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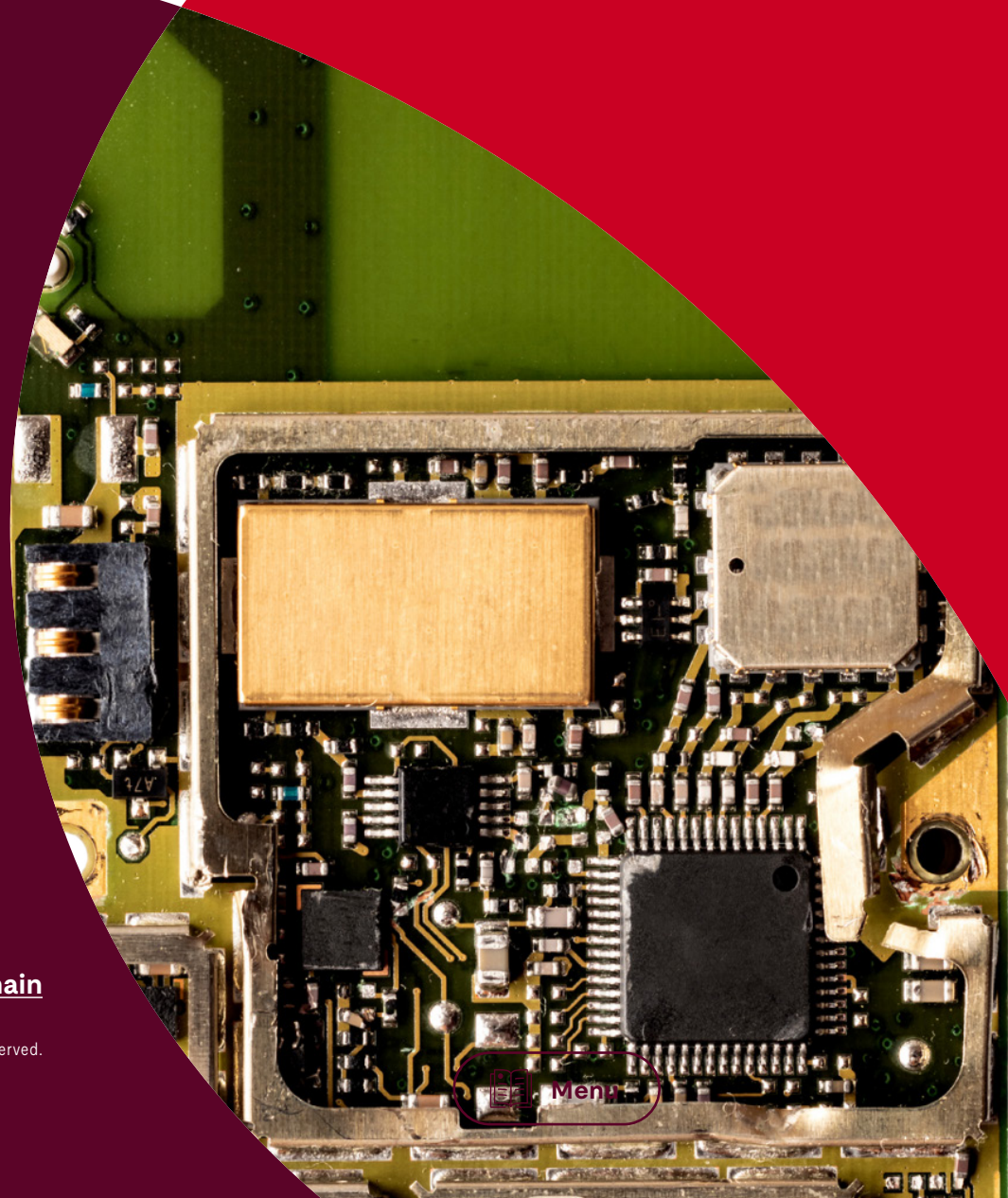
Managing chemical components

In cell phones, computers and other consumer electronics

Let’s go



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Management of sustainability, compliance, environmental, health and safety data relating to the consumer electronics supply chain is a complex and critical challenge.

Chemicals are the building blocks for all materials, and the impacts of chemical regulations and strategies can extend beyond the chemicals, through raw materials, and through to the finished goods themselves. However, retailers and manufacturers are moving beyond these regulatory requirements to reduce potential environmental and human health risks around chemicals of concern. Why? Because combining detailed product knowledge, supply chain information and a broad perspective on local and global regulations enables companies to effectively mitigate risk, protect human health and the environment, and navigate diverse market entry requirements.

Chemical regulations exist to ensure chemicals sold and used in everyday products do not pose a significant risk to human health or the environment throughout a chemical's life cycle. For example, tens of thousands of chemicals are registered under the European Union's Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) legislation, making large amounts of information available about a chemical's intrinsic properties, uses and associated risks. Making this information available to the supply chain is essential for the safe use of chemicals, as more than 95% of manufactured goods are composed of chemicals at some level. The Securities and Exchange Commissio (SEC) may incorporate many or all of these into its new rules.[1]

[1] https://icca-chem.org/wp-content/uploads/2020/05/ICCA-Building-Technology-Roadmap-Executive-Summary.pdf

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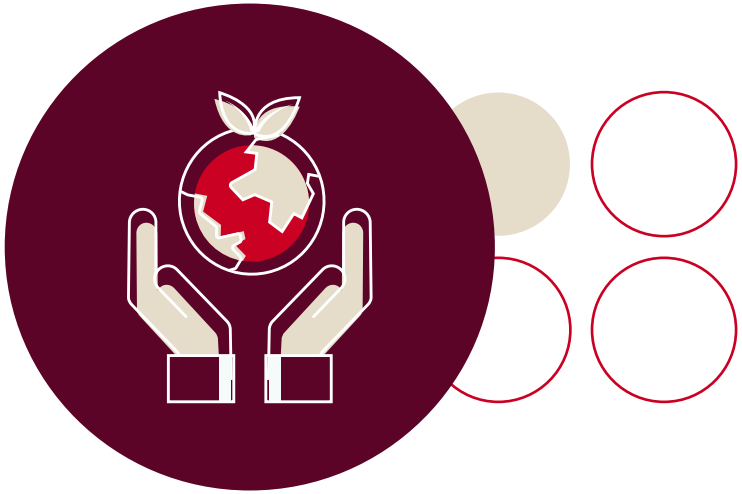
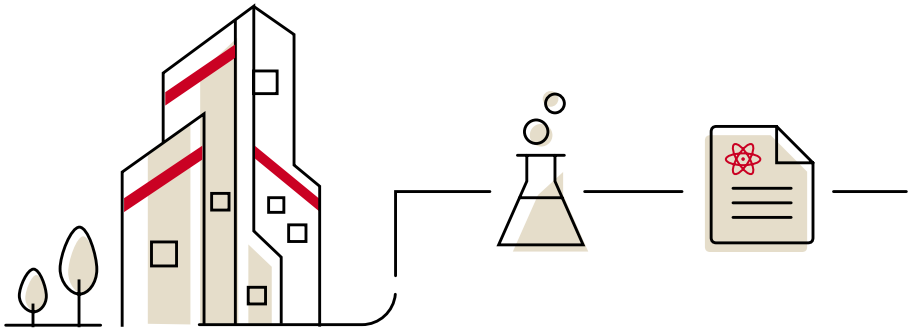
Establishing programs that reduce or eliminate certain chemicals from your supply chain, manufacturing processes and products is critical to helping increase the safety of consumers and protection of our planet.





One of the greatest challenges organizations face in managing chemical policies is the collection of information from suppliers. Historically, organizations have relied on email, spreadsheets or documents to collect information. This approach creates security concerns around the protection of intellectual property and critical business information. Additionally, the manual process of collecting and sharing information often leads to limited responses from suppliers and data quality issues, ultimately leaving data gaps that are a concern for many organizations.

Furthermore, as regulations evolve and expand, and more information becomes required, organizations find themselves continually repeating the outreach to suppliers in order to keep up with the latest requirements.

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Accelerating trends in the chemicals and materials industry

What can you do to limit your risk of market entry barriers, help protect the health of your consumers and safeguard the sustainability of the planet? Effectively manage your chemical footprint from raw material to final product.

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What a chemical data management system can do

A chemical data management system can effectively manage your chemical footprint, identify areas of risk, help you mitigate those risks, and help support sustainable development and growth. A chemical data management system is a set of policies and procedures that enable a company to properly and safely handle the chemicals it interacts with. This includes a systemic approach to procuring, storing, using and disposing of chemicals within a facility.

Implementing a chemical data management system will help a company to:

1. Improve the health and safety of employees and help bring safer products to consumers
2. Collect information from the supply chain in order to comply with regulatory requirements and consumer expectations
3. Prevent accidents
4. Minimize chemical purchases and holdings
5. Minimize chemical waste
6. Minimize their impact on the environment

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Protection of health

Biological responses occur following exposure to virtually all substances, both natural and synthetic. A global survey of 411 Environmental Health and Safety (EHS) decision-makers found that 25% of respondents expected to increase their spending on chemical and hazardous waste compliance.[2]

Consumer safe use

After all, chemicals in consumer products are subject to close contact with consumers on a daily basis and can be transferred to the human body. For example, chemicals may enter the air in our homes and be inhaled, and jewelry and toys may contain lead or harmful plastic substances. Also, many consumers don't realize that chemicals are present in cleaning products, glues, carpeting, furniture and many other items that can potentially release chemicals in their homes.

Work safety

According to the U.S. Bureau of Labor Statistics, about 32 million workers are potentially exposed to one or more chemical hazards on the job. Chemical exposures may cause or contribute to many serious health effects, such as heart ailments, kidney and lung damage, sterility, cancer, burns and rashes. Some chemicals may also be safety hazards and have the potential to cause fires, explosions and other serious accidents.[3] Improper usage, handling and storage of chemicals can cause severe hazards, including chemical disasters. So it is incumbent upon manufacturers to not only adopt proper handling policies but also be fully aware of what chemicals have been brought into their facility in raw materials.

[2] https://research.verdantix.com/report/global-ehs-leaders-survey-2018-budgets-priorities-tech-preferences
[3] https://www.osha.gov/sites/default/files/2018-12/fy07_sh-16625-07_hazcomhandout.pdf

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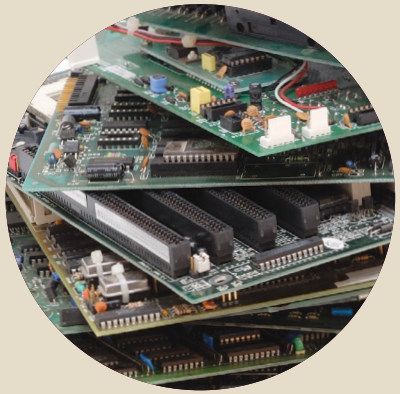
Information processing

The practices that are increasingly becoming necessary steps in new product development include:

- Sharing information about material composition and properties, products, and suppliers up and down the supply chain.
- Conveying purchaser specifications to manufacturers and collecting the information they need to buy better products.
- Collecting the information manufacturers need from their suppliers to optimize their products and better meet purchaser requirements.
- Evaluating products against a wide range of regulatory and enterprise-specific requirements.
- Creating customizable qualification and scoring rules that make it easy to sort products by quality and identify areas of strength or weakness.
- Sharing chemical policies with manufacturers and suppliers so entire supply chains can work in collaboration to produce better products.
- Conducting in-depth evaluations of chemical compositions or bills of materials.



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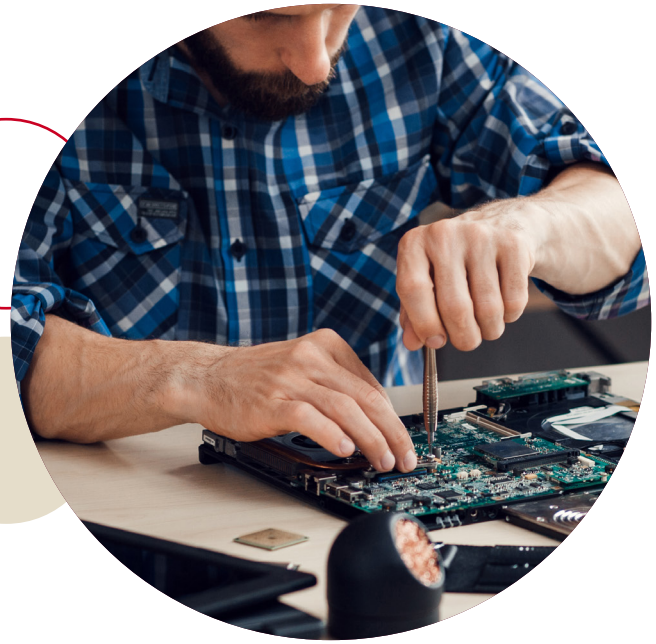

Chemical regulations affecting consumer electronics manufacture

The manufacture of consumer electronics poses a particular set of hazards. As mentioned, the EU REACH legislation regulates more than 500 substances for every European product manufacturer, supplier, buyer and seller. Since the influence of the EU market extends well beyond the region, this legislation effectively has become a global baseline alongside the EU Restriction of Hazardous Substances (RoHS) directive that sets out chemical control requirements specifically for electronics products and has similarly been adopted in other regions, such as China, Saudi Arabia and South Korea.

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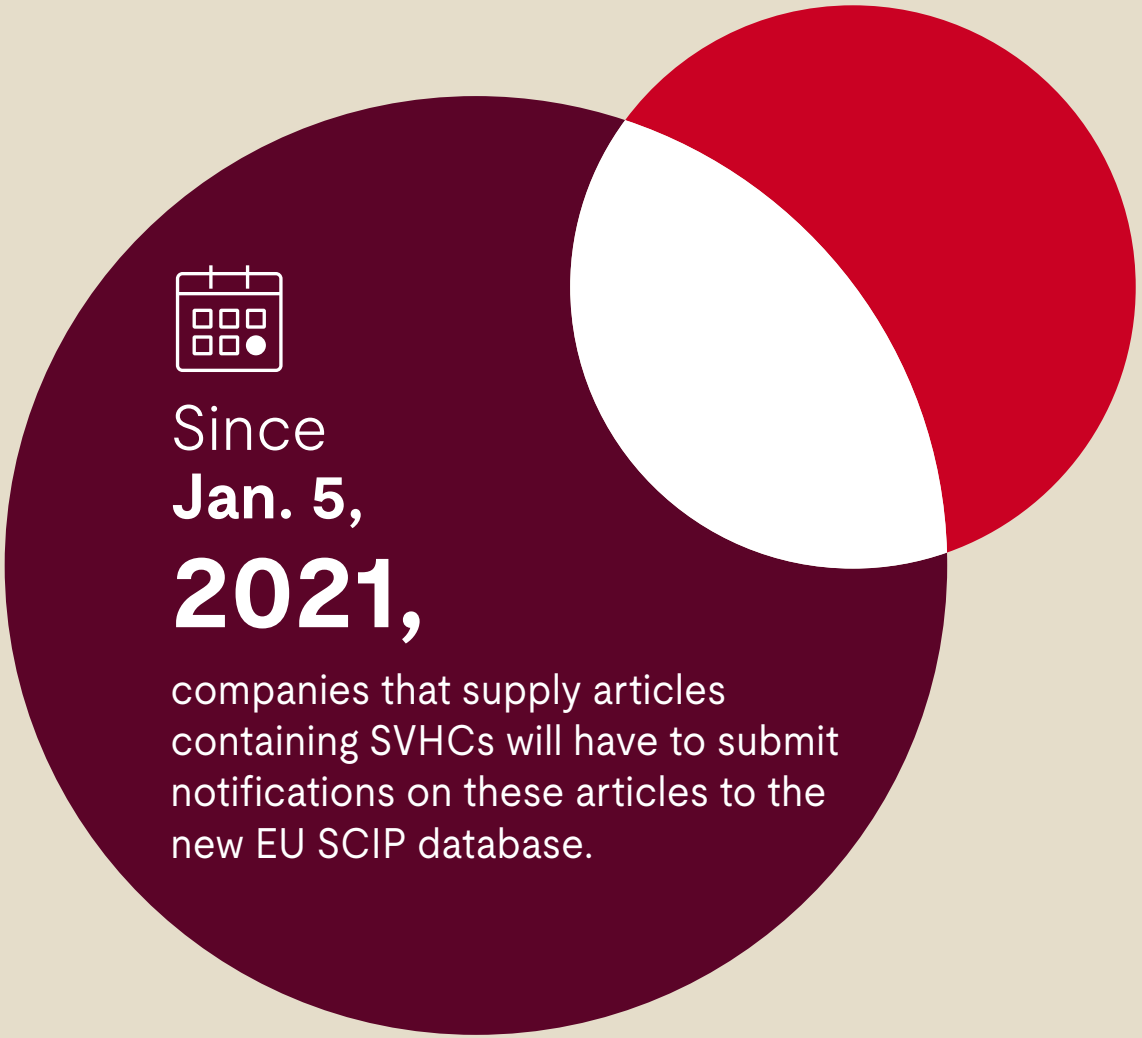

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Since Jan. 5, 2021,

companies that supply articles containing substances of very high concern (SVHCs) will have to submit notifications on these articles to the new EU Substances of Concern in Products (SCIP) database. SCIP is a database for information on substances of concern in articles or in complex objects (products). Established under the Waste Framework Directive, the database is meant to provide waste operators with information about hazardous substances in the waste they process so that materials can potentially be recycled and reused in the production of new articles.

In the U.S.,

the Toxic Substances Control Act (TSCA) directs the federal response to chemical safety. Congress amended TSCA with the enactment of the Lautenberg Chemical Safety for the 21st Century Act, strengthening the ability of the U.S. Environmental Protection Agency (EPA) to regulate chemicals. Additionally, several states have adopted their own chemical safety laws designed to establish broad and permanent frameworks to systematically prioritize chemicals of concern, close data gaps on those chemicals and restrict their uses in those states.

Laws regulating

bisphenol A, cadmium, chemicals in flame retardants, green chemistry and chemical safety have been enacted in 32 states. Statutes in the states of California, Maine, Minnesota, Oregon and Washington authorize these states to develop comprehensive chemical regulatory programs.

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Consumer electronics products pose unique challenges because they include chemicals not seen on the consumer market before, including rare earth elements and other volatile substances such as lithium. Corporate environmental, social and governance (ESG) response is being scrutinized by investors, purchasers and other stakeholders. Social media is playing a large role in this capacity, giving a louder voice to those affected by the chemicals in products. Reporting of sustainability parameters will become mandatory and eventually enforced with regulations, and it is expected that accounting for environmental impact will become mandatory as well.

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Overcoming market entry barriers

Compliance documentation, reporting and disclosure requirements for the same products vary around the world, despite international efforts such as the United Nations' Globally Harmonized System (GHS) attempting to harmonize aspects of chemicals legislation. Being able to manage the complexity of these requirements around the globe can help manufacturers achieve and maintain regulatory compliance. A chemical in your product may be acceptable in one place in the world and not in another. So reducing supply chain risk and fully understanding raw material contents is critical. A seller or manufacturer enjoying free access to one market may suddenly find the same products stopped at the border of another because of different chemical ingredient, disclosure, reporting and labeling requirements. The only way to avoid this is a robust chemical data management system that covers the entire product life cycle. Being able to identify market entry risks early in the product planning and design stages can help prepare you and reduce your risk of market barriers.

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Transport requirements

Cross-border shipments have become complex due to varying requirements from country to country. Transport regulations vary, as do the requirements for the management of dangerous goods. A manufacturer may find themselves without a key ingredient, facing production delays because they were unaware of shifting transport requirements. A stalled production line is a worst-case scenario, but even a short delay can cause scheduling and logistical nightmares. However solutions exist to improve these issues; for example, measures that facilitate trade include designing “green lanes” to streamline border controls at entry points or exchanging specific trade documents electronically. Also, facilitated access to information on good practices at borders can be crucial to enhancing awareness and understanding.[4]

Maintaining brand trust

While worker and consumer safety are paramount, an inadequate chemical data management system can also affect brand trust. Consumers have a megaphone at their disposal through social media and can greatly influence others when they have been disappointed by a product. If your product has been found to contain a harmful chemical or has caused harm to a consumer, your brand may be irreparably tarnished. One study suggests that 90% of people buy from brands they follow on social media. Also, 49% of consumers seek guidance from social media[5] influencers before making a buying decision. As a matter of fact, influence can be so high that 29% of consumers are more likely to make a purchase on the same day of using social media.[6] It is easy to see how a negative report on social media can lead to the erosion of brand trust.

[4] https://www.oecd.org/coronavirus/policy-responses/getting-goods-across-borders-in-times-of-covid-19-972ada7a/
[5] https://www.marketingdive.com/news/90-of-people-buy-from-brands-they-follow-on-social-media-study-says/577882/
[6] https://clootrack.com/knowledge_base/how-does-social-media-influence-consumer-behavior/

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Sustainability concerns

Consumers are placing a higher value on sustainability and thus consider products based on criteria such as circularity and carbon footprint.[7] Sustainability is becoming a fundamental part of the business strategy for many industries marketing different product categories, and the interest in the circular economy is growing day by day.

The circular economy's goals are to keep materials in use for as long as possible, minimize waste and the need for additional resources, regenerate articles and materials when they end their service life, and use materials that minimize hazardous content. This requires innovative approaches. Taking a step back, an important strategy for circular economy initiatives is understanding the chemicals that compose the finished product. Starting from the article's initial concept, a chemical safety assessment can help minimize the use of hazardous substances and encourage article recycling.

[7]Melody M. Bomgardner, "A new dawn for biobased chemicals," C&EN 98, no. 26 (2020): pp. 29-33.

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Reducing the use of materials containing dangerous substances is fundamental, and a robust chemical data management system can help you substitute hazardous substances with greener alternatives. A technical review of your chemical inventory can help verify:

- The substitution of polluting chemicals.
- Improvements in your detox and circularity commitments.
- Compliance with legislation.
- Reactions to new chemical legislations/evidence.
- Conformity to your Restricted Substance List (RSL) and Manufacturing Restricted Substance List (MRSL)
- The definition of targeted testing programs
- Safety in the workplace

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What does effective chemical data management look like?

A robust chemical data management system will help you:

- Characterize any chemical, assembled or hybrid product in your system
- Streamline your raw material data for higher quality compliance and faster market access
- Provide substance volume tracking to provide a granular analysis of chemical volumes shipped
- Perform regulatory tasks, such as preparing standard documents, quickly and easily

A robust system achieves this by controlling all aspects of chemical purchasing and inventory; regulatory requirements and restricted substances lists (legally binding and voluntary); communications within the organization; safe storage, handling, use and disposal of chemicals; and control systems to prevent worker and environmental exposure to chemicals. For example, an organization's chemical purchasing policies can be controlled by a chemical data management system by defining the rules and objectives associated with the procurement of chemicals and formulations. This is also a key step toward greener chemistry. The system can include a list of approved suppliers and chemicals and define the steps to qualify new suppliers, chemicals and formulations.

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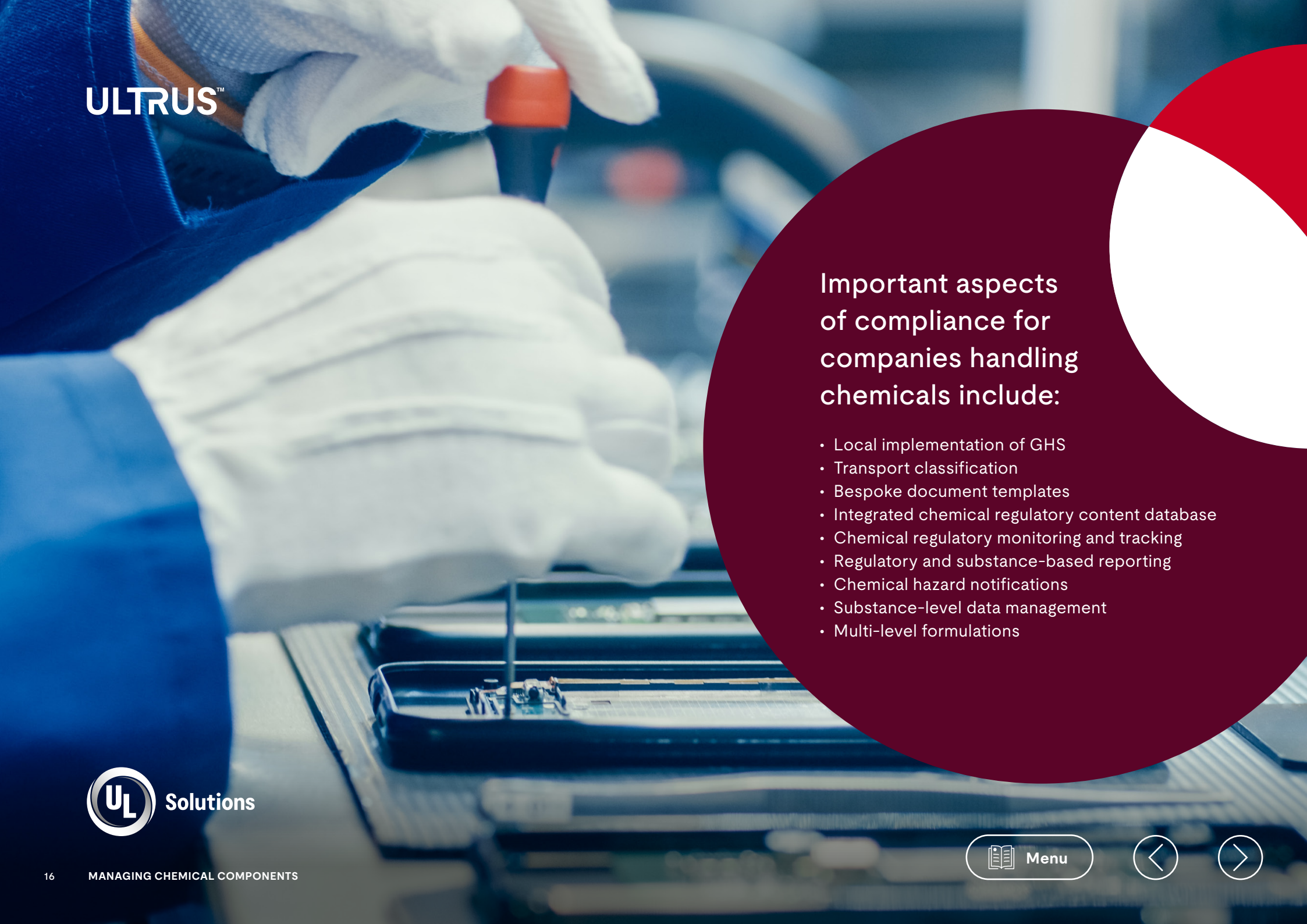

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Important aspects of compliance for companies handling chemicals include:

- Local implementation of GHS
- Transport classification
- Bespoke document templates
- Integrated chemical regulatory content database
- Chemical regulatory monitoring and tracking
- Regulatory and substance-based reporting
- Chemical hazard notifications
- Substance-level data management
- Multi-level formulations

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Ways to prioritize chemical data management and regulatory compliance

Maintain material Safety Data Sheets

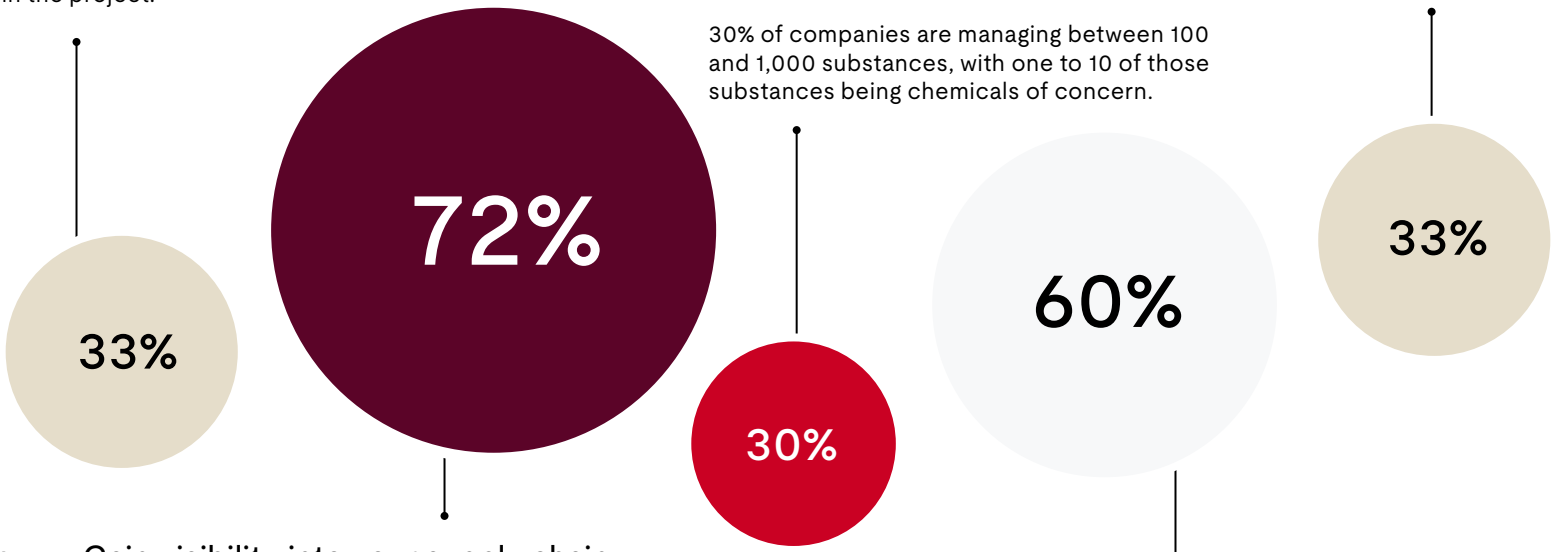
33% of checked Safety Data Sheets (SDS) were non-compliant with the requirements checked in the project.

Know which chemicals are in use

30% of companies are managing between 100 and 1,000 substances, with one to 10 of those substances being chemicals of concern.

Keep records

33% of reported mixtures had incorrect labeling.



Gain visibility into your supply chain

72% of consumers have low confidence in chemical manufacturers' communications concerning the environmental impact of their products.

Understand regulatory landscape

60% of companies said they were reactive toward compliance.

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How **UL Solutions** can help

UL Solutions, a global safety science leader, can help you manage chemical compliance in your supply chain processes, policies and procedures. WERCS Studio, our powerful, configurable global regulatory compliance software, can help you create regulatory documents such as Safety Data Sheets (SDSs), manage labeling and transport classifications, mitigate risk, and efficiently manage your regulatory compliance and EHS initiatives.

WERCS Studio is part of ULTRUS™ software, which includes flagship digital offerings from UL Solutions to help customers meet their regulatory, supply chain and sustainability challenges.

WERCS Studio

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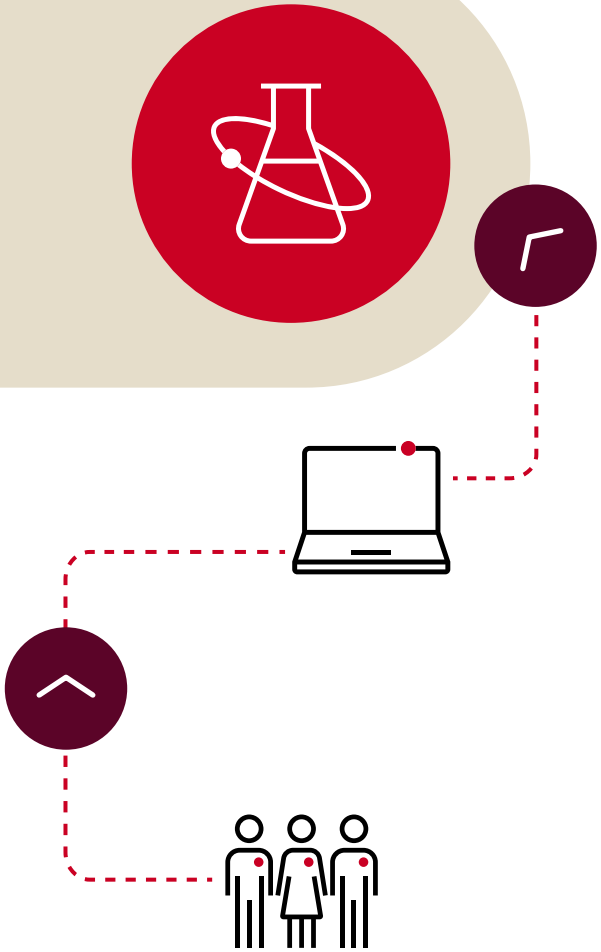
This chemical data management system and hazard communication software comprises more than 30 scalable modules that provide comprehensive and flexible automated capabilities.



Plus, WERCS Studio is powerful and customizable enough to handle hazard communication and EHS management across a diverse set of industries, including:

- Consumer packaged goods
- Consumer electronics
- Retail
- Industrial chemicals
- Agrochem
- Pharmaceuticals
- Petroleum
- Paints and coatings
- Fragrance and flavors
- Lubricants
- Animal health

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Conclusion

Regulatory requirements and management strategies relating to chemicals can extend beyond chemical raw materials to the finished goods themselves. Globally, a large number of regulations have been enacted and continue to be updated to help incorporate developments in safety, sustainability and compliance requirements. Despite well-intentioned efforts to standardize chemical regulations around the world, such as through the GHS, companies still have to navigate guidelines that vary widely from state to state and country to country. In response to these challenges, consumer electronics manufacturers must find tools to help ensure accurate and sustained global regulatory compliance. A robust chemical management system is truly the only answer. You cannot effectively compete on the global stage today without one, in addition to promoting consumer and worker safety and helping protect the planet. Regulations are simply too complex and ever-changing.

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