



sustainable
chemistry

Uncover hidden chemical hazards: How to build transparency in textiles



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Introduction: The hidden chemical hazards putting your business at risk

Behind every textile product lies a complex network of chemicals used to dye, coat, finish, and shape the materials, apparel, and footwear we rely on every day.

While many of these substances are safe and functional, others pose risks to human health and the environment, yet are hard to detect. These problematic substances can harm workers, consumers, and ecosystems, while for businesses, they can jeopardize compliance, disrupt product innovation, damage brand reputation, and erode consumer trust.

So why do **problematic substances like per- and polyfluoroalkyl substances (PFAS), phthalates, and azo dyes still appear in textile products**, even when certifications and supplier declarations are in place?

The answer lies in a lack of visibility.

Chemical transparency is your most effective safeguard.

Preventing hazardous chemicals from entering your products requires more than just surface-level information. You need a deeper understanding of the chemicals used throughout your entire value chain, including those within your **products** and those used in the **manufacturing process**.

At Enhesa Sustainable Chemistry, we define chemical transparency as more than identifying what's present. It means:

- Knowing **which chemicals are used in your products and processes**
- Understanding their **characteristics and potential impacts**
- Being aware of **whether they're currently regulated or restricted, or likely to be soon**

This doesn't mean suppliers must disclose every proprietary ingredient. Confidentiality, which is essential for maintaining strong business relationships, and transparency can coexist. With the right tools, textile brands can gain **the visibility needed, even when specific ingredients are redacted**.

But challenges remain. Rapidly evolving regulations, inconsistent supplier responses, and a limited view of process chemicals all make it difficult to get the full picture. These gaps increase the risk of non-compliance and can slow progress towards safer, more sustainable product innovation.



Why it matters

Even with certifications, testing, and supplier disclosures in place, **substances of concern still find their way into textile products**. Visibility gaps persist, exposing brands to risk.

71%

of companies say **inconsistent supplier responses** are a barrier to supply chain transparency

43%

report **not fully understanding the chemical make-up of their products**

Source: Enhesa Chemicals Management & Sustainable Chemistry Survey, 2024

Impact ► This limits their ability to achieve compliance, protect the environment, workers and consumers, and threatens brand trust.

As regulations evolve and scrutiny increases, **chemical transparency is becoming a key differentiator** for forward-looking textile brands.

What this guide covers

This guide outlines **six practical strategies** that leading textile, apparel, and footwear companies use to:

- Uncover hidden substances of concern
- Gain visibility into the chemicals in products and processes
- Design safer, more sustainable products

Because without chemical transparency, **compliance becomes harder, as does the path to safer, more sustainable innovation**.

| The risk of relying solely on certifications

The textile industry has embraced certification to drive safer, more sustainable practices, and certifications like GOTS, ZDHC, and OEKO-TEX play a vital role. However, most certifications focus only on certain process steps, a limited set of known problematic substances, or narrow hazard information and testing scopes.

They may not provide full visibility into all chemicals used, or insight into substances that could be regulated in the future.

Chemical transparency complements certifications by revealing hidden chemical hazards that certifications may overlook, helping you with your compliance efforts today while preparing your business for emerging regulatory restrictions.



1 Know what's inside, then screen smarter

Chemical transparency starts by identifying what you already have, so you can screen more strategically.

Building a foundation for chemical transparency starts with understanding what chemicals are present in your products and processes.

That's because most compliance priorities, like EU REACH and California Proposition 65, require a clear view of the substances you use. You can't check for alignment with these core regulatory lists if you don't know what you're screening against.

Most textile companies rely on two established sources to gather that insight, though both have limitations:

- **Supplier declarations**, which offer partial, point-in-time data. These may be outdated, or incomplete, especially as upstream suppliers often lack full visibility.
- **Testing**, which can be valuable but is often expensive, is conducted too late to inform design decisions, and is limited to substances already identified — meaning unknown emerging hazards can go undetected.

These methods can help establish a baseline, but they aren't enough on their own.

You can work towards full chemical transparency in several ways. In the following sections, we'll explore key strategies, including identifying substances of concern, engaging suppliers,



and assessing chemical hazards. But one of the most accessible and actionable first steps is screening what you do know against lists that will help you anticipate potential hidden issues.

How to screen smarter: Go beyond the basics

Most brands begin with **regulatory lists**, but leading companies go further. They use screening not just to meet minimum requirements, but to anticipate risks and future-proof their products. This means screening across a broader range of list types to uncover hidden risks.

These include:

- **Market-driven standards:** e.g., ZDHC MRSL, OEKO-TEX®, GOTS (restricted substances)
- **Brand-specific RSLs:** Developed by companies like Nike, VF Corp, H&M
- **Authoritative hazard lists:** Such as IARC and ECHA SVHC, and REACH CLP
- **Watch lists:** Such as CHEMSEC and Green Science Policy Institute Six Classes

This broader screening approach helps:

- Flag substances not yet regulated but gaining attention
- Identify chemicals targeted by NGOs or advocacy groups
- See which substances are already flagged by competitors for phase-out



Tip: Make sure your screening includes chemical groups, especially substances of concern widely used in textile products, such as PFAS, bisphenols, and phthalates.





What our experts say

The most forward-looking brands aren't just tracking what's regulated and restricted today, they're preparing for what's coming. Screening against diverse types of lists helps anticipate future restrictions and stay ahead of chemical regulations.

To turn insight into action, they develop internal Restricted Substances Lists (RSLs) based on screening results, and cascade these across their supply chain to align suppliers with clear safety and sustainability expectations. This drives transparency, reduces risk, and strengthens consumer trust.

Ziba Hosseini, Ph.D., Toxicology Specialist, Enhesa Sustainable Chemistry

How Enhesa Sustainable Chemistry can help



Chemical Assess enables rapid chemical list screening against **more than 600 lists**, including regulatory, authoritative lists, watch lists, and chemical groups relevant to the textiles industry.

- The platform also **incorporates expanded lists into the screening process**, so when searching for chemicals on your list of interest, results include those for the specific substance as well as for broader chemical groups and families. This ensures comprehensive coverage and flags any potential issues across related substances to give you the full picture.

2. Find what's hiding in your process chemistry

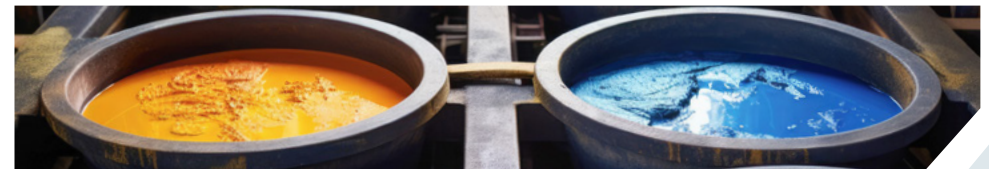
Where hazardous chemicals hide – and why you might not see them.

When it comes to chemical transparency, most brands focus on what's in the final product. But many problematic chemicals never appear in product specifications, safety data sheets (SDSs), or test reports because they're introduced during the manufacturing process.

From dyes and finishes to lubricants and coatings, **process chemicals are a major source of hidden risks**. Even brands that screen against priority regulatory lists or use certifications can miss hidden chemical inputs that weren't disclosed — or even known — by suppliers.

This makes them difficult to detect unless you know where and how to look.

That's why **visibility into process chemistry is a critical next step to identifying problematic chemicals**. By learning where chemicals of concern typically enter textile products, you can spot exposure points and focus your chemical transparency efforts. This chapter explores where chemicals can slip through unnoticed.



Where to look: Substances of concern widely used in textiles



PFAS



Phthalates



Formaldehyde



Azo dyes



Heavy metals

Want to explore these substances further?

► [View the infographic in full](#)

Chemical group	Common uses	Concerns
PFAS	Waterproof coatings, stain resistance	Persistent, bioaccumulative, linked to cancer and immune harm
Phthalates	Soft plastic prints, synthetic leather	Reproductive toxicity, especially in children
Formaldehyde	Wrinkle-free finishes, anti-mildew	Known carcinogen, respiratory irritation
Azo dyes	Bright colorants (reds, blacks, oranges)	Can break down into carcinogenic amines
Heavy metals	Pigments, leather tanning	Neurotoxicity, organ damage, environmental contamination



| Real-world example

A global apparel brand discovered PFAS in its products, not from the fabric used, but from grease used on manufacturing machinery during production. Certification didn't catch it, but greater visibility into the brand's process chemistry did.

What's next: Unlocking supplier insight

Understanding what happens during production is critical. But to uncover the full picture — including chemicals introduced further upstream — you need insight from the people who handle and select the chemical inputs as your products take shape: your suppliers.

In the next chapter, we'll explore how to engage your supply chain more effectively, so you can surface critical chemical data and fill in the gaps to build chemical transparency for your business.



3. Engage your suppliers to unlock transparency

Why better collaboration leads to better chemical insight.

Much of your success in gaining chemical transparency will depend on what your suppliers can tell you, and what they know about chemical input. That's why leading brands treat **supplier engagement** not as a box to check, but as **a core part of chemical management strategy**.

In this chapter, you'll learn how to work more closely — and more effectively — with your suppliers to identify hidden hazards, build trust, and improve data quality across your value chain.

Why supplier engagement is essential

Most chemical hazards originate not in the materials you specify but in the dyes, auxiliaries, treatments, and finishes introduced by suppliers and sub-suppliers. These inputs are often:

- Not disclosed on SDSs
- Outside the scope of certifications
- Not fully known by direct suppliers, especially when sub-suppliers are involved

That's why supplier engagement is so important. By working closely with your suppliers and encouraging them to engage their own networks, you can begin to uncover chemical inputs that would otherwise remain hidden. This **collaboration helps build a chain of transparency** that goes beyond surface-level documentation.



What our experts say

Brands often rely heavily on supplier certifications. But in many cases, these programs require very little chemical transparency. In our experience of reviewing disclosures needed for some of the more stringent certification programs, we frequently find missing ingredients or undisclosed impurities.

Colleen McLoughlin, Ph.D. DABT, E.R.T., Director of Toxicology and Interdisciplinary Sciences, Enhesa Sustainable Chemistry

How to engage suppliers to improve chemical transparency

Five steps to strengthen supplier engagement

Based on our work with leading textile brands, these best practices can help you overcome common barriers to transparency in the supply chain.

1 Define your "why"

Clarify your goals — whether it's achieving compliance, innovating safer products, strengthening brand trust, or all three. Clear intent sets the tone for stronger collaboration.

2 Find your starting point

Focus your efforts for the greatest impact. You could start with new product lines, high-volume items, or key suppliers.

3 Be clear in your requests

Specify exactly what information you need, how it will be used, and who will see it. Transparent communication builds trust and leads to higher response rates.



4 Choose your method

You might request full ingredient disclosure or develop your own Restricted Substances List (RSL) to communicate expectations to suppliers. The right method for you depends on your purpose.

5 Pilot and empower suppliers

Start with one or a small group of suppliers to test your engagement process. Use tools and training, such as those provided by Supply Chain Connect, to facilitate engagement and scale up.



Key takeaway: Understanding process chemistry — and engaging your supply chain — is a critical step towards chemical transparency. It's how you uncover risks that lists and certifications alone can't reveal.

How Enhesa Sustainable Chemistry can help



Supply Chain Connect makes it simple to collect detailed chemical information from an unlimited number of suppliers in a consistent, secure format, while protecting your suppliers' proprietary data. This is especially critical for identifying process chemicals that aren't always captured in documentation and where you might have risk.



Chemical Assess enables brands to rapidly evaluate chemicals across 24 toxicological endpoints, helping you identify potential issues quickly, even at scale.



4. Make chemical transparency a cross-functional priority

Chemical transparency works best when everyone shares responsibility.

To make informed decisions about the chemicals in your products, visibility needs to extend beyond regulatory teams. From sourcing and product development to sustainability and compliance, **every team plays a role in identifying and managing chemical risks** — and needs access to reliable, consistent information.

Why cross-functional collaboration matters

Chemical decisions happen across your business. Whether you're selecting suppliers, designing new products, reformulating materials, or preparing compliance statements, each team brings a different lens — and different priorities.

But progress slows when teams work in silos. One group may focus on regulatory risk, another on environmental, social, and governance (ESG) goals, and another on product performance. Without shared access to chemical data, decisions are made in isolation, increasing the risk of misalignment or missed hazards.

To move faster and reduce risk, chemical transparency needs to be a cross-functional priority supported by shared standards and a single source of truth.



How Enhesa Sustainable Chemistry can help



Chemical Assess provides expert-verified chemical hazard data in a simple traffic light dashboard, so teams across your business can work from the same easy-to-use, reliable information. Customizable views let teams focus on their specific priorities, whether that's target regulatory lists, other list types, or key hazard indicators.



What our experts say

Imagine every team — from sourcing, to compliance, to product development, and sustainability — working from the same chemical data. When teams align, better decisions happen faster and that chemical transparency makes compliance and smarter, safer innovation easier.

**Betsy Murry, Director of Products and Programs,
Enhesa Sustainable Chemistry**

5. Assess hazards early to get ahead

Integrate chemical hazard assessments into your sourcing and innovation process to build safer, more transparent products from the start.

Achieving chemical transparency goes beyond lists of ingredients. It's about understanding the characteristics and **potential risks of your chemicals**, before those hazards are locked into your products. That's where chemical hazard assessments (CHA) come in.

Why they matter

CHAs help brands evaluate chemicals and uncover potential health and environmental impacts early in the process, even when full ingredient details aren't available or substances aren't yet regulated.

By embedding hazard insights into sourcing, supplier engagement, or product design, you gain a clearer view of your chemical landscape and reduce the risk of introducing problematic substances.

While most Restricted Substances Lists (RSLs) focus on known, high-profile hazards, CHAs help you stay ahead, proactively identifying risks before they're restricted.



The benefits of CHAs

CHAs enable brands to:

- Proactively evaluate risks beyond current regulations
- Fill visibility gaps when supplier data is limited
- Make informed decisions based on hazard potential, not just compliance
- Anticipate emerging risks through horizon scanning
- Reduce reliance on downstream controls like testing

Used alongside smarter chemical list screening strategy, CHAs take you beyond surface-level transparency, helping you uncover risks that might otherwise go unnoticed.

Use CHAs early – before risk is locked in

CHAs are most effective when integrated early — before materials are finalized, suppliers are locked in, or formulations are scaled.

Whether you're evaluating new coatings, adhesives, or dyeing agents, assessing hazard profiles upfront helps prevent hidden substances from entering your products from the start.

This is especially valuable when working with redacted supplier data. Even when ingredient details are limited, CHAS can provide actionable insights for decision-making.



Did you know?

Dermal sensitization is an emerging concern for the textiles sector. Leading brands are increasingly evaluating this toxicological endpoint not only in finished products to protect consumers, but also across manufacturing processes, to help prevent sensitization in workers exposed during production.



What our experts say

Hazard assessments give textile brands a head start, whether evaluating new materials or improving transparency in those already in use. By understanding chemical impacts early and deeply, brands can lead with safer, more intentional choices that protect people, workers, and the environment.

Colleen McLoughlin, Ph.D. DABT, E.R.T., Director of Toxicology and Interdisciplinary Sciences, Enhesa Sustainable Chemistry

How Enhesa Sustainable Chemistry can help



Chemical Assess enables your teams to evaluate your chemicals across 24 toxicological endpoints. With deep coverage of substances commonly used in textiles, including dyes, coatings, and finishes, it supports chemical transparency even when ingredient details are redacted.

Our robust chemical hazard database, built from years of experience in textile chemistry, enables early-stage screening and safer innovation, helping you identify hidden risks and make confident decisions that move beyond compliance.



6 Turn chemical transparency into your competitive advantage

Innovation, confident sustainability claims, and stronger brand trust all start with visibility.

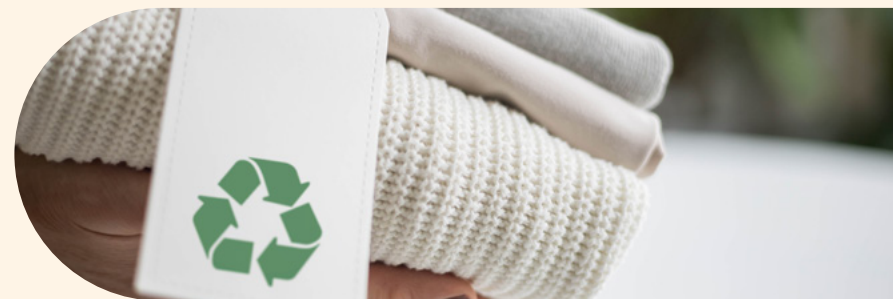
Chemical transparency does more than support compliance. It unlocks strategic value.

With clear visibility into the chemicals used in your products and processes, your organization can:

- **Launch new products faster**, with fewer reformulations and late-stage surprises
- **Back up sustainability claims** with credible, traceable data
- **Design with safer materials** from the outset
- **Strengthen trust** with consumers, regulators, and investors
- **Accelerate time-to-market** by reducing the uncertainty in sourcing and development

Why it matters now

Textile and apparel brands, in particular, face growing pressure to deliver on safety and sustainability, without compromising product performance or speed to market. Transparency is the enabler. By embedding chemical insight into design and sourcing workflows, brands can gain both agility and credibility, turning chemicals management into a strategic advantage.



| Real-world example

From regulatory minimums to brand leadership

A global apparel brand known for its commitment to wellness and sustainability recognized that meeting regulatory minimums wasn't enough. To deliver on its brand promise, it needed complete visibility into the chemicals used throughout its complex global supply chain.

The challenge: It lacked chemical hazard information to make confident, proactive material choices.

By combining **Supply Chain Connect** to collect comprehensive chemical data from its suppliers with **Chemical Assess** to evaluate hazard profiles, the brand gained a new level of chemical insight.

This allowed it to:

- Make proactive, informed sourcing decisions
- Avoid harmful substances before they trigger compliance or reputational risks
- Deliver products that meet both performance expectations and ambitious sustainability targets

The result: Safer products, stronger brand equity, and a future-proofed approach to chemicals management.





How Enhesa Sustainable Chemistry can help

Throughout this guide, you've seen how leading textile and apparel brands are uncovering hidden chemical hazards, improving supply chain insight, and making safer, more sustainable choices.

Enhesa Sustainable Chemistry is here to help you do the same — with expert-powered tools and toxicology-backed data that bring clarity to complexity and confidence to your decisions.

Whether you're just starting to build transparency into your sourcing and design workflows, or ready to scale a robust chemicals management strategy, we offer proven solutions to support your goals:

We're here to support your journey, wherever you start.

[Book a demo](#) or [talk to our team](#) to explore how we can support your next step toward smarter, safer innovation.



Chemical Assess

Rapidly screen your chemical inventory against 600+ regulatory, market, and hazard lists — including chemical groups — and evaluate substances across 24 toxicological endpoints.



Supply Chain Connect

Collect secure, standardized chemical data from any number of suppliers — even when ingredients are redacted — to gain visibility into process chemistry and upstream risks.



Chemical Research

A powerful, searchable database of scientific, toxicological, and hazard data to help you understand the safety impacts of your chemicals in detail.



Conclusion: Transparency drives confidence

Chemical hazards may be hidden, but their business impact is very real.

The good news? You can take control.

With the right data, tools, and strategies, textile companies can:

- ✓ Identify and phase out problematic substances
- ✓ Avoid costly disruptions and reputational exposure
- ✓ Build safer, more sustainable products from the start

Certifications validate what's already known.

Chemical transparency prepares you for what's next.





Ready to start seeing the full picture?

Uncover what's hiding in your products, stay ahead of evolving regulations, and design safer, more sustainable materials — with expert support at every step.

Not sure where to begin?

We can help assess your readiness and create a roadmap - at your pace.

[Ask our experts](#)



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Achieve **compliance**, manage **risk**, and drive **sustainability**.