees.

How a Restricted Substance List is enforced

The brand is ultimately responsible for the safety of its products. RSL's are typically enforced

- Through product testing.
- Legally binding contracts between brands and their suppliers that reflect the need for compliance with RSL requirement.

Why there are so many Restricted Substance Lists

RSL's are owned and managed by brands. There is not much alignment on a single industry-wide RSL because they are

- Designed to reflect the chemical laws in the countries where the products are manufactured and distributed.
- Designed to reflect the type of products that a company sells.
- Company culture. Some companies may only want their RSL to meet regulatory compliance whereas others may want it to exceed regulations to minimize product recalls and reduce risk.
- Company resources, cost and limited technical expertise.

HISTORY OF THE RSL

History of Restricted Substance Lists

The first RSL was introduced by H&M in 1995. But it wasn't until the early 2000's that other brands introduced RSL's as a way to ensure hazardous chemicals were not present on finished products. Many reasons existed for developing an RSL including

- As a way to minimize product recalls
- Company culture,
- To stay ahead of legislation
- Upcoming legislation

Thought process used to create a Restricted Substance List

As the RSL was developed, part of the thought process that governed the work included

- Scope of the supply chain.
- Types of chemical exposure including exposure to workers
- Hazardous chemicals that may be present in chemical formulations including by-products and contaminants
- Chemicals that were regulated in the apparel and textile industry

Introduction of AFIRM - 2004

In 2004 the Apparel and Footwear International RSL Management Group (AFIRM) was formed.

This is a group of brands committed to reducing the use and impact of harmful substances in the apparel and footwear supply chain.

Their vision is to build awareness of RSL's and provide resources for brands to self-govern the implementation of their RSL's across the apparel and footwear supply chain.

The AFIRM RSL

The AFIRM RSL is organized in the following manner:

CAS No.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
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It can be found here: <http://afirm-group.com/afirm-rsl/>

Introduction of the AAFA RSL - 2007

In 2007 the American Apparel and Footwear Association (AAFA) developed an RSL for the apparel and footwear industry.

It has updated this industry-wide RSL 17 times.

Their RSL includes materials, chemicals, and substances restricted or banned in finished home textile, apparel, and footwear products because of a regulation or law.

In each case, the RSL identifies the most restrictive regulation.

The AAFA RSL

The AAFA RSL is organized in the following manner:

CAS Number	Chemical Name/Color Index Name	Restriction /Maximum Limit on Final Product or Tested Component	Country	Regulation	Test Method	Other Countries, U.S. States that also Regulate this Substance	Comment
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It can be found here:

https://www.wewear.org/assets/1/7/RSL_v16_final_UPLOAD.pdf

Introduction of the Greenpeace Detox campaign - 2011

In 2011, Greenpeace launched its Detox campaign against the apparel and footwear industry.

The campaign required brands to make public commitments to zero discharge of hazardous chemicals by 2020. This means no hazardous waste, chemicals and pollutants will be released into

- Water
- Air
- Soil

A great emphasis has been placed on updating RSL's at least annually

UPDATING A RSL

Why a RSL needs to be updated

Brands need to abide by the law.

Brands must keep up to date with regulations because they are updated by governing bodies as more test data becomes available.

Some brands may decide an unregulated chemical should reside on their RSL for a couple of reasons:

- The chemical may be regulated in the future
- The chemical may create some safety concerns for the workers
- Mounting pressure from NGO's

Who regulates chemicals and chemical exposure?

Local governments (China, Turkey etc.), states (e.g. U.S.) or other intergovernmental bodies such as the European Union regulate most hazardous chemicals and determine a safe limit value that poses no risk.

There is no set of global chemicals regulations, which means each local government, U.S. state or intergovernmental body develops its own set of chemicals laws.

Brands must determine which chemicals reside on their RSL.

In many cases the countries in which their products are manufactured and sold will govern which chemicals reside on the RSL.

ADHERING TO THE RSL

How RSL's are implemented

Brands establish acceptable limit values on the final product of hazardous chemicals for each chemical in the RSL.

All components must comply with the limit values

Producers must implement a testing and QA program to meet the limit values.

Producers are responsible to ensure all the materials they source to manufacture the product are in compliance with

- The prohibitions, limitations and requirements described in the RSL
- The applicable laws of every country in which they are to be fabricated, manufactured, processed or distributed.

Definitions of terms used in RSL's

When RSL's are implemented, certain terms are used as part of the implementation. This is standard vocabulary.

- The **acceptable limit value** is the maximum amount of the chemical allowed on the product. This may be driven by regulations or it may be determined by the brand.
- **Prohibition**. Chemicals that may not be present in any amount on product
- **Limitations**. Chemicals that may be present in a limited amount
- **Requirements**. The rules established in the RSL, incl. limit values, test methods to determine presence of a chemical and RSL verification

The role the BRAND plays in adhering to the RSL

The **BRAND** is the organization responsible for selling the product. It could be a retailer or brand such as adidas or Levi's. They are accountable for

- Updating the RSL at least annually.
 - Tracking chemicals regulations
 - Ensuring the correct chemicals are on the RSL and the imposed limit values meet the required regulations.
- Communicating RSL requirements to suppliers and producers.
 - The brand expects their partners to ensure the chemicals and materials used to make the product do not contain chemicals present on the RSL
- Conducting training programs to educate supply chain partners in how to adhere to the RSL requirements.

Brands may also

- Identify test methods for chemical detection to be used by producers
- Implement an audit program
- Test products for RSL compliance
- Share a list of “brand approved” labs that can test for RSL compliance.
- Help build capable labs in developing countries that can test for RSL compliance
- Require producers to implement a chemical management program
- Create a failure resolution program if the product contains chemicals above the allowable limit.

The role the INTERMEDIARY plays in adhering to the RSL

The **INTERMEDIARY (SUPPLIER)** plays an intermediate role in the supply chain and an importer, licensee, agent or trader. An importer must always ensure their customers' (brands and retailers) requirements are met even if they have their own brand that may have a different set of requirements.

The intermediary is responsible for

- Delivering compliant products to the brand.
- Ensuring sourced materials and chemicals adhere to the brand RSL.

The role the PRODUCER plays in adhering to the RSL

The **PRODUCER** is the manufacturing location that produces the finished product. Producers source materials, chemicals, packaging etc. used in the manufacture of a product.

The producer is responsible for

- Adhering to the RSL and delivering compliant products to the importer or brand.
- Ensuring sourced materials and chemicals adhere to the brand RSL.

To achieve the above, a producer should have proper procedures, staff and training in place that follow “management system” principles.

The role the PRODUCER plays in adhering to the RSL (cont)

- Purchasing materials and chemicals that comply with the brand RSL.
- Ensuring all SDS's are available for every chemical purchased, and that employees are familiar with these SDS's.
- Ensuring all relevant staff members receive chemical training.
- Conducting inspections, audits and other QC practices to ensure compliance to brand RSL
- Performing lab testing of products to RSL compliance as part of RSL verification process.

The role the CHEMICAL COMPANY plays in adhering to the RSL

The CHEMICAL COMPANY is the organization that sells the chemical formulations used to manufacture the product. It may be a chemical manufacturer or a distributor. It may have a robust quality assurance program in place that tests incoming chemical substances for contaminants and hazardous chemicals, or it may not. Their role includes

- Meeting all brand RSL's
- Identifying and complying with all requirements set out by governing bodies and legislations, such as Reach
- Track and comply with the list of SVHC's and potential SVHC's set out by governing bodies and legislations, such as Reach

The role the CHEMICAL COMPANY plays in adhering to the RSL

- Determine if any chemical substances in formulations will violate the RSL if used in the brand's products.
- If a formulation contains a hazardous chemical, its concentration must be less than the limit value threshold identified in the brand RSL.
- Conduct laboratory analytical testing on formulations and incoming chemicals substances.
- Provide a certificate of analysis as part of a RSL verification process.

THE MANUFACTURING RESTRICTED SUBSTANCES LIST (RSL)



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DEFINITION AND OVERVIEW

Definition of a Manufacturing Restricted Substance List (MRSL)

A MRSL is a list of chemical substances banned from intentional use in facilities that process materials and trims.

- **Intentional use** means the chemical is not intentionally added to the formulation but may be present as a by-product or contaminant.

The MRSL contains threshold limit values of hazardous chemicals in chemical formulations.

The MRSL is not driven by regulatory compliance but takes a broader approach to restricting and eliminating hazardous chemicals

NOTE - A chemical formulation is a propriety mixture of individual chemical substances that is available to purchase under a trade name from chemical suppliers.

Definition of a Manufacturing Restricted Substance List (MRSL)

There should be no intentional use of any chemical substance on the MRSL in factories that process materials used to produce apparel and footwear.

The threshold limits of chemical substances are applied to commercially available chemical formulations and NOT finished apparel or footwear products.

If hazardous chemicals are restricted before they enter the manufacturing facility, they should not be present on the finished product.

Objectives of a Manufacturing Restricted Substance List (MRSL)

1. Helps brands meet the goal of zero discharge of hazardous chemicals.
2. Protects the health and safety of the environment, workers and consumers that make and handle products.
3. Reduces the use of hazardous chemicals in supply chains.
4. Drives a broader approach to restricting and eliminating chemicals in supply chains through an integrated chemical management system.

How a Manufacturing Restricted Substance List is organized

MRSLs are split into groups based on chemical classes or function. These include, but are not limited to

- The 11 classes of chemical substances in the Detox campaign
- Additional regulated dyes such as sensitizers
- Polycyclic aromatic hydrocarbons
- Long chain Perfluorinated compounds
- Volatile Organic compounds

Only a few apparel brands have developed their own MRSL and they are mostly based on the ZDHC MRSL.

All the chemicals listed on the MRSL are subject to a usage ban in production facilities.

How a Manufacturing Restricted Substance List is organized

The 11 classes of chemical substances in the Detox campaign are:

- Alkylphenols
- Phthalates
- Brominated and chlorinated flame retardants
- Azo dyes
- Organotin compounds
- Perfluorinated chemicals
- Chlorobenzenes
- Chlorinated solvents
- Chlorophenols
- Short chain chlorinated paraffins
- Heavy metals such as cadmium, lead, mercury and chromium (VI)

How a Manufacturing Restricted Substance List is organized

The MRSL will contain the CAS number if known and the chemical supplier commercial formulation limit.

Additional useful information may include

- Where in the supply chain the chemical may reside,
- Its functional use
- Analytical method used for detection.

Ideally, an MRSL is part of an integrated Chemical Management System Manual or Guidance

Scope of a Manufacturing Restricted Substance List (MRSL)

A MRSL considers any chemical that may enter the manufacturing facility rather than chemicals that may be present on finished products. Includes

- Chemicals used in manufacturing but not present in the finished product
- Chemicals on the finished article above a certain limit value threshold
- Chemicals used to clean or maintain equipment
- Janitorial chemicals
- Chemicals present in laboratories
- Wastewater treatment chemicals
- Pest management chemicals

Scope of a Manufacturing Restricted Substance List (MRSL)

The scope is applicable to the chemical substances and formulations used to manufacture the components and therefore the finished article.

- Apparel and non-apparel products such as footwear
- Accessories
- Fabrics including leather
- Chemicals and chemical formulations
- Materials
- Sundries such as zippers, buttons and labels (not metal trims)
- Packaging

How a Manufacturing Restricted Substance List (MRSL) is enforced

Through:

- Testing of chemical formulations
- Vendor monitoring
- Wastewater testing
- RSL testing (product)
- Some brands require chemical management systems are in place at the chemical company and producer
- A chemical company may also provide a list of ZDHC MRSL compliant formulations

HISTORY OF THE MRSL

History of MRSL's

There are fewer MRSL's compared to RSL's.

ZDHC catalyzed the development and implementation of MRSL's. Their focus is to restrict chemicals at the beginning of the supply chain rather than clean up hazardous waste at the end of the supply chain.

They want brands to adopt and implement a consistent tool and approach to harmonize and simplify the complexity of chemicals management.

However, there are a few brands that have their own MRSL's.

Creating the ZDHC MRSL

ZDHC brands and a technical advisory committee from the chemical industry created the ZDHC MRSL with 3rd party experts critiquing the work.

The thought process that governed the work included

- Ensuring most of the the GP 11 classes of chemicals were included.
- Including chemicals that brands had already eliminated to keep up with industry standards.
- Allowing for chemical impurities that may exist in formulations.
- Providing information on the function of the chemical and its location in the supply chain.

The ZDHC MRSL

- Includes chemicals used in textile, synthetic leather and leather processing
- Includes 2 groups of chemicals
 - Chemicals banned from intentional use in facilities that manufacture textile products
 - Chemicals that are restricted to certain concentration levels in chemical formulations. Limits ban intentional use but allow for impurities.
- Broader than the 11 classes identified by Greenpeace

The ZDHC MRSL

The ZDHC MRSL is organized in the following manner:

CAS No.	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit	Potential Uses in Apparel and Footwear Textile Processing	General Techniques for Analysing Chemicals
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It can be found here:

<http://www.roadmaptozero.com/programme/manufacturing-restricted-substances-list-mrsl-conformity-guidance/>

The Greenpeace MRSL

- Includes a very broad list of hazardous chemicals, some of which are not used in textile, synthetic leather and leather processing
 - An example is the group of petroleum distillates and related compounds
- Does not include function of the chemical
- Does not include threshold limit value
 - Assumes hazardous chemicals can not be present even as contaminants or by-products
- Significantly broader than the original 11 classes identified in the Greenpeace Detox campaign

Levi Strauss & Co. MRSL

- Scope includes mills, printers, cut and sew, finishers, leather, accessories and footwear.
- Broader than the 11 classes identified by Greenpeace
- Requires tighter threshold limit values on some chemicals compared to ZDHC.
- Part of their overall chemical management strategy
- Similar to ZDHC

H&M MRSL

- Some chemicals applicable to whole production site and not just H&M production lines.
- Other have until 2020 to be applicable to whole production site
- Threshold limit value and test method written as an appendix
- Includes presence of chemicals in formulations and wastewater
- Broader than the 11 classes identified by Greenpeace
- Different limit threshold values compared to ZDHC

Nike MRSL

- MRSL has been in existence for 10 years although they have recently adopted the ZDHC MRSL
- Expanded their efforts to include metal trims and polymers not covered by ZDHC MRSL.
 - The chemicals are mainly used as solvents.

UPDATING A MRSL

Do MRSL's need to be updated?

The MRSL is not intended to help brands adhere to chemicals regulations. Therefore it does not need to be updated as frequently as an RSL.

Reasons why an MRSL should be updated.

- If a safer alternative can replace a hazardous chemical, that hazardous chemical can be added to the MRSL
- Adding hazardous chemicals that were previously not well understood or did not have enough data.
- Additional regulations

ADHERING TO THE MRSL

How MRSL's are implemented

Adhering to the MRSL resides with chemical companies because threshold limit values are aimed at chemical formulations and not textile products.

Producers are responsible to ensure that all chemicals used to manufacture products are in compliance with the MRSL.

Each actor in the supply chain plays a different role in adhering to the MRSL.

The chemical industry is working with ZDHC to create a database that will contain a list of formulations that meet the ZDHC MRSL. (A positive list)

The role the BRAND plays in adhering to the MRSL

The **BRAND** is responsible for

- Updating the MRSL if they have their own version or adopting the updated version of the ZDHC MRSL if they use this version.
- Communicating MRSL requirements to producers
- Implementing training programs that educate supply chain partners in how to adhere to MRSL requirements.
- Developing a verification and documentation process to ensure purchased chemical formulations meet established limits.
 - Producers purchase chemicals, however, some brands may communicate MRSL requirements directly to key chemical companies

Brands may also

- Identify test methods, to test for the presence of hazardous chemicals in chemical formulations and sometimes wastewater.
- Implement an audit program
- Share a list of “brand approved” labs that can test for MRSL compliance.
- Help build where needed, capable labs in developing countries that can test for MRSL compliance
- Require producers to implement a chemical management program that complies with the MRSL.

The role the INTERMEDIARY plays in adhering to the MRSL

The **INTERMEDIARY** plays an intermediate role in the supply chain and an importer, licensee, agent or trader. An importer must always ensure their customers' (brands and retailers) requirements are met even if they have their own brand that may have a different set of requirements.

The intermediary is responsible for

- Delivering MRSL compliant products to the brand.
- Ensuring sourced materials and chemicals adhere to the brand MRSL.

The role the PRODUCER plays in adhering to the MRSL

The **PRODUCER** is the manufacturing location that produces the finished product. Producers source materials, chemicals, packaging etc. used in the manufacture of a product.

Producers may contract out to other entities to source materials, chemicals, packaging etc. that will be used in the manufacture of the brand product.

The role of the producer is

- Adhere to the MRSL and deliver compliant products to the brand.
- If a producer sources materials and chemicals to manufacture the product, he is responsible for ensuring these materials and chemicals adhere to the brand MRSL.

The role the PRODUCER plays in adhering to the MRSL (cont)

- Implement a chemicals management approach at the factory that includes adherence to the MRSL.
- Purchase materials and chemicals that comply with the MRSL.
- Ensure relevant staff members receive chemical training.
- Conduct inspections, audits and other QC practices to ensure compliance to brand MRSL.

The role the CHEMICAL COMPANY plays in adhering to the MRSL

The CHEMICAL COMPANY is the organization that sells the chemical formulations used to manufacture the product. It may be a chemical manufacturer or a distributor. It may have a robust quality assurance program in place that tests incoming chemical substances for contaminants and hazardous chemicals, or it may not. Their role includes

Their role is to

- Meet brand MRSL's even if they are different from one another.
- NOT intentionally use or add chemical substances on the MRSL to formulations

The role the CHEMICAL COMPANY plays in adhering to the MRSL

- Source chemical substances or formulations from reputable chemical suppliers so that impurities will be below MRSL threshold.
- If a formulation contains a hazardous chemical, it must be present in an amount less than the limit value threshold identified in the MRSL.
- Conduct laboratory analytical testing on formulations and incoming chemicals substances.
- Provide a certificate of analysis as part of a MRSL verification process.
- Review brand MRSL's to determine if any chemical substances in chemical formulations has the potential to violate the MRSL

DIFFERENCE BETWEEN RSL AND MRSL

The role the CHEMICAL COMPANY plays in adhering to the MRSL

RSL	MRSL
List of hazardous chemicals that may not be present above a certain threshold on a finished article	List of chemical substances subject to a usage ban
Compliance document. Driven by regulations. Some RSL's have chemicals that are not regulated	Beyond compliance. Considers chemicals that are not yet regulated. Not driven by regulatory compliance
Used by brands to meet regulations and obey the law	Used to help achieve zero discharge of hazardous chemicals
Only concerned with chemicals on finished articles	Concerned with all chemicals used in a facility
Limit value of chemical is applicable to the finished products	Limit value of chemical is applicable to chemical formulations
Enforced by product testing	Enforced by testing formulations, finished products and wastewater
Numerous RSL's available today	Fewer MRSL's. Greater opportunity to align to 1 common tool
Updated regularly as chemicals laws are updated	Does not need to be updated as regularly because it is not driven by regulations
Implementation does not include a chemicals management system	Implementation include a chemicals management system

COMBINING RSL AND MRSL

Some Brands are Combining the RSL and MRSL

- Trend towards combining the RSL and MRSL into a single document
- This document should contain the following information
 - RSL limit of the restricted chemical allowable on a product
 - MRSL limit of the restricted chemical allowable in a chemical formulation
 - MRSL limit of the restricted chemical in wastewater
 - Acceptable test methods
- This document should
 - Provide clarity on the different functions of RSL and MRSL
 - Include all chemicals covering both RSL and MRSL
 - Include clear instructions on how to use the combined document

Combined RSL and MRSL

Examples

Substance	CAS-nr.	Detection Limit		Test Method				STATUS Banned/phase-out
		Input: Chemical Formulations / Output: Waste Water (µg/l)	Output: Waste Water Sludge (mg/kg)	Input: Chemical Formulations	Output: Waste water	Output: Sludge	*Output: Products	

Inadmissible substances/substance groups	CAS no.	EMS		Testing methods/limits of quantitation		RSL	ZDHC-MRSL	Coop limit value (total content) (A / B / C)
		Waste water Detection limits (examples of common methods)	Sludge Detection limits (examples of common methods)	Limit of quantitation, product (partly matrix-dependent and variable)	Method of quantitation, product:	Basic requirement Production	Chemical Input / Formulation Limit	

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your attention !
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