



Green Chemistry Member Survey

April 2014

Summary

In 2014, the Green Chemistry & Commerce Council surveyed its business members to gain a better understanding of their green chemistry practices, drivers, and barriers. This report summarizes the results of that survey.

The survey was sent to 39 GC3 members who were asked to identify themselves as chemical companies, manufacturers, brands, and/or retailers. Thirty six responses were received from 29 companies, a 75% response rate. The survey was primarily multiple-choice, with open-ended comment opportunities available for each question. For those companies submitting more than one response (4), there were some differences in answers, reflecting different perspectives based on the respondent's position in the company. The results of this survey, along with input from additional commissioned research and discussion at the GC3's annual Innovators Roundtable, will be used to inform the GC3's efforts to mainstream green chemistry, including incorporation into the GC3's Agenda to Mainstream Green Chemistry, which can be found at <http://greenchemistryandcommerce.org/projects/mainstreaming>

Defining Green Chemistry

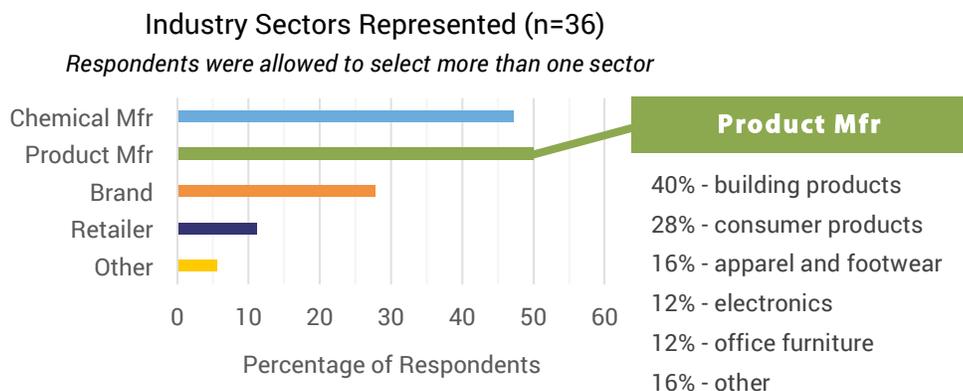
Green chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substance throughout their lifecycles: design, manufacture, use, and end of life.

Green chemistry is a growing field of practice that builds on conventional chemistry and engineering by applying 12 fundamental principles that guide the molecular design of sustainable chemical products and processes. Adhering to these principles prevents pollution and waste, leads to synthesis of chemicals in less hazardous and more efficient ways, promotes the use of renewable feedstocks, and leads to the design of safer chemicals.

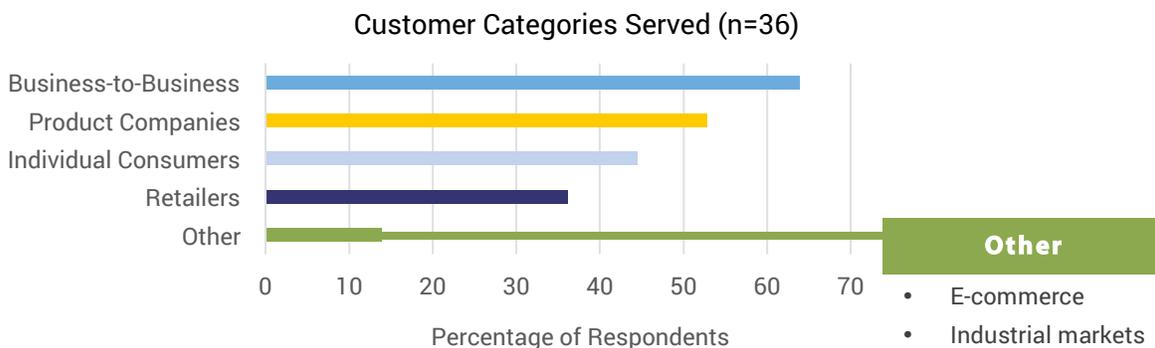
While green chemistry has been practiced primarily at the chemical discovery, development and formulation levels, product developers, manufacturers, brands, and retailers all play an important role in its implementation. Several ways they do this are by changing design specifications, sourcing materials and products that incorporate green chemistry practices, changing manufacturing practices to substitute or reduce the use of hazardous chemicals, and developing and implementing policies that restrict chemicals of concern in the products they source, make, and/or sell.

Company Demographics

Survey respondents were asked to select their industry sector: chemical manufacturer, product manufacturer, brand, and/or retailer. The majority of respondents were product manufacturers, followed by chemical manufacturers. Thirteen companies selected more than one sector.



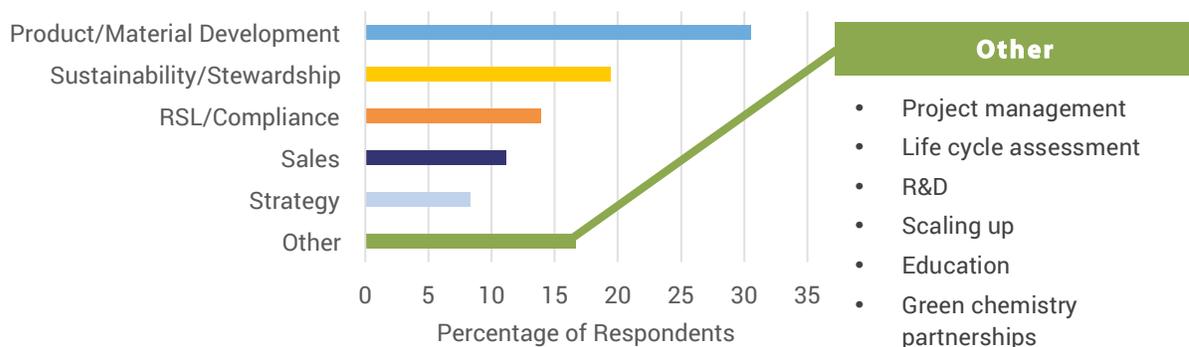
Respondents were also asked to select the category of customers their company serves—business to business, product companies, individual consumers, and retailers. Some companies chose more than one customer category, and several chose all four. The majority of companies (64%) sell their products business to business. These products include office supplies and furnishings, paints, and chemicals.



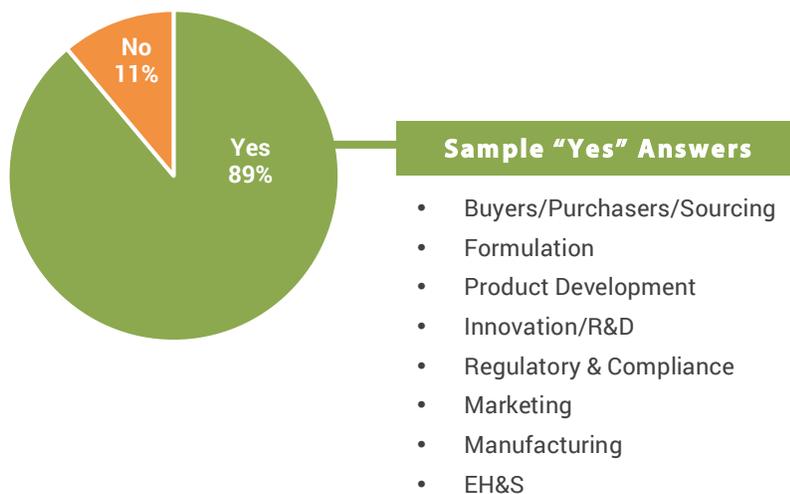
Green Chemistry Roles

Responsibilities for green chemistry span a number of job categories among GC3 member firms, ranging from product development, to sales, and compliance. This shows that green chemistry doesn't happen in one particular part of a company, and that it can be embedded in multiple parts of a business. In some cases, the entire company has an overarching green chemistry focus.

What are your job duties relating to green chemistry?
(n=36)

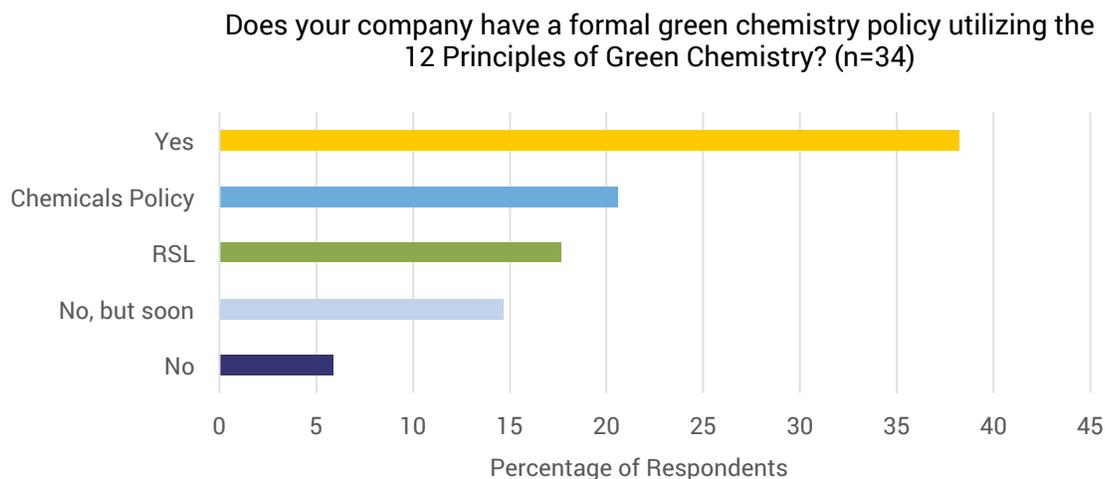


Are there other people in your company tasked with the sourcing, development, and/or sale of products with safer chemistries? (n=36)



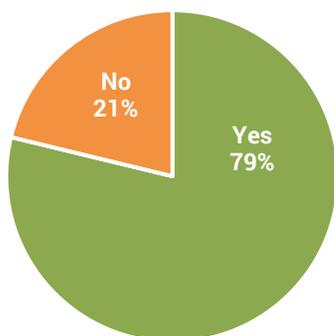
Green Chemistry Practices

The vast majority of GC3 member companies have a policy on green chemistry—either following the 12 Principles of Green Chemistry, phasing out chemicals of concern and identifying safer alternatives, or merely restricting hazardous substances. Some are currently developing green chemistry policies. Product brands were most likely to have a formal policy on green chemistry, followed by chemical manufacturers.

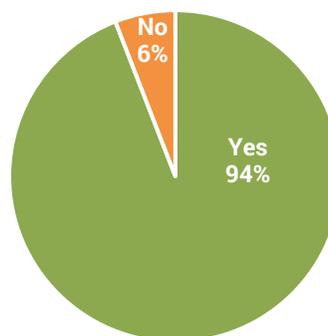


Approximately 90% of product brands noted that they have embedded green chemistry considerations into design guidelines, followed by chemical manufacturers (87%), product manufacturers (77%), and retailers (67%). Only one brand and one retailer indicated that green chemistry is not a design priority for their firm in the next 3-5 years. All of the chemical companies involved in the survey answered that their R&D priorities include green chemistry, followed by 94% of product manufacturers, 90% of brands, and 75% of retailers.

Are green chemistry and engineering design criteria embedded in your company's product design guidelines? (n=33)

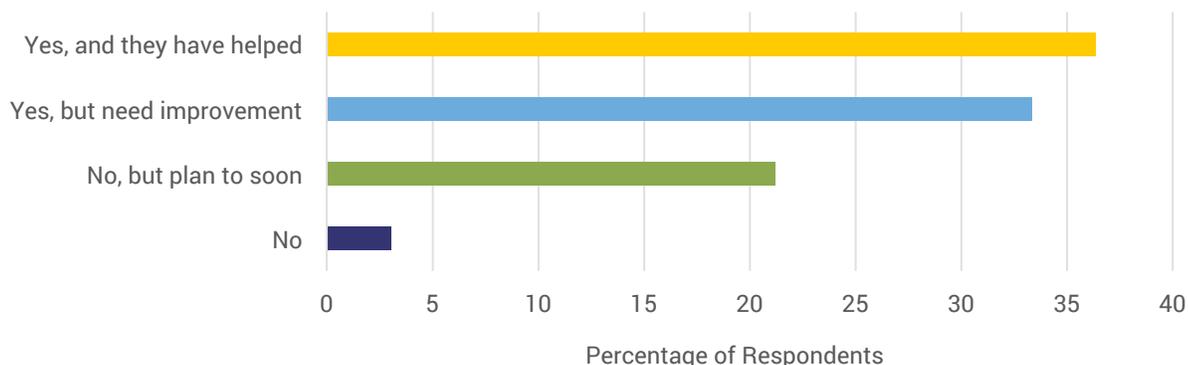


Do your R&D or product development priorities for the next 3-5 years explicitly include green chemistry approaches? (n=34)



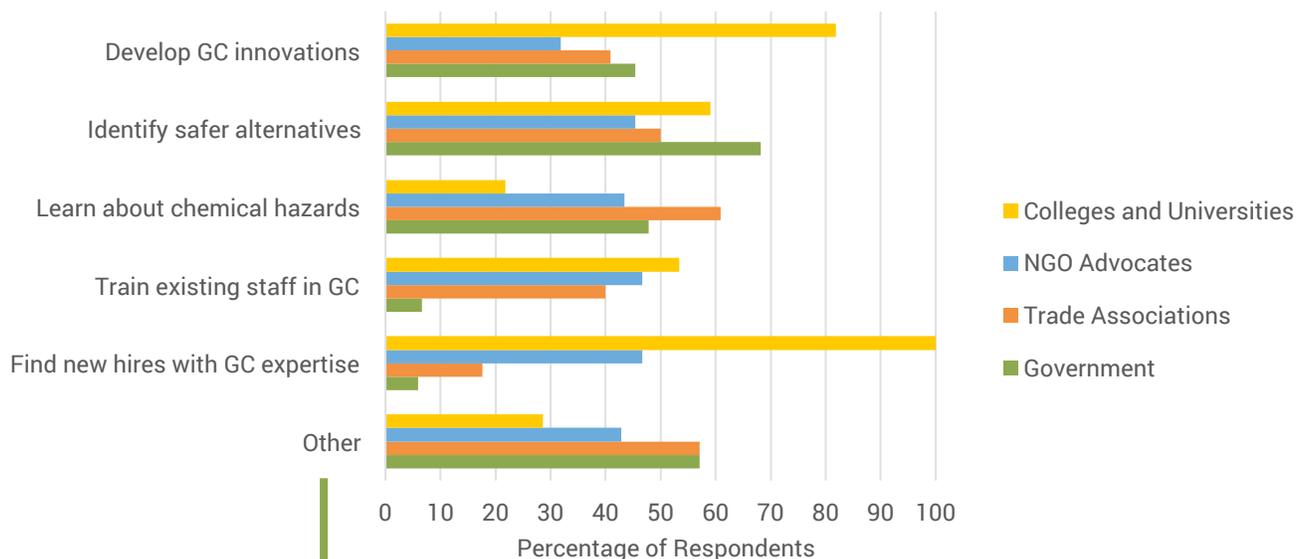
About 80% of product brands and chemical companies use metrics to track green chemistry progress, with a significant number of companies across sectors stating that these metrics need improvement. Twenty-five percent of retailers—more than any other sector—have no established green chemistry metrics, although they plan to develop them soon.

Does your company use metrics or benchmarks to track progress towards green chemistry implementation? (n=33)



Partnerships are critical to advancing green chemistry among GC3 member companies. Colleges and universities are the most identified partners for developing new innovations and for finding new hires with green chemistry expertise. Chemical companies, product manufacturers, and retailers tend to partner with trade associations to identify chemical hazards; while retailers, along with brands, work more than do the other sectors with advocates to identify chemical hazards.

Which entities do you partner with for the following activities? (n=32)



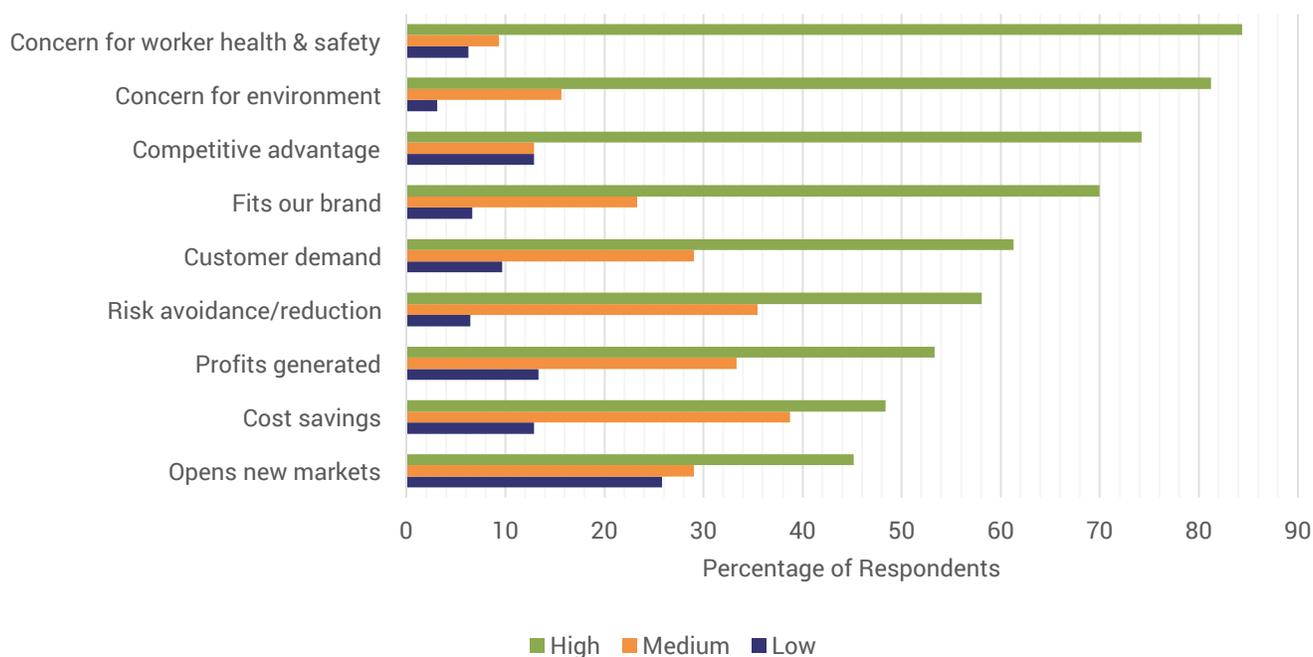
Other Partnered Activities

- Advocating for change; promoting green chemistry and engineering
- Reaching customers interested in sustainability
- Collaboration with other companies/consultants
- Chemical data collection

Green Chemistry Drivers

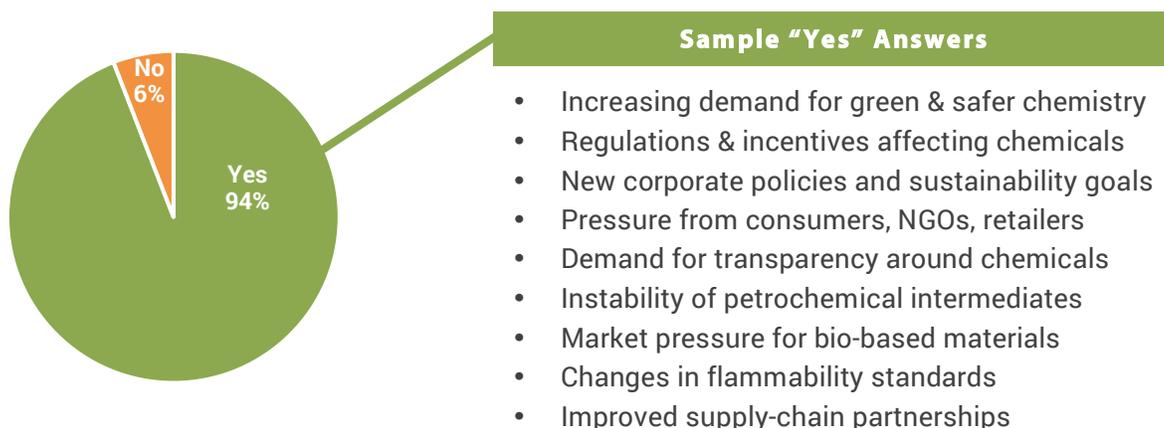
Respondents noted that the most important green chemistry drivers are concern for the environment and for worker health and safety; this is universal across all sectors. Additionally, a top driver for chemical manufacturers is that green chemistry provides their firms a competitive advantage. There were additional differences across sectors in ranking the importance of other drivers: chemical companies rank risk avoidance lower, and profits generated higher, than the other sectors; and product manufacturers rank cost savings as a more important driver than other sectors.

Rank the importance of the following drivers to your company's safer chemistry initiatives (n=30-32)



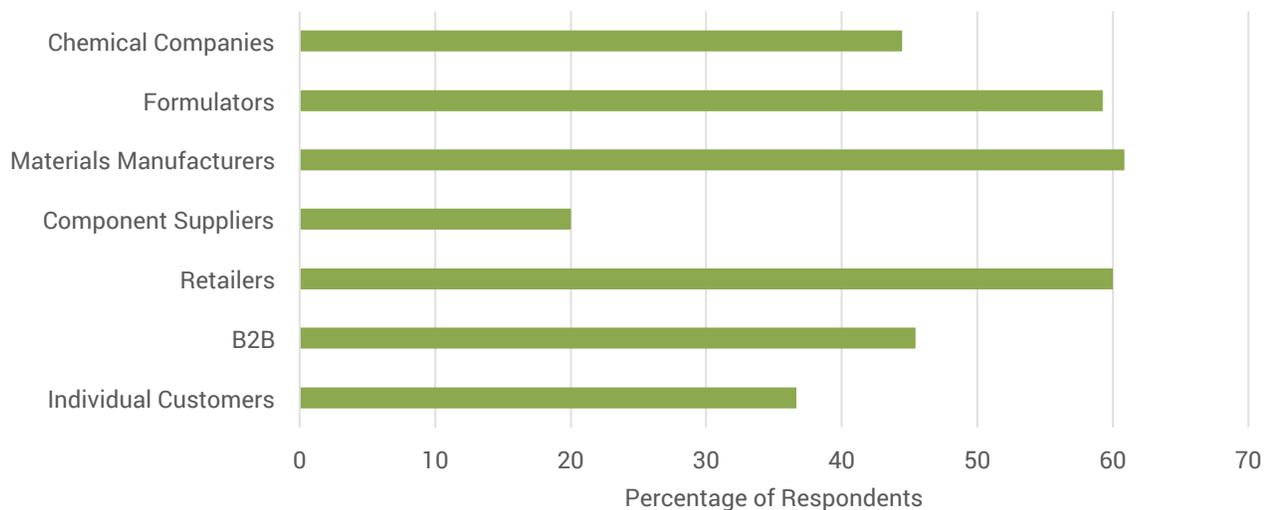
Chemical manufacturers represent the only sector that does not anticipate any changes in the next 3-5 years that will impact their company's green chemistry initiatives.

Do you anticipate any changes in the next 2-3 years that will impact your green chemistry practices? (n=34)



Each sector views the most activity in or support for green chemistry as coming from different places, which is not surprising given that they each work with different parts of the value chain.

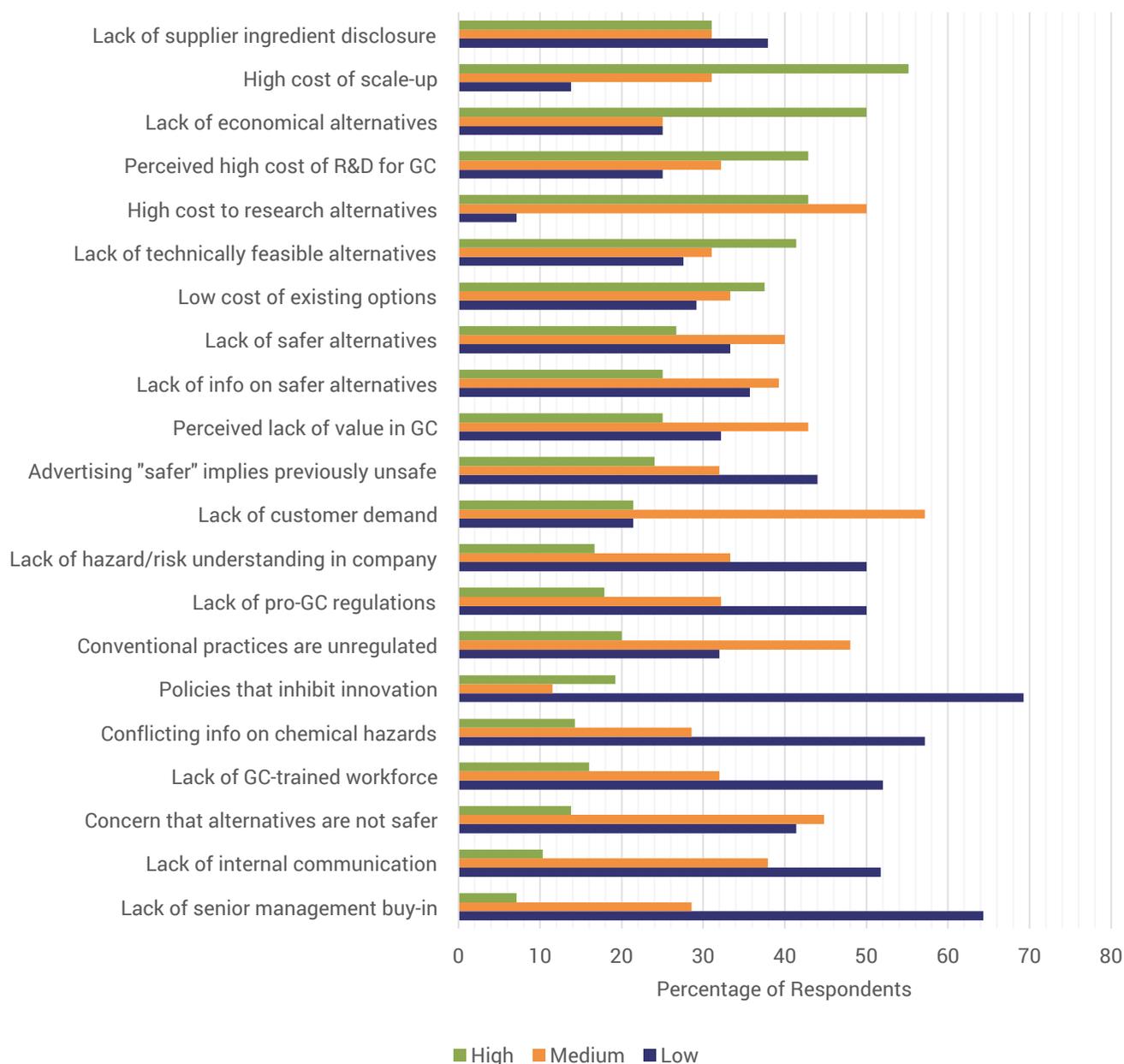
Where do you see the most activity in/support for green chemistry in your supply chain? (n=33)



Barriers to Green Chemistry

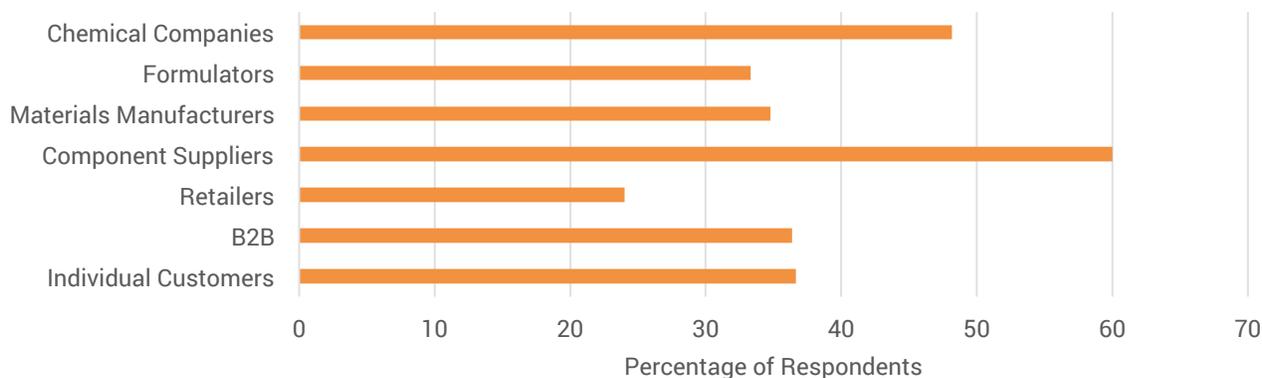
The biggest barriers GC3 member companies identified in moving towards green chemistry are the high cost of scaling up and the lack of economically feasible alternatives. Some differences in top rankings across sectors are the lack of technically feasible alternatives (experienced most strongly by product manufacturers and brands); the high cost to research alternatives (product manufacturers); the perceived high cost of green chemistry alternatives, and the low cost of existing non-green chemistry options (chemical manufacturers); and the lack of disclosure about chemicals/materials sourced by suppliers (product brands and retailers).

Rank the following barriers your company has experienced in moving towards green or safer chemistry (n=24-30)



Respondents, regardless of sector, identified the least support for green chemistry as coming from either component suppliers or chemical companies. Education, transparency, and communication along the supply chain may be important to change this dynamic.

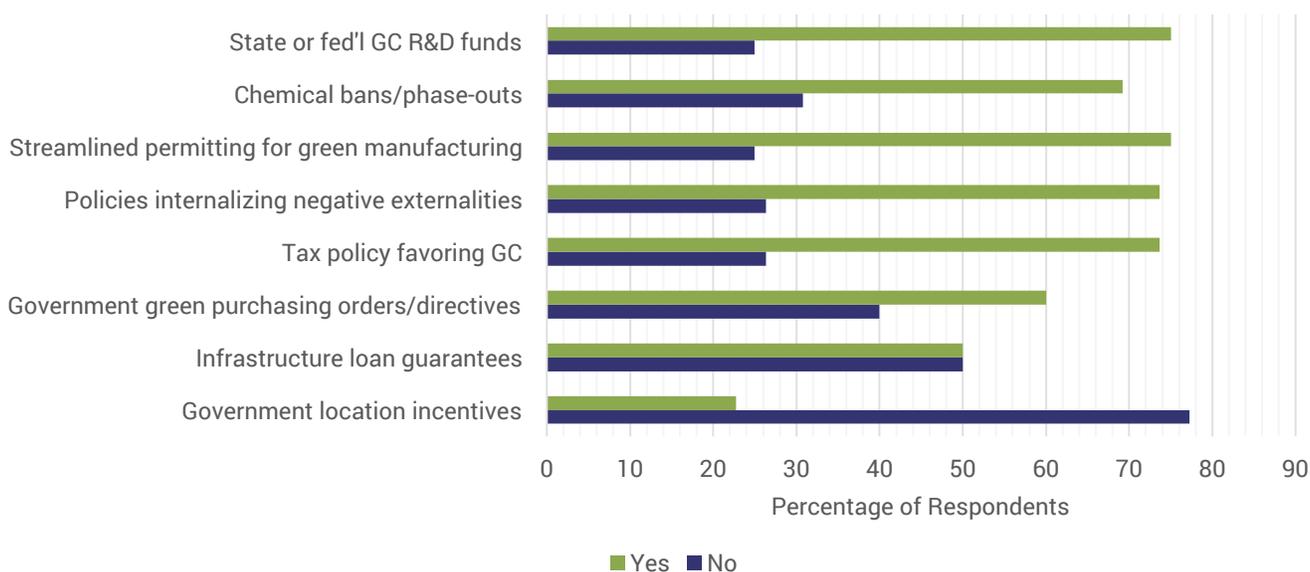
Where do you see the least activity in/support for green chemistry in your supply chain? (n=33)



Policies for Green Chemistry

Smart policies can drive green chemistry activity by providing funding for research, expanding markets, reducing the costs and time associated with obtaining permits, and more. All sectors universally ranked policies that provide government R&D funding as the most important type of policy that would help their company expand its green chemistry efforts. There were areas of difference between the sectors; for example, retailers ranked tax policies favoring green chemistry and streamlined permitting much lower than did the other sectors, and ranked chemical bans more favorably. The companies that ranked location incentives high included both start-ups and well-established firms.

Would any of these policies help your company expand its green or safer chemistry practices? (n=18-26)



Activities Promoting Green Chemistry

There are actions outside of formal government policies that can advance green chemistry, such as growing a workforce trained in green chemistry, fostering new partnerships, and increasing transparency in supply chains about chemicals used and their hazards. Increased consumer demand and partnerships with green chemistry researchers ranked the highest as potential activities that would promote green chemistry, while access to venture capital was considered the least helpful. As in other categories, there was some divergence between sectors. For example, product brands and product manufacturers ranked partnerships with environmental organizations higher than did other sectors, and chemical companies ranked much lower than other sectors the need for more green chemistry-related trainings.

Would any of these activities help your company expand its green or safer chemistry practices? (n=19-30)

