Each year, approximately <u>30 million metric tons</u> of solvents are used globally across a wide variety of industrial, manufacturing and consumer goods applications. Unfortunately, most industrial and commercial solvents are carbon intensive, have limited recyclability, and many pose significant human health risks. Over the last few decades, there have been significant efforts to create safer and more sustainable solvent alternatives. However, fully transitioning to safer and more sustainable solvents will not be easy - incumbent solvents are versatile, readily and reliably available for "pennies a pound", and current manufacturing process and products are optimized for their use.

To accelerate this transition, Change Chemistry is convening a crossvalue chain collaborative working group that will prioritize efforts to identify and support the transition to safer, more sustainable solvent(s) with a focus on performance, scale, and adoption.

Approach

Replacing solvents of concern with safer and more sustainable alternatives will be a multiyear process that requires working collaboratively and strategically to drive incremental change. As a first step, this project seeks to replace Group 1 solvents.

Group 1

Solvents that are present in the consumer goods sold by retailers.

Group 2

Solvents that are used in the manufacturing of consumer goods or in the provision of consumer services.

Group 3

CHANGE chemistry

Solvents that are used in the manufacturing of chemicals, materials or chemical intermediates.

Group 1 solvent substitution is supported by strong market and regulatory drivers. Further, their lower volume requirements obviate some substitution barriers. Achieving a Group 1 substitution demonstrates how functional needs can be met with safer and more sustainable alternatives and provides data that can be used to further (or additionally) inform the supply chain. This will build capacity, create alignment across supply chains, and develop markets for solvent alternatives whose functional attributes are amenable to Group 2 and 3 applications.

Approach (continued)



- 1. **Develop a list of priority solvents** by identifying solvents commonly used in consumer products and analyzing their use across product categories, hazard, industrial applications, and regulatory limitations. Members' needs and input will also be critical.
- 2. **Develop criteria and metrics** for safe and sustainable solvents by consulting members, partners, and existing sustainability and hazard frameworks.
- 3. Define functional and economic criteria for practical solvent substitution.
- 4. **Identify alternative solvents and benchmark** against the metrics and criteria previously defined. If the identified alternatives are determined to not meet requirements, we will support the development of a novel solvent.
- 5. **Complete a gap analysis** to determine barriers for substituting solvents, focusing on the prioritized solvent and application.
- 6. **Define actionable next steps and develop recommendations** to address barriers and support the adoption of solvent alternatives.

Key Outputs

- Develop a Sustainable Solvents Business Rationale to help members communicate about sustainable solvents and their value to all parts of an organization and through the supply chain. This includes definitions, metrics, and information resources to facilitate communication and collaboration across different job functions.
- Identify an alternative solvent(s) that is safer and more sustainable than the incumbent while meeting the performance requirements for the chosen use function.
- Demonstrate that replacing a solvent of concern in a niche application can support larger, market-wide change.
- Complete a landscape analysis of the barriers to solvent substitution and develop recommendations for stakeholders across the value chain to overcome these challenges and transition to an alternative.

Why Join?

To drive widespread, impactful change, this project requires the involvement of and input across manufacturing value chains.

- **Brands, Formulators & Retailers** create powerful demand signals to accelerate the transition to the identified solvent alternatives. By joining this initiative, you will go beyond your RSL and proactively eliminate a hazardous solvent from your portfolio, protecting your business health and resiliency. By demonstrating your commitment to safer and sustainable chemistry to your customers, you will be enhancing your brand value.
- **Chemical Manufacturers & Suppliers** have critical knowledge of the available alternatives as well as their safety and sustainability. By joining this project, you will advance your broader sustainability and business goals, grow trust with customers, and develop partnerships with product innovators and downstream buyers.
- **Startups** are solution providers but may face challenges with market penetration or developing strategic partnerships that could help accelerate their adoption. By joining this project, you will connect with other Change Chemistry members and have the opportunity to demonstrate the unique abilities and benefits of your technology.
- Service providers/consultants/non-profits bring a wide range of knowledge and experience, tools, and resources to an initiative. By participating in this project, you will contribute to system wide change and demonstrate your commitment to sustainable chemistry to your stakeholders.

If you would like to join this project and are a Change Chemistry member, contact <u>Jenny MacKellar, Program Director</u>. If you are interested in becoming a Change Chemistry member, contact <u>Rui Resendes, Director of Partnerships and Business Development</u>.

