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Supply Chain

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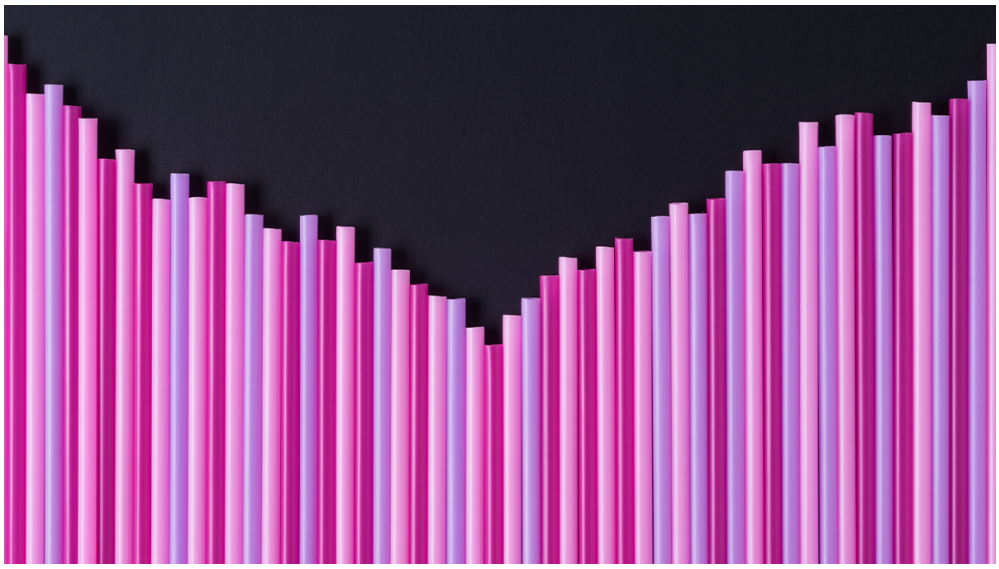

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"Everywhere You Look, the Global Supply Chain Is a Mess," read a recent headline in the *Wall Street Journal*. Most supply chain practitioners would agree: between the pandemic, container shortages, winter weather, factory fires, the blocking of the Suez Canal by a container ship, and other logistics woes, things are messy. These disruptions have already led to the current global shortage of semiconductors, and now the supply disruption of another critical category of materials is occurring: plastics. Constraints on the supplies of their raw materials — especially polyethylene (PE), polypropylene (PP), and monoethylene (MEG) — are leading to factory

shutdowns, sharp price increases, and production delays across a range of industries.

The plastics made from these chemicals are used in every kind of product imaginable — from food packaging, appliances, smartphones, and car parts to exercise equipment and roller skates. Combine this with surging consumer demand for goods and it's easy to see why these supply constraints are a big deal.

Like the semiconductor shortage, this one has been a long time coming. During summer 2020, Covid-19-related lockdowns caused inventory levels to fall. Then, in August, Hurricane Laura forced a number of petrochemical factories in Louisiana and Texas to shut down; overnight 10% to 15% of U.S. PE and PP production stopped.

This was followed by a slew of force majeures from big polymer producers, including LyondellBasell in Louisiana and Chevron Phillips Chemical in Texas. (By declaring force majeure, these suppliers were relieved of certain supply-delivery commitments due to circumstances outside their control.) Simultaneously, Covid-19 safety precautions slowed production at many workplaces and caused labor and trucking shortages at ports.

The final blow was the winter storm in February that struck the Gulf Coast. Texas is home to the world's largest petrochemical complex, which turns oil and gas and other byproducts into plastics. Almost 100 critical chemicals and derivatives used widely across many products and industries are processed in Texas. It will take more than six months to correct the imbalances caused by the storm. Given these problems, the grounding of a container ship in the Suez Canal on March 23 could not have come at a worse time.

Surges in demand are widely expected to occur in the United States and other countries as vaccinated consumers venture out and spend their stimulus checks. But companies may not be able to take full advantage of

this opportunity: Purchasing managers surveyed by the Institute for Supply Management last month anticipated worsening supply-demand imbalances in a variety of areas as the U.S. economy continues to open up. Many of their companies already face depleted inventories up and down their supply chains, price increases, higher rates of delinquent shipments, and longer lead times for orders. From the vantage point of sourcing experts who are managing suppliers, the outlook is grim: They expect disruptions to last for longer than 12 months.

While supply chain disruptions of some kind are just a fact of life, it's not all doom and gloom, especially if we learn from them. Covid-19, for example, vividly revealed the vulnerabilities baked into lean, cost-optimized supply chains. It also highlighted the need for building supply-chain-resilience capabilities. During the pandemic, companies that had solid monitoring and supplier mapping capabilities — down to the sub-tier site and part level — had a complete picture of how the evolving crisis would affect their supply chains. This helped companies take action before the disruption hit. Some were able to avert any negative impact.

Access to early warning systems and market intelligence are important for keeping a close watch on developments that impact the flow of goods, but companies should also have experts across different commodity categories using the systems to pick up early warnings and prepare early on for potential constraints. A wide range of materials go into a single product, and it's important to know where those materials come from. Mapping only one or two categories or Tier One suppliers is not sufficient. In the case of the semiconductor shortage, the carmakers' inability to get a $5 chip from a Tier Three supplier derailed the entire automotive industry.

In a similar misstep, many supply chain managers failed to adequately monitor polymer suppliers because those materials go into low-cost items like adhesives and resins. While they're widely used across many products, their low cost meant they were not top of mind at many companies. To build a more resilient supply chain, it's vital to look at even the most

inexpensive parts and materials when they are critical to products and revenues and not just expensive, sophisticated, or specialty items.

Many companies also make the mistake of paying close attention only to their direct suppliers and not to their suppliers' suppliers. Best-in-class companies take time to identify the suppliers' suppliers that are critical to the continuing production of their top revenue generators and proactively map, monitor, and protect those entire supply lines.

When sourcing constrained materials, companies compete with buyers with the deepest pockets who are not necessarily their traditional competitors. Those that have had early warnings of disruptions and visibility into which sites and products would be impacted have been able to get in line first to grab available inventory and capacity. In this environment, companies that are better prepared to act quickly have a competitive advantage.

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