pure|STRATEGIES

SUSTAINABLE CHEMICALS MANAGEMENT SOFTWARE

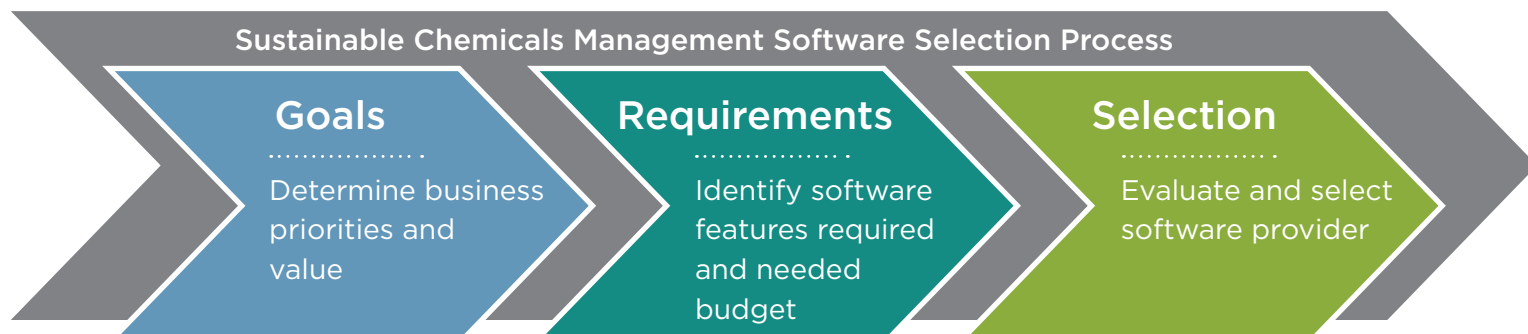A Pure Strategies review of tools for managing chemicals in products

pure INSIGHT

The need for business to better manage chemicals across the value chain has grown in recent years as a result of changing customer and consumer concerns and regulatory restrictions. Sustainable chemicals management – which we define as the movement towards safer chemicals across the value chain – is a complex undertaking. It involves compiling and analyzing chemical identity, inherent hazard, regulatory status, exposure potential, and other data.

For medium to large businesses seeking to develop a sustainable chemicals management program, excel spreadsheets and similar first-generation tools are limited in what they can offer. Software systems designed specifically to meet today's chemical information needs can help companies save resources, support improved chemical selection for design of safer products, and allow more rapid response to changing market demands.

This report provides a brief overview of the type and level of **sustainable chemicals management software options for products in the market today**. It includes a review of software features and provides a brief overview of their offerings. The report also addresses key questions companies should consider in exploring these services.

- What are the business priorities for investing in sustainable chemical management software?

- What are the key features you should look for in a software tool?

- What criteria should you use in selecting the software and services that best meet your needs?

All of the software vendors included in this report provide value for companies seeking to strengthen product-related sustainable chemicals management. But there are some significant differences in the services they provide. An important starting point when deciding between offerings is to consider the software features that are most important for meeting your sustainable chemicals management business goals. The report will help companies navigate the process of deciding which tools best meet their needs.

Sustainable Chemicals Management Software Selection Process

Goals	Requirements	Selection
Determine business priorities and value	Identify software features required and needed budget	Evaluate and select software provider

Leading product companies are increasingly developing and implementing sustainable chemicals strategies (see sidebar) to reduce risk, build trust with consumers, accelerate innovation, and gain growth opportunities. Other companies are actively working to catch up in order to meet growing regulatory and market demands for tracking or restricting chemicals.

Key to the implementation of such a strategy is a software tool to manage data and support decision-making to help the business:

- Understand and assess chemicals and their hazard profiles

- Identify chemicals in supply chain and products

- Provide certainty in meeting regulatory and customer chemical restrictions

- Prioritize reduction and/or elimination of hazardous chemicals and potential for exposure in products.

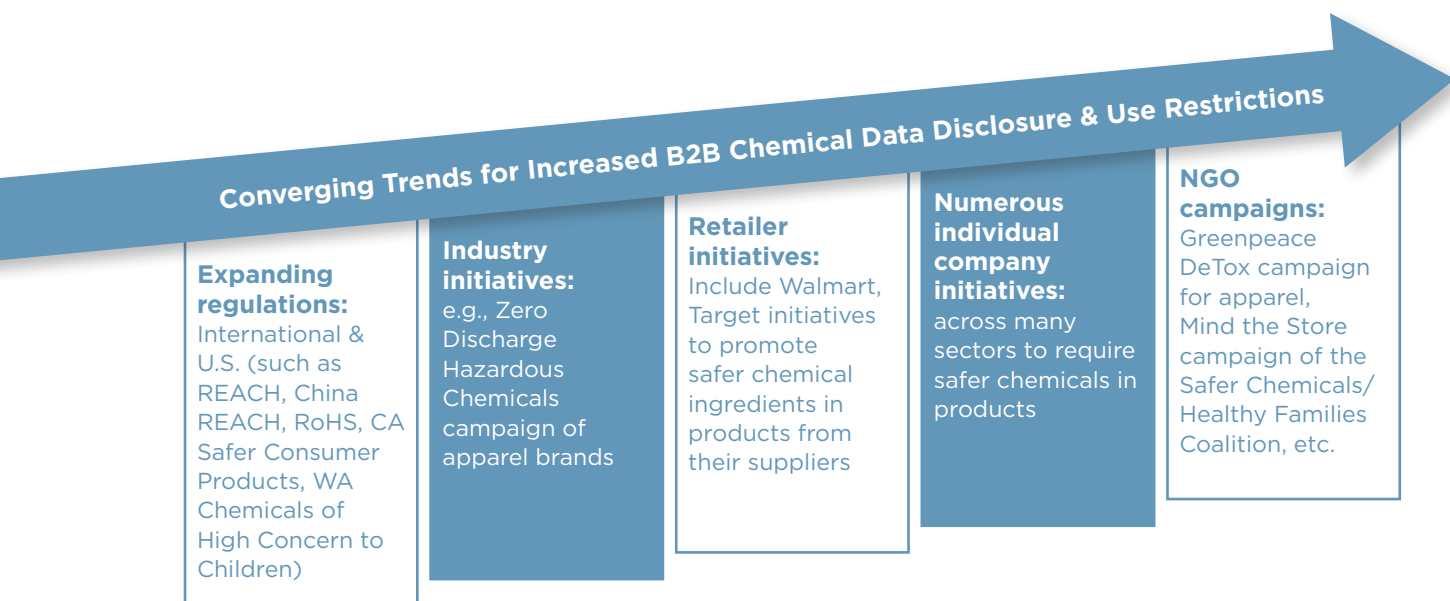- Ensure accurate chemical hazard communication to customers

Sustainable Chemicals Strategy for Business

An effective Sustainable Chemicals Strategy includes the prioritization of chemicals of concern for reduction or elimination, understanding and improving the health and environmental profile of ingredients, verifying product composition, and enhancing ingredient transparency and communication. The strategy requires leadership support, integration into business processes (e.g., procurement and product design), and effective tools to support its implementation.

- Prioritize chemicals of concern
- Improve health/environmental profile
- Verify product composition
- Enhance ingredient transparency

This report:

- Presents the business case for sustainable chemicals management software

- Summarizes the key features of sustainable chemicals management software tools

- Outlines the criteria business should consider when considering the purchase or license of a software tool

- Reviews the capabilities and provides an Appendix that provides an overview of the tools offered by 11 leading vendors.

Companies face an array of chemical management issues – product hazards, regulatory requirements for Safety Data Sheets (SDSs), facility safety, emissions to air, water or land, etc. But the focus of this report is on software for sustainable chemicals management in products.

II. The Business Case for Sustainable Chemicals Management Software

Well-designed software and services can comprehensively track chemical ingredient information from incoming products/materials through incorporation or reformulation in the products sold to a company's customers. They can also alert the company to potential violations of regulatory, customer or internal standards. Spreadsheets and simple databases are no longer equal to this task. Upgrading to software is usually a worthwhile investment for companies with sustainable chemicals programs.

Converging Trends for Increased B2B Chemical Data Disclosure & Use Restrictions

Expanding regulations:
International & U.S. (such as REACH, China REACH, RoHS, CA Safer Consumer Products, WA Chemicals of High Concern to Children)

Industry initiatives:
e.g., Zero Discharge Hazardous Chemicals campaign of apparel brands

Retailer initiatives:
Include Walmart, Target initiatives to promote safer chemical ingredients in products from their suppliers

Numerous individual company initiatives:
across many sectors to require safer chemicals in products

NGO campaigns:
Greenpeace DeTox campaign for apparel, Mind the Store campaign of the Safer Chemicals/ Healthy Families Coalition, etc.

The business benefits from improved knowledge and control of chemical ingredients can be substantial - rom increased efficiency and risk reduction to growth opportunities. Realizing the potential benefits requires understanding the business's needs and adopting the sustainable chemicals management software best adapted for those needs.

The Appendix provides an overview of the sustainable chemicals management software provided by these 11 vendors:

Actio	I & I The WERCS ⓊⓁ	TEXbase
Chemical Compliance Systems	SafeTec	thinkstep
C-Insight	SAP	3E
I & I Good Guide PurView ⓊⓁ	SciVera Lens™	

Increased efficiency and reduced costs

- Improved employee productivity through reduced time for tracking chemical data and responding to changing regulations or customer requirements

- Better anticipation of and communication with suppliers about new or upcoming chemical ingredient requirements[1]

- More efficient coordination/ communication of changing chemical requirements with product design teams

- Greater assurance of chemical ingredient quality consistency during production

Reduced risks

- Avoid regulatory fines/recalls due to chemical ingredient violations

- Avoid legal liability due to hazardous ingredients in products

Improved customer relationships

- Assure customers of consistency in meeting product chemical ingredient restrictions, including rapid compliance with new regulatory or customer requirements

Improved brand reputation with customers/consumers

- Design safer products using improved chemical ingredient data

- Support product claims of non-hazardous ingredients reliably

- Provide more complete information/greater transparency to customers

Benefits of Effective Chemical Data Management: The Seagate Example

Seagate, the US-based data storage company, has made significant strides in adhering to REACH regulations. As the company had a comprehensive chemical data management system in place, it was able to react quickly. "We realized early on that we would either have to spend an awful lot of money on resources, or we would have to put in place some tools that could help us automate the process," said Brian Martin, Seagate's senior director for product environmental compliance.

"

When [the EU REACH] Directive was launched and the list of Substances of Very High Concern came out ... we had our first response to the REACH SVHC list within 15 minutes. We confirmed that by polling a subset of our suppliers within the next 48 hours. Within a couple of days, we had a very solid answer to REACH compliance that we could give to our customers with a high degree of credibility.

"

III. Key Features of Sustainable Chemicals Management Software

Sustainable chemicals management software should help managers organize, analyze and make decisions about chemicals and materials in their supply chains and products. The summaries below provide a brief overview of key capabilities to support these decisions.

Not all tools include all of the components that can facilitate this process. Nor are the needs of all companies identical, although adopting tools with robust chemical data inventorying and RSL screening capabilities is a minimum requirement to support a company's sustainable chemicals management. Review these capabilities and related vendor offerings in light of your company's business priorities and sustainable chemicals program goals to develop a list of software requirements.

Key Software Capabilities

(1) Inventory chemical data

(2) Screen chemical ingredients against RSLs

(3) Assess chemical ingredients for inherent hazard characteristics

(4) Assess exposure potential

(5) Identify less hazardous alternatives

(1) Inventory Chemical Data

Inventory

Identify

Generate

A fundamental benefit of adopting sustainable chemicals management software is automated inventory and management of chemical information.   Software tools can capture available data from the company's purchasing system, manage chemical information to support product design and development, and ensure accuracy of the information on chemical ingredients in products sold to customers. But the degree to which the systems have automated integration of chemical data management software with purchasing or enterprise software varies.

Even when chemical data software systems are integrated with company enterprise data systems, bills of materials (BOMs)/bills of substances (BOSs) may be incomplete, or there may be errors in some of the data. The complexity and length of many supply chains make it difficult to identify the sources of these gaps or errors, or the reasons for them. Causes might include:

- Incomplete or inaccurate knowledge on the part of a supplier about the chemicals in its products

- Confidential business information (CBI), e.g., sensitive proprietary formulations for which a supplier believes secrecy is vital in order to avoid significant commercial damage.

Not only can software systems assist companies in more effectively managing chemical hazards by identifying gaps and potential errors, but some vendors also provide a service to mitigate these problems.

- QC role: Where the software identifies incomplete or inaccurate data, some vendors interact with the supplier with requests for review and/or correction of the problematic BOM/BOS information.

- Third-party role: Where CBI chemical information is involved, some vendors enter into non-disclosure agreements with a company's suppliers (or even further back in the supply chain) to obtain full information, with only relevant hazard information passed on to the company using the software vendor's services.

(2) Screen Chemical Ingredients against RSLs

An easily automated feature of sustainable chemicals management software is evaluating the company's inventory of materials/ingredients against lists of regulatory limits/reporting requirements or customer or the company's own restrictions (Restricted Substance Lists, or RSLs). Customer and company RSLs often go beyond regulatory requirements. All types of RSLs frequently include a mix of threshold limits and complete prohibitions for the identified chemicals of concern, and may also include limits for residues or contaminants. The software system can incorporate all of these measures.

All of the vendors evaluated for this report provide a means to compare a company's list of chemicals/materials used against RSLs. However, there are some important differences with respect to this service including:

- The scope and number of regulatory and RSL lists varies substantially among software vendors – from several hundred to a relatively small number of basic regulatory lists.

Examples of Chemical Restriction & Reporting Lists

Regulatory Lists
- Consumer Product Safety Improvement Act (CPSIA)
- China Catalogue of Hazardous Chemicals
- Korea REACH
- Japan Chemical Substances Control Law
- EU REACH Substances of Very High Concern (SVHCs)
- EU Restriction of Hazardous Substances (RoHS)
- EU Toy Safety Directive
- Washington Chemicals of High Concern for Children
- California Prop 65, Candidate Chemical List for Safer Consumer Products program
- Maine Chemicals of Concern & Priority Chemicals
- US EPA ozone depleting substances

Sector/Company RSLs
- Furniture: Business Institutional Furniture Manufacturers Association (BIFMA) Chemicals of Concern
- Apparel/footwear: Zero Discharge of Hazardous Chemicals (ZDHC), American Apparel and Footwear Association (AAFA), Apparel and Footwear International RSL Management working group (AFIRM)
- Multiple individual company RSLs in all major product sectors and retailing customers with a high degree of credibility.

- The frequency of updates varies among vendors, with some updating their lists daily. It may be important that regulatory lists and other RSLs are updated regularly so that companies can keep abreast of changing regulations and customer requirements that affect their products.

- Some software systems will add RSLs on a customized basis to meet a company's specific needs (e.g., for RSLs of major customers). This can be valuable for companies with numerous customers with particular beyond-regulation chemical requirements. But it is important that the vendor's system also incorporates a large enough array of regulatory or commercial RSLs that the company using the system doesn't have to take on a major burden of identifying relevant RSLs.

Replacements for BPA: Equally Hazardous?

As a result of both regulatory measures and public concerns about the endocrine disrupting properties of bisphenol A (BPA), some companies began using bisphenol S (BPS) and bisphenol F (BPF) to replace BPA. Neither BPS nor BPF is regulated. But a report[2] on recent research concludes that, "BPS and BPF appear to have similar metabolism, potencies and mechanisms of action as BPA and may pose similar health hazards."

(3) Assess chemical ingredients for inherent hazard characteristics

Because regulatory lists of hazardous chemicals often lag behind scientific knowledge, companies that focus exclusively on compliance with RSLs may inadvertently move to equally hazardous or more hazardous chemical alternatives. Software systems that assess chemicals for inherent human health, environmental or physical hazards can protect companies from making these kinds of regrettable substitutions.

Some software systems provide assessments of chemicals (whether or not on RSLs) for their inherent human health, environmental or physical hazards. While there are some variations in the hazard end points included in the software tools, they generally cover those from the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), developed by international agreement, as well as common issues of concern such as endocrine disruption activity or asthma-inducing chemicals. For many consumer product manufacturers, it is often the human health hazard endpoints that are of greatest concern (see text box of GHS health hazards).

GHS Health Hazard Endpoints

- Acute toxicity
- Skin corrosion/ irritation
- Serious eye damage/ eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity

- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity - single exposure
- Specific target organ exposure - repeated exposure
- Aspiration hazard

Among those software tools that assess hazard information not captured by regulations, there is substantial variability in the breadth and depth of their offerings. Key options include:

- *Automated assessments of ingredients against lists of chemicals with inherent hazard characteristics:* Many organizations publish lists, based on scientific literature and research, of chemicals with particular hazard attributes. Such lists include both regulated chemicals and chemicals not currently regulated for the particular hazard attribute – perhaps due to lag time in regulatory development or lack of consensus on the hazard assessment. But such lists, whether from governmental or non-governmental organizations, allow for automation of hazard assessments based on the information in the lists. An example of a computerized compilation of such lists is the GreenScreen List Translator (see text box).[3] Two of the software vendors in the Appendix leverage the GreenScreen List Translator in their assessments. Others may rely on their own methodology.

- *Integration of hazard information from research literature to provide more complete hazard assessment:* These evaluations can fill gaps in list-based assessments, since some chemicals of concern may not yet be on any lists. For example, a recent review found that 30% of chemicals with high reproductive/developmental hazards (based on research reported in eChemPortal) did not appear on any lists of hazardous chemicals.[4] The results of such assessments may be subsequently incorporated in the vendor's software database.

- *Weighting of chemical hazards:* Some software systems provide for weighting and scoring of alternative chemical formulations. Such scores may be used for evaluations of alternative products from suppliers, or for design of safer formulations. For more information, see below in (5) on identification of less hazardous alternatives.

GreenScreen List Translator

The GreenScreen List Translator, developed by Clean Production Action, automates the search of over 850 lists that it characterizes as 'authoritative' lists (developed by governments or government-recognized expert organizations) or 'screening' lists (developed by non-governmental/ non-recognized bodies, or as target lists of chemicals for further assessment by authoritative bodies).

GreenScreen uses an algorithm for the hazard assessments that prioritizes authoritative over screening lists for identifying chemicals of concern. If a chemical does not appear on the lists, this may either be a good sign (it has been assessed and found not to be hazardous for assessed endpoints) or due to lack of available testing information.

Examples of 'authoritative' lists:

- International Agency for Research on Cancer (IARC)
- Stockholm Convention on Persistent Organic Pollutants: addresses persistence, bioaccumulation, ecotox and/or human toxicity
- National Toxicology Program – Report on Carcinogens
- Association of Occupational and Environmental Clinics (AOEC): addresses respiratory sensitization, including asthma

(4) Assess exposure potential

Few software vendors tackle the challenge of assessing potential consumer exposures to hazardous chemicals in products. The contexts and scenarios for consumer exposure estimates are subject to significant uncertainties. But those vendors who do take on the challenge help meet customer needs by drawing on a variety of toxicological, chemical characteristic and exposure measurement data.   Examples include:

- *Intrinsic physicochemical characteristics:* A recent report of the National Academy of Sciences (NAS), A Framework to Guide Selection of Chemical Alternatives, stressed the importance of making use of generally available data on physical attributes of chemicals, such as volatility or solubility, that impact potential routes and levels of chemical exposure. An example from dry cleaning illustrates its applicability. As pressure to eliminate use of perchloroethylene (perc) as a cleaning solvent increased, some cleaners switched to n-propyl bromide (nPB) as a replacement. Not only is nPB a regrettable substitution (as bad or worse from a hazard perspective), it is several times more volatile, so that any failure in workplace controls can lead to higher levels of inhalation exposure.

- *Life cycle and product factors:* A chemical posing an occupational health hazard may not always pose a health hazard for consumers in the final product. A commonly cited example is carbon black, assessed as a possible human carcinogen in workplaces by IARC. But carbon black is chemically bonded in many consumer products. According to the IARC monograph: "No substantial exposure to carbon black is thought to occur when it is bound to other materials such as rubber, printing ink, or paint."[5]

- *Exposure scenarios derived from public or proprietary databases and research:* Vendors may have access to proprietary consumer product exposure data based on their own research or that of their clients. They may also make use of exposure scenarios and data, to the extent relevant for individual products, being developed through government research efforts in The Netherlands, the United States and other countries.
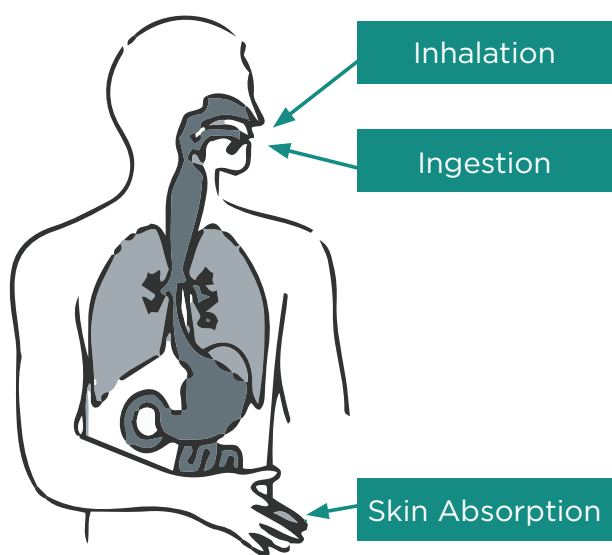
While exposure analyses are required by regulation for many chemicals in workplace settings, sustainable chemicals management software vendors do not typically offer assessments of exposures to chemicals in consumer settings. But a few vendors provide them, and companies interested in such assessments should explore the approaches and experience of vendors offering the service.

Inhalation

Ingestion

Skin Absorption

Routes of Exposure

(5) Identify less hazardous alternatives

The least common feature provided by software vendors, yet one many customers seek, is a service to help identify alternative, more sustainable chemical ingredients that can perform a needed function in a product. Some vendors address this issue with software tools and services such as the following:

- *Scoring chemical products/ingredients on the basis of relative hazards:* As described above, the characterization of the hazards of any chemical covers a wide range of health, environmental and physical endpoints (a chemical might rank high for skin corrosion and eye damage, low for carcinogenicity, etc., with varied scores across all of the GHS endpoints). Scoring any chemical or ingredient would involve weighing factors that include:

  — An objective, scientific assessment of the relative hazard of the chemical for each of those endpoints (and, in some cases, of available exposure projections)

  — A value assessment determining which types of hazard are to be most heavily weighted. For consumer products, various combinations of health hazards will generally predominate. There is almost unlimited potential variety to these value components of the weightings, depending on what is most important to the customer.

  Using these weightings, the software could both assess the relative sustainability of currently available formulations and ingredients, and run what-if scenarios for other alternatives.

- *Toolboxes of safer chemical alternatives for specific functions:* Some software tools provide databases to assist customers in identifying safer functional alternatives to replace hazardous chemicals they currently use in products. The database might be vendor proprietary information or based on publicly available datasets such as that developed by the Environmental Protection Agency's Design for the Environment (DfE) program.[6] While the databases can provide information on potential alternatives, decisions on the viability of particular alternatives requires the customer's product expertise.

DfE's Safer Chemical Ingredients List: Functional Categories

- Antimicrobial actives
- Chelating actives
- Colorants
- Defoamers
- Enzymes & enzyme stabilizers
- Fragrances
- Oxidants & oxidant stabilizers
- Polymers
- Preservatives & anti-oxidants
- Processing aids & additives
- Solvents
- Specialized industrial chemicals
- Surfactants
- Uncategorized

IV. Criteria for Selecting Sustainable Chemicals Management Software

Once your company has determined which software requirements are most important for meeting your company's business priorities and sustainable chemicals program's goals, you need to determine your budget. Then it is time to shop around and compare vendors' software capabilities and services to determine which best meet your needs. The following are typical steps to assess and select vendors:

1. Review vendors (in the report) to identify which align with most of your priorities/requirements
2. Evaluate demos, offering details, and costs
3. Determine solution provider

Sustainable Chemicals Management Software Capabilities and Vendor Services		YES	NO	Need more information	Importance for your business (H,M,L)
Depth/detail of chemical data provided by vendor software system & additional services					
Does the software provide sufficient detail in inventory and tracking of relevant chemical ingredient information to meet your company's needs in supply chain transactions and internal management (e.g., ingredient CAS numbers, concentrations, identity & weight of homogeneous materials)?					
Is a wide enough array of regulatory, industry sector or major customer chemical RSLs routinely available as part of the vendor's software offerings to meet most of your company's business requirements?					
Does the vendor regularly update changes in included regulatory and/or industry RSLs?					
If vendor regularly updates changes in included RSLs, is frequency of updating at least	Daily?				
	Weekly?				
	Monthly?				
	Quarterly?				
Does the software provide alerts/reports about potential data gaps or inaccuracies in the chemical information provided to your company by suppliers?					
Does the vendor routinely communicate with suppliers to correct potential data gaps or inaccuracies in the chemical information provided to the vendor's customers by their suppliers?					
Does the vendor offer 3rd-party services (e.g., under non-disclosure agreements with suppliers) to obtain CBI/proprietary chemical ingredient information from direct or indirect suppliers in order to assess hazard characteristics of ingredients in the suppliers' products?					

Does the software provide easy-to-run, what-if scenarios for new product design and alternatives assessments?				
Availability of expert assessments as part of vendor services				
Does the vendor offer additional expert assessments (e.g., in toxicological assessments of chemicals or potential for exposure) where needed?				
Does the vendor have specialized expertise in your company's sector that would enable it to readily supplement the chemical information tracked by the software system?				
Integration with the company's business data				
Can the vendor's chemicals management software integrate with your company's purchasing systems and other business data management systems?				
If yes, is the integration automated?				

In addition to the specific sustainable chemicals management features discussed in this report, it is also important to review factors such as software data management, customer experience with the vendor and costs				
Software system data management				
Does the software provide a 'data ownership' model where data (especially sensitive proprietary chemical ingredient data) can be owned, and access to it granted or controlled, by a specific function or person in your company?				
Does the software create audit trails that show which specific chemical data was modified and by whom?				
Does the software provide robust version control (to facilitate identification of most current version of regulatory and customer requirements, as well as tracking changes over time)?				
Vendor experience				
Do other companies in your business sector use this vendor's software and the specific offerings you are considering? If yes, how many? _____				
Will the vendor provide you with references/contacts from its current customers in your business sector with whom you can discuss the vendor's software and services?				

Software service costs

Costs for using the different vendors' systems are extremely varied and challenging to compare. As a result, it is important to review the issues in the above table, define your requirements and ask each vendor for the same options in order to compare costs. As one vendor put it, "It really depends on the specifics." And another vendor quoted a range of $3,000-$25,000 per individual user. The table below outlines some of the key aspects that can determine pricing.

Vendor programs and services are most frequently provided as SaaS (software as a service), and thus commonly are charged through a subscription fee (e.g., annually). In addition, many tools are set up with discrete modules that a company can select from to fulfill its requirements. This has both benefits and drawbacks for the customer.

- **Pro:** Your company just pays for the modules necessary to meet its needs

- **Con:** The bundling or organization of the modules may require you to pay for capabilities you don't need in order to get all of the components you want.

Examples of Potential Cost Factors	
Number/types of services	Depending on software service design, additions to basic RSL screening (e.g., for hazard assessments against endpoints, exposure estimates) increase costs
Number of users	Based on number of individual users within company who can enter or view data
Number of regulatory lists or other RSLs	Number of RSLs built into software and included in company's subscription, and RSLs added on a customized basis
Number of products	Number of products or unique chemicals in products can be unlimited or a set number)
Number of suppliers	Number of suppliers or volume of products from suppliers
Company (or division) size	Examples of possible factors include number of employees, dollar volume of sales

V. Conclusions: Matching Needs & Software Services

All of the software vendors included in this report provide sustainable chemicals management for products. But the scope and depth of these offerings vary. For example, not all vendors address exposure. And while all of the software services provide RSL screening, this can range from a limited number of major regulatory chemical lists to extensive global sets of regulatory and commercial RSLs.

Because of differing company needs and resources, there is no one-size-fits-all ideal vendor for all companies. Clarify your company's business and program goals, and then evaluate the varied options offered by the vendors carefully to determine the best solution.

Each vendor summary in the appendix includes both a few highlights of their services and a checklist of major service components. The summaries can guide you to the sustainable chemicals management software systems that could help your company meet its goals. Keep in mind that these are only highlights, and that vendors continuously upgrade their software systems. For additional information, go to the URL link listed for each vendor.

The table below provides a few examples of how understanding key vendor highlights can help your company's search.

If your goals include:	Look for vendors with highlights including:
Efficient inventory and analysis of chemical ingredients in suppliers' products	• Uploading/collection of data from BOMs • Integration of chemical assessment data with business process data
Basic RSL screening for compliance of chemical ingredients with regulations, customer requirements	• Availability of extensive or global RSLs as part of software package • Ability to add customized RSLs • Compliance assessments
Hazard assessments beyond compliance	• Capability of software to assess chemical ingredients against a range of human health, environmental and physical endpoints
Exposure estimates	• Exposure assessments • Risk assessments
Comparisons of chemical ingredients/products for most sustainable alternatives	• Scoring of chemicals/products • Weighting of factors for comparisons • Incorporation of customer criteria for comparisons

The bottom line?

Adopting a robust sustainable chemicals management program can substantially increase efficiency and growth opportunities for your business, as well as strengthen customer relationships throughout the value chain. A key step in building this program is adopting a software system that increases your management control over all aspects of chemical ingredients in supply chain transactions and product design/development. To reach this:

- **Define Goals:** Ensure the company has evaluated the possible goals and value from utilizing software tools in order to align needs and selection.

- **Establish Requirements:** Be clear what capabilities you're looking for/your chemicals management software requirements.

  — All software options provide a chemical inventory but differ in the number and type of RSLs and the extent to which they can help assess chemical ingredients against hazard endpoints. There are limited solutions that enable exposure and risk assessment and even fewer that can identify less hazardous alternatives.

- **Make Selection:** Look at the vendors' service summaries in the appendix, explore further on the vendor websites, then contact the vendors that appear most likely to meet your needs. Identify vendors whose sustainable chemicals management software most closely aligns with your requirements, and whose approach will allow you to pay for only the services you need.

  — Explore and negotiate. Talking to more than one vendor will provide insight into available combinations of software prices and services that afford the best opportunity to maximize the benefits of a strong sustainable chemicals management program for your business.

Sustainable Chemicals Management Software Selection Process

Goals — Determine business priorities and value

Requirements — Identify software features required and needed budget

Selection — Evaluate and select software provider
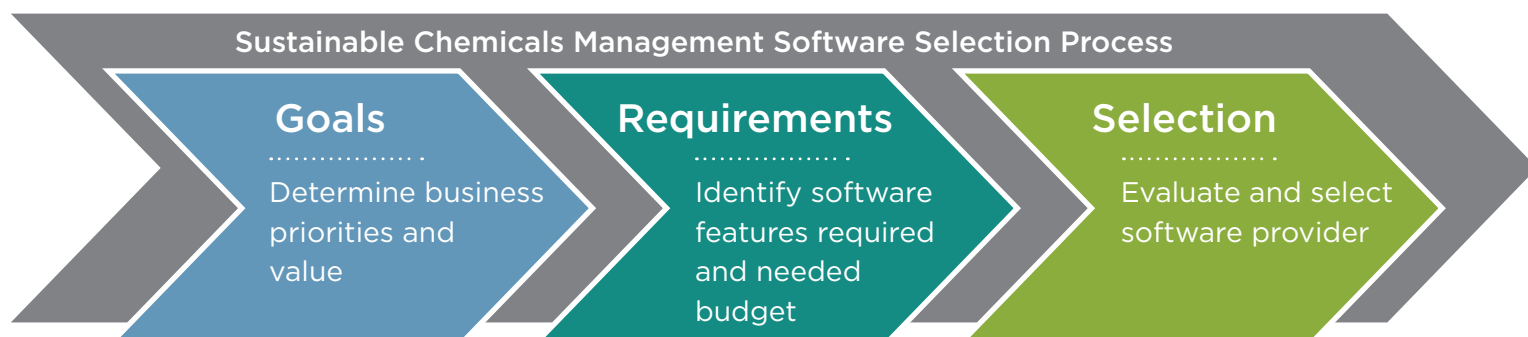
Endnotes

[1] Seagate textbox: "Seagate's "Green" Strategy: Best for our Customers, Our Business, and the Environment", https://www.youtube.com/watch?v=Hz2sJTviPr4

[2] https://chemicalwatch.com/23282/review-finds-bisphenol-f-and-s-effects-similar-to-bisphenol-a

[3] http://www.greenscreenchemicals.org/resources/entry/list-translator

[4] "Enhanced Alternatives Analysis: Automated Evaluation of Chemical Hazard Attributes to Identify Preferred Substitutes," by Patricia J. Beattie, Joseph P. Rinkevich, James Orchard-Hays; SciVera, LLC; 5th Annual Meeting and ToxExpo, Phoenix, Arizona, March 23-27, 2014

[5] http://www.thelancet.com/journals/lanonc/article/PIIS1470204506706519/fulltext

[6] http://www2.epa.gov/saferchoice/safer-ingredients

Feature	Description		Actio	CCS	C-Insight	Information & Insights/Good Guide/Purview/Ⓤ	Information & Insights/The WERCs/Ⓤ	SafeTec	SAP	SciVera	TEXbase	thinkstep	3E
Inventory Chemical data	Identifies data gaps/potential errors		x	x		x	x		x	x	x	x	x
	Protects CBI data while providing hazard information		x	x	x	x	x		x	x	x	x	x
Screen chemical ingredients against RSLs	Inventories chemical ingredients/ concentrations by standard identifiers (e.g., CAS #s) and assesses against:	Regulatory lists	x	x	x	x	x	x	x	x	x	x	x
		Customized RSLs/ MRSLs	x	x	x	x	x	x	x	x	x	x	x
Assess chemical ingredients against hazard endpoints	Human toxicity		x	x	x	x	x	x	x	x	x	x	x
	Environmental toxicity		x	x	x	x	x	x	x	x	x	x	x
	Physical hazards		x	x	x	x	x	x	x	x	x	x	x
	Supports comparison/scoring of alternatives against hazard criteria			x	x	x	x	x	x	x			x
Assess exposure potential	Integrates estimates of exposure for potential uses of hazardous ingredients			x		x	x	x	x	x			
Identify less hazardous alternatives	Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes			x	x					x			
Other features	Integrates ingredient data analysis & regulatory reporting		x	x			x	x	x	x		x	x
	Provides automated real-time or batch feeds with data validation		x		x	x	x	x	x	x	x	x	x
	Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		x		x		x	x	x	x	x	x	
	Uploads source documents (invoices, use, etc.) for audit review		x		x	x	x	x	x	x	x	x	x
	Software can be integrated into ERP/PLM systems		x	x	x	x	x	x	x	x	x	x*	x
	Software deployment	On customer servers						x		x			
		As SaaS (software as a service)	x	x	x	x	x	x	x	x	x	x*	x

*Through integration with Siemens Teamcenter software

Actio

CCS

C-Insight

Information & Insights/Good Guide/Purview/Ⓤ

Information & Insights/The WERCs/Ⓤ

SafeTec

SAP

SciVera

TEXbase

thinkstep

3E

Vendor Profile

Overview

Actio's Material Disclosure platform collects & analyzes supply chain and product regulatory compliance and stewardship data. Additional chemical management software tools address SDS management, new material approval, inventory and regulatory reporting.

Significant System Features

Supports compliance assessments of **ingredients/materials** provided by suppliers. **Can upload supplier BOMs** into Material Disclosure software.	Regulatory analysis software originally **designed to assess REACH compliance,** but broadened to address a wide range of global regulatory requirements. Can also integrate specific customer RSLs/MRSLs into the tool.
Multiple inter-related modules provide supply chain & regulatory compliance assessments and SDS management & reporting (see diagram below).	System **can be configured to track human/ environmental toxicity or physical hazard endpoints**; system captures much of this data through SDS management modules.

Actio: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		X
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		X
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

Chemical Compliance Systems (CCS)

Vendor Profile

Overview

CCS GreenSuite software addresses both hazard and risk, and assesses potential impacts of chemical ingredients throughout product lifecycles. Chemical ingredients are scored both on the basis of intrinsic hazard and estimated exposure.

Significant System Features

Where combined hazard and exposure for chemicals in processes or products exceed acceptable thresholds, **CCS provides a database of potential alternative 'greener' chemicals** organized into approximately 65 functional categories.	**CCS can incorporate exposure estimates** (depending on use) for different exposure pathways, using both exposure algorithms developed by The Netherlands/EU and exposure data provided by customers.
CCS has a **BOM-tracking system** that is not part of GreenSuite, but the two systems can be linked.	CCS scores chemicals initially on the basis of **44 hazard endpoints** from NSF/ANSI 355 standard. Customers can weight categories (e.g., for relative importance of ecological/ health scores).

CCS: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		X
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		X
Other features		
Integrates ingredient data analysis & regulatory reporting		X
Provides automated real-time or batch feeds with data validation		
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		
Uploads source documents (invoices, use, etc.) for audit review		
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

![C*Insight logo]

Vendor Profile

Name of Product: *RSL-Insight*
Sector/supply chain emphasis: *Apparel & footwear*
Notable customers: *Not disclosed*
URL: *www.cinsight.net*

Overview

C-Insight focuses primarily on the apparel and footwear sector. Its RSL-Insight software assists clients in collecting, reporting and analyzing testing data related to brands' RSLs. Its database incorporates an extensive set of RSLs and regulations and allows analyses of chemical data with respect to any set of hazard endpoints.

Significant System Features

Provides chemical testing and RSL management software programs (see form below), which it launched over a decade ago. Also provides some assessments of product performance and reliability.	Supports brand efforts to **track and evaluate supplier performance** in meeting RSL or other requirements.
Supports the identification of safer chemical alternatives through engagement with partnership initiatives in the apparel/footwear sector, including the Apparel and Footwear International RSL Management (AFIRM) working group.	In addition to RSL-Insight, provides **COC-Insight** (tracking compliance with chemical ingredient requirements of the Consumer Product Safety Improvement Act) and **H2O-Insight** (supporting the collection, analysis and management of water and wastewater programs for global supply chains).

Primary Submission Information

Submission # (TRF #)	Brand*	Division*	Product Type*
TBD ()	<Select One>	<Select One>	<Select One>
Test Program	**Test Specification**	**Sourcing Office**	**Country of Origin***
<Select One>	<Select One>	<Select One>	<Select One>
Testing Lab*	**Lab Reference #**	**Lab Contact Name**	**Lab Contact Info**
<Select One>			
Season*		**Sample Description***	
<Select One>			
Sample Type*	**Material #**	**Article #**	**Sample Status***
<Select One>			<Select One>
Color Way	**Color Code**		**Purchase Order #**
Supplier*		**Supplier #**	**FFC #**
Date Received* (mm/dd/yyyy)	**Test Report Date** (mm/dd/yyyy)	**Retest**	**Previous Submission #**
		No	
P.S. Result	**COC Testing Result**	**COC Exp. Date** (mm/dd/yyyy)	
	<Select One>		
Result Override Reason		**Expiration Date Override Reason**	

Fields marked with an asterisk are required.

[SUBMIT]   [RESET]

C-Insight: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		X
Other features		
Integrates ingredient data analysis & regulatory reporting		
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		X
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

Name of Product:	*PurView*
Sector/supply chain emphasis:	*Multiple sectors*
Notable customers:	*Target*
URL:	*www.ulpurview.com*
Merger news:	*UL Information & Insights purchased GoodGuide in 2012 and the company's enterprise platform, PurView, launched in Fall 2013. UL I&I purchased The WERCs in 2013, creating potential for integration between offerings of The WERCs and PurView.*

Overview

UL's PurView platform enables enterprise customers to evaluate products or materials from their suppliers based upon configurable sustainability criteria, and ranks chemicals based on client-specified algorithms. The platform is one of a suite of supply chain technology solutions offered by UL Information & Insights.

Significant System Features

PurView has approximately **50 regulatory lists** in its standard configuration. Purview software can also be configured to assess chemicals or products against client-specified regulatory lists or multiple RSLs/MRSLs.

PurView **can track exposure information**, but exposure information is not automatically compiled or generated by the system.
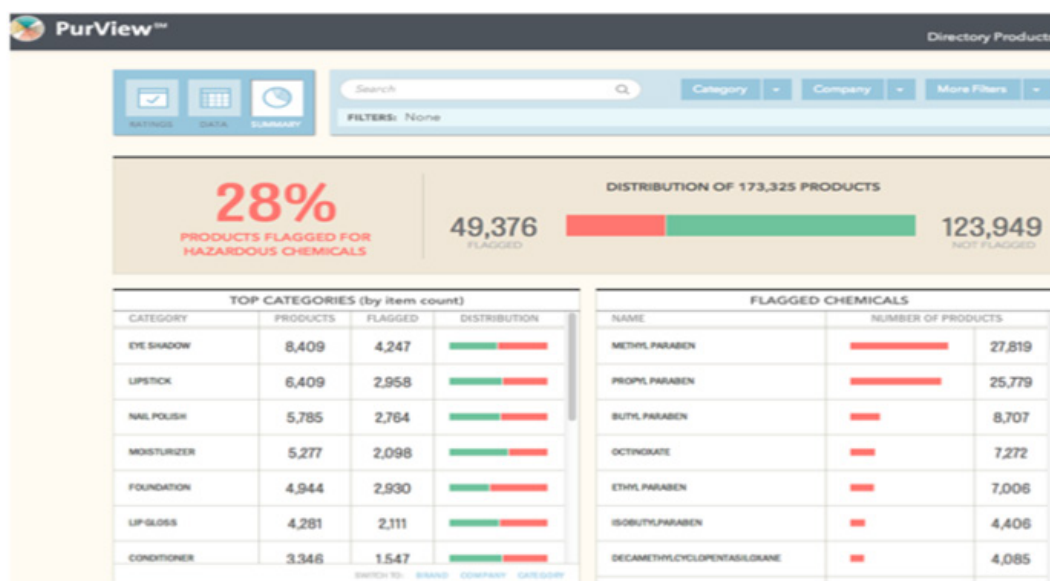
GoodGuide/UL PurView Platform: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		X
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

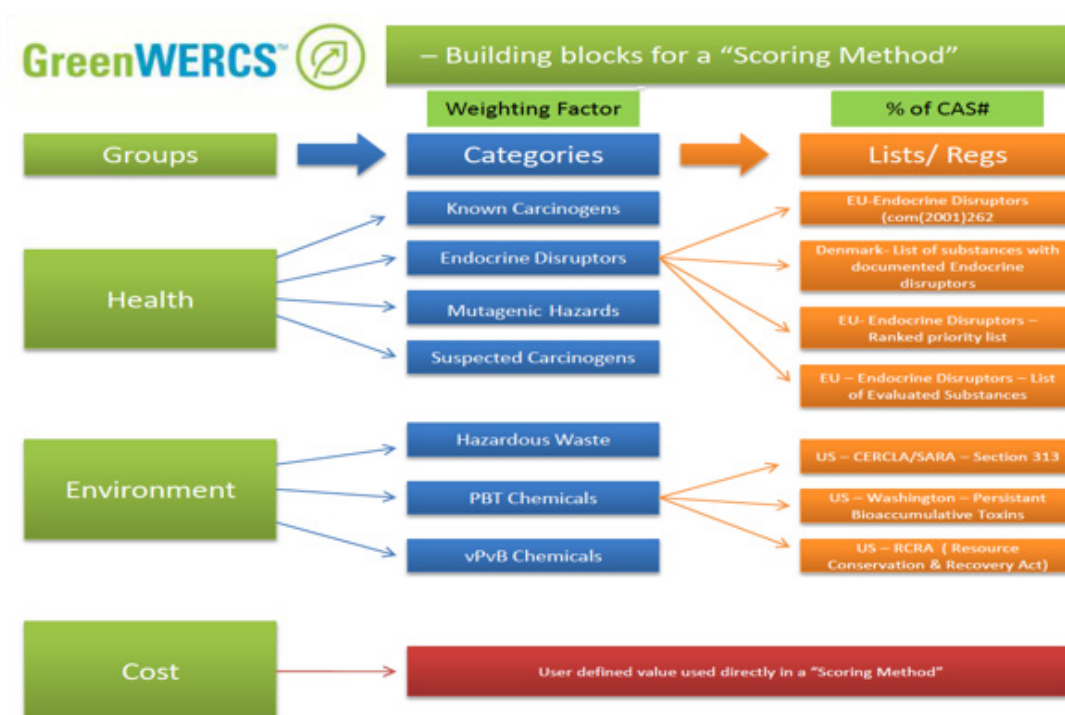|	
Name of Product:	_GreenWERCS_
Sector/supply chain emphasis:	_Multiple sectors_
Notable customers:	_Walmart, Allergen, Halliburton_
URL:	_www.thewercs.com_
Notable news:	_UL Environment purchased GoodGuide in 2012 & The WERCS in 2013, offering potential for WERCS/GoodGuide synergisms._

Overview

The GreenWERCS module of The WERCS software chemical management tools provides transparent scoring methodologies for products for human health and environmental and physical hazard endpoints. Related modules manage chemicals across product lifecycles, including for regulatory compliance and SDS management.

Significant System Features

Companies can configure GreenWERCS scoring methodologies to prioritize company-defined goals, or add features to the standard GreenWERCS model (for example, elements of the GreenScreen methodology that are incorporated within the GreenWERCS software).

The WERCS can write **customer-specific rules** to incorporate exposure logic to augment the hazard-based ratings.

GreenWERCS™ — Building blocks for a "Scoring Method"

Groups	→	Weighting Factor		% of CAS#
		Categories	→	Lists/ Regs

Health → Known Carcinogens, Endocrine Disruptors, Mutagenic Hazards, Suspected Carcinogens → EU-Endocrine Disruptors (com(2001)262; Denmark- List of substances with documented Endocrine disruptors; EU- Endocrine Disruptors – Ranked priority list; EU – Endocrine Disruptors – List of Evaluated Substances

Environment → Hazardous Waste, PBT Chemicals, vPvB Chemicals → US – CERCLA/SARA – Section 313; US – Washington – Persistant Bioaccumulative Toxins; US – RCRA (Resource Conservation & Recovery Act)

Cost → User defined value used directly in a "Scoring Method"

GreenWERCS: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		X
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		X
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		X
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	X
	As SaaS (software as a service)	X

SafeTec™

Vendor Profile

Sector/supply chain emphasis: *Multiple sectors*
Notable customers: *Basic American Foods, Boeing, Illumina, McLane Company, Pacific Gas & Electric*
URL: *www.saftec.net*

Overview

SafeTec offers comprehensive, automated (M)SDS and chemical inventory management. SafeTec's system is designed primarily to extract information from Safety Data Sheets and provide customers with online data tracking of chemicals.

Significant System Features

Typically **tracks chemical ingredients at the facility level** rather than the material/product level. Also provides chemical screening for product ingredients where companies have identified banned chemicals as part of a chemical approval process.	**Workflow assessments at facilities** can be used to track potential chemical hazards and exposures from an industrial hygiene perspective, focusing on factors such as applications and flow volumes.
Can capture ingredient information to cross-reference against regulatory lists. Also assists in automating environmental reporting using chemical inventory data and regulatory lists.	**Alternative chemicals/products for applications could be ranked** from data captured from the source SDS. Ranking would be based on a customer-defined algorithm.

SafeTec: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		
Protects CBI data while providing hazard information		
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		X
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		X
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		X
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

Name of Product: *SAP Solutions for Sustainability*
Sector/supply chain emphasis: *Multiple sectors including supply chain collaboration*
Notable customers: *Molex, Colgate Palmolive, Varian, Givaudan, Clariant*
URL: *www.sap.com/sustainability*

Overview

SAP Product Safety and Stewardship software solutions enable companies to manage chemical ingredient and material data and satisfy legal and customer requirements at all stages of the product lifecycle. Extensive, regularly updated chemical regulatory databases support compliance assurance throughout product supply chains. (See SAP lifecycle stewardship and compliance diagram below.)

Significant System Features

Comprehensive chemical and regulatory databases support design, production and distribution of compliant products. SAP databases have substance and reference data for 250,000 listed substances, and rule sets for product and mixture classification.
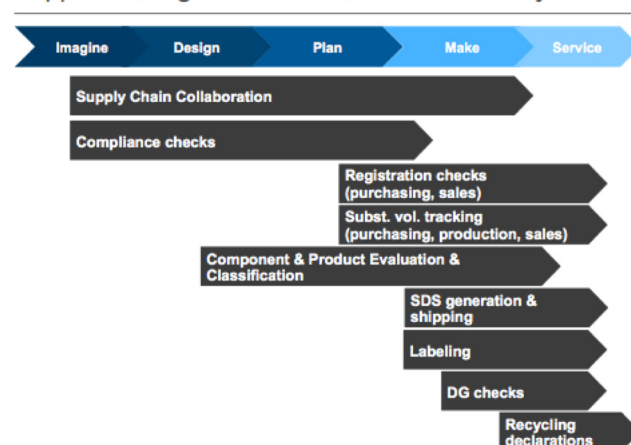
Software provides integration of chemical management capabilities with companies' business processes. SAP's integrated architecture enables embedding product safety and stewardship data and processes in business processes to operationalize compliance activities.

Systems collect **compliance data from suppliers and customers**, including compliance information based on chemical exposure scenarios and uses.

Key **compliance features** include:
- Streamlining collection of customer and compliance information
- Assessing compliance information and reporting to all stakeholders
- Creating compliance documents

Product Safety and Stewardship
Support Throughout the Whole Product Life-Cycle

SAP: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		X
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		X
Other features		
Integrates ingredient data analysis & regulatory reporting		X
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		X
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	X
	As SaaS (software as a service)	X

Name of Product:	*SciVera Lens Chemical Safety Assessment Platform; SciVera Lens Secure Supplier Platform*
Sector/supply chain emphasis:	*Consumer product categories*
Notable customers:	*Not disclosed*
URL/phone:	*www.scivera.com / 434-974-1301*
Notable recent news:	*Recently acquired T-ChIP system for textile chemicals management. Also launched service provider licensing program.*

Overview

The SciVera Lens software & supporting services provide product chemical data collection; restricted substance screening; hazard, exposure and screening level risk assessment; and alternatives assessment for a variety of consumer product sectors.

Significant System Features

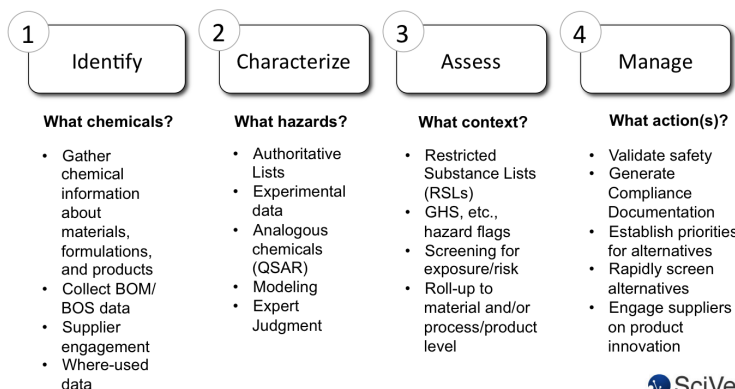|	
In addition to hazard assessment, can provide exposure assessments for high hazard chemicals. Benchmarks are developed for high hazard chemicals across all exposure routes. Authorized users can configure exposure function (e.g., not bioavailable) for specific chemical, material, or product use conditions.	Customers can both **load** their Bill of Substances data into the SciVera Lens system and **export** BOS data from the system to their own platform. They can also **connect** their product data management platform **directly** to SciVera Lens for automated transfer.
Enables customers to gather ingredient (CAS #s) data from suppliers for reporting RSL, hazard, and/or risk assessment results to customers while protecting the suppliers' proprietary ingredient information.	**Licensed GreenScreen profiler** and has automated much of the GreenScreen assessment process within the SciVera Lens platform.

Chemical Safety Assessment

Proactive product chemical data collection and evaluation for human and environmental health

1 Identify	2 Characterize	3 Assess	4 Manage
What chemicals?	**What hazards?**	**What context?**	**What action(s)?**
• Gather chemical information about materials, formulations, and products • Collect BOM/BOS data • Supplier engagement • Where-used data	• Authoritative Lists • Experimental data • Analogous chemicals (QSAR) • Modeling • Expert Judgment	• Restricted Substance Lists (RSLs) • GHS, etc., hazard flags • Screening for exposure/risk • Roll-up to material and/or process/product level	• Validate safety • Generate Compliance Documentation • Establish priorities for alternatives • Rapidly screen alternatives • Engage suppliers on product innovation

SciVera
Better Science. Better Products.

SciVera Lens™: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		X
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		X
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		X
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

![TEXbase logo]

Vendor Profile

Overview

The TEXbase software system can assist in defining and meeting either performance specifications or chemical restrictions in brand or sector RSLs. TEXbase software solutions were initially developed to provide support for companies in the apparel and footwear industry seeking to achieve greater consistency and certainty in defining and meeting material innovation, quality and performance specifications.

Significant System Features

Supports **communication of specifications and test protocols** for either chemicals or other properties and promotes collaboration of suppliers, labs and brands on developing and communicating test data.	Through supply chain mapping, the software expands multi-tier supply chain information back to the **raw material level** (including fibers and yarns), and provides traceability for how materials meet brand requirements throughout the supply chain.
Allows brands to import **detailed supplier information** for product development.	**Assesses chemicals in products** and tests materials and finished products against Restricted Substances Lists (RSLs).

TEXbase: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		X
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

Vendor Profile

thinkstep

Name of Product:	*Product compliance software*
Sector/supply chain emphasis:	*Multiple sectors*
Notable customers:	*Seagate*
URL:	*www.thinkstep.com*
Notable recent news:	*Name changed from PE-International to thinkstep. Launched new material management software with Siemens.*

Overview

Thinkstep's software collects supply chain data and assesses that data against compliance requirements, whether pre-configured regulatory rule-sets or customized company restrictions. Its software for chemical hazards is fully integrated with Siemen's Teamcenter enterprise software, which provides comprehensive BOM management.

Significant System Features

While the product compliance has built in regulatory program lists, such as REACH, it can be configured to **incorporate any set of restricted substance lists required** by a customer.	Through use of questionnaires about compliance with specific sets of requirements, thinkstep's chemical hazard software **enables suppliers to provide essential hazard data** to customers about proprietary information while protecting Confidential Business Information.
Thinkstep's software is not a stand-alone tool. Assessments against the regulatory and restricted substance lists in thinkstep's software are **integrated into Siemens' comprehensive BOM management structure.**	**Supplier data can be integrated** in IPC 1752 or other standardized chemical ingredient forms.

Thinkstep: Software System Components		
Inventory Chemical data		
Identifies data gaps/potential errors		**X**
Protects CBI data while providing hazard information		**X**
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	**X**
	Customized RSLs/MRSLs	**X**
Assess chemical ingredients against hazard endpoints		
Human toxicity		**X**
Environmental toxicity		**X**
Physical hazards		**X**
Supports comparison/scoring of alternatives against hazard criteria		
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		**X**
Provides automated real-time or batch feeds with data validation		**X**
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		**X**
Uploads source documents (invoices, use, etc.) for audit review		**X**
Software can be integrated into ERP/PLM systems		**X** *
Software deployment	On customer servers	
	As SaaS (software as a service)	**X** *

*Through integration with Siemens Teamcenter software

3E
COMPANY
A Verisk Analytics Company

Name of Product:	*Ariel WebInsight; 3ESC; 3E GPA*
Sector/supply chain emphasis:	*Multiple sectors*
Notable customers:	*3E's Ariel data is widely used by chemical manufacturers.*
URL:	*www.3ecompany.com*

Overview

3E Company offers a suite of data products and information services to assist in meeting specific customer needs for achieving compliance with global Environmental Health & Safety (EH&S) requirements for safe manufacturing, distribution, transportation, usage and disposal of chemicals and products.

Significant System Features

Using customer-defined criteria, **3E's Green Product Analyzer (GPA) can score products** against others in the same product category with respect to chemical regulatory standards, customer-defined RSL standards or chemical hazards/properties (see sample product comparison chart below).

3E data can be loaded into ERP/PLM platforms such as SAP, Oracle-based, and customer-specific systems. Automation depends on ERP configuration.

Through Ariel WebInsight, **customers can access extensive regulatory data sets** and a Physical, Chemical, Toxicological, Eco-Toxicological Content (PCTEC) database that provides chemical property & hazard information for a wide range of endpoints.

Chemical ingredient data can be tracked through the supply chain using 3E's supply chain software.

Product Comparison
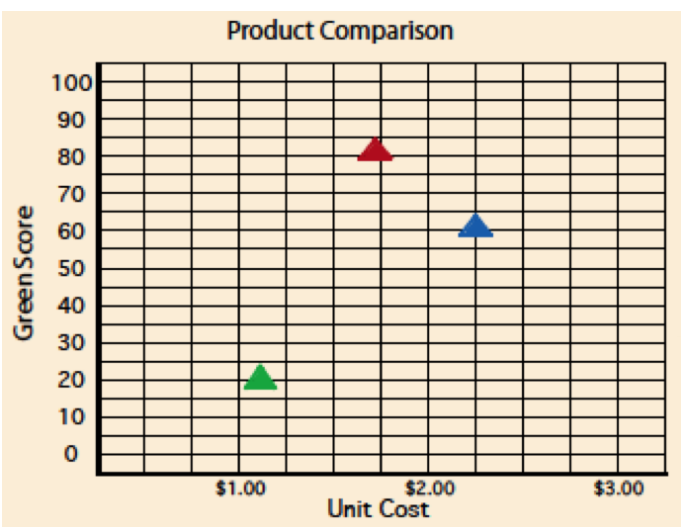
	Green Score	Unit Cost
Product A	20	$1.25
Product B	60	$2.25
Product C	80	$1.75

3E: Software System Components

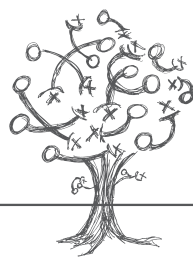|		
Inventory Chemical data		
Identifies data gaps/potential errors		X
Protects CBI data while providing hazard information		X
Screen chemical ingredients against RSLs		
Inventories chemical ingredients/concentrations by standard identifiers (e.g., CAS #s) and assesses against	Regulatory lists	X
	Customized RSLs/MRSLs	X
Assess chemical ingredients against hazard endpoints		
Human toxicity		X
Environmental toxicity		X
Physical hazards		X
Supports comparison/scoring of alternatives against hazard criteria		X
Assess exposure potential		
Integrates estimates of exposure for potential uses of hazardous ingredients		
Identify less hazardous alternatives		
Facilitates and provides guidance for identifying less hazardous chemical alternatives that meet specific functional requirements through an inventory of chemicals & attributes		
Other features		
Integrates ingredient data analysis & regulatory reporting		X
Provides automated real-time or batch feeds with data validation		X
Provides 'data ownership' for specific data elements by individuals/locations within company with data access controls and audit trails		
Uploads source documents (invoices, use, etc.) for audit review		X
Software can be integrated into ERP/PLM systems		X
Software deployment	On customer servers	
	As SaaS (software as a service)	X

About Pure Strategies' Sustainable Chemicals Management Expertise

Since 1998, Pure Strategies has helped companies initiate and enhance existing sustainable chemicals management by setting meaningful goals, devising effective management strategies, and making changes to products and supply chains that deliver value to the business and society. Pure Strategies works to transform chemicals management from a compliance focus to a proactive approach that reduces risk, builds brand strength and advances innovation. We help companies articulate their vision, develop priority chemical strategies, assess hazards, create design guidelines, develop tools, and integrate a focus on benign chemistry and transparency throughout the business. Our clients include Walmart, The North Face, Seventh Generation, RB, Rockline Industries, and EMD Millipore.