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Chemical Logistics: The Price of Success

These are good times for chemical manufacturing in the United States. But an active market creates special challenges for companies that need to transport chemical products.



The U.S. chemical industry is going strong, according to American Chemistry Council (ACC) figures released in late 2017. U.S. chemical production volume for 2017, excluding pharmaceuticals, would be 0.8 percent higher than in 2016, finds the ACC's annual industry study. ACC predicts further growth of 3.7 percent in 2018, 3.9 percent in 2019, and 3 percent in 2020.

Continued access to inexpensive shale gas, used for feedstock in the manufacturing process and for energy, gives U.S. chemical manufacturers an advantage over competitors in other locations, says the ACC. Companies have announced nearly 320 new chemical production projects in the United States, with a total value of more than \$185 billion, the organization says. Foreign investment accounts for 62 percent of that value.

The ACC also notes an increase in exports from the United States,

creating a \$32-billion trade surplus for chemicals, excluding pharmaceuticals, in 2017. Chemical exports totaled \$127 billion, and imports rose by 2.8 percent over 2017, reaching \$96 billion.

Along with low-cost feedstock, the U.S. chemical industry benefits from the strength of the general economy, which is driving greater demand for plastics and many other products made from chemicals. "We've seen a sustained upward trend that has continued to build steadily and progressively," says Mark Montanari, vice

president, chemical and oil and gas at Boston-based consulting firm Maine Pointe.

Companies that transport chemicals, or manage chemicals transportation, saw a spike in business in 2017 in the wake of several major hurricanes, including Harvey, which ravaged southern Texas in August of that year. "Some of the production facilities we were working with sustained damage," recalls Adam Kroupa, general manager of the ChemSolutions business at third-party logistics (3PL) provider C.H. Robinson in Eden Prairie, Minnesota.

As companies transferred production to alternate facilities, they needed to move component chemicals or arrange for suppliers to deliver to the new locations. "We

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Miller Intermodal Logistics Services provides well-maintained, efficiently priced equipment, and responds quickly to shippers who need to lease bulk tank trailer storage and equipment.

were able to help those companies with their supply chain, and adjust their transportation needs,” Kroupa says.

On top of those temporary changes, the chemical industry has seen some longer-term adjustments to shipping strategies since the Panama Canal reopened in 2016.

“Imports from China that used to hit the West Coast are being delivered to Texas, where a lot of refining and chemical production facilities are located,” Kroupa says. “Many shipments are going to the East Coast as well.” Those changes mean less demand for over-the-road or intermodal transportation for chemicals from California, but more for tanker truck capacity near the ports of Texas, Georgia, and the Northeast.

Another trend is a move among some chemical manufacturers to develop a more distributed supply chain. “Instead of operating major plants that produce and source from one or two locations globally, some companies are trying to figure out how to create smaller,

boutique manufacturing that’s close to customers,” says Chuck Breinholt, president of Rinchem, an asset-based 3PL in Albuquerque that specializes in chemical and gas supply chains.

Like companies that supply components to auto manufacturers, these chemical firms try to locate plants in the same cities as some of their large customers, vastly reducing the need for outbound transportation.

“This move doesn’t necessarily benefit us as a 3PL,” says Breinholt. “It is smart business, however, if manufacturers can figure it out and can comply with and control safety and quality issues.”

The Big Squeeze

While greater demand for chemicals is good news for companies that sell and use those products, and for their logistics partners, the strong market also creates a big challenge—a serious capacity crunch.

Thanks to the ongoing driver shortage, tighter enforcement of

hours of service (HOS) regulations with electronic logging devices (ELDs), and a healthy economy, companies shipping all kinds of products find it hard these days to secure transportation capacity in popular lanes. For chemical shippers, the challenge is even greater.

That’s partly because so many chemicals are classified as hazardous materials (hazmat). In a tight market for drivers in general, the subset of drivers with hazmat certification is even tighter.

“The driver shortage is more acute because of the additional training that’s required to haul chemicals,” says Michael Notarangeli, executive vice president, logistics, at Maine Pointe. “Usually drivers in the chemical industry have more tenure, because they have more training and a good safety record.”

Such requirements make it tough to find new drivers for chemical loads when demand surges.

Making the situation tougher still, a federal regulation

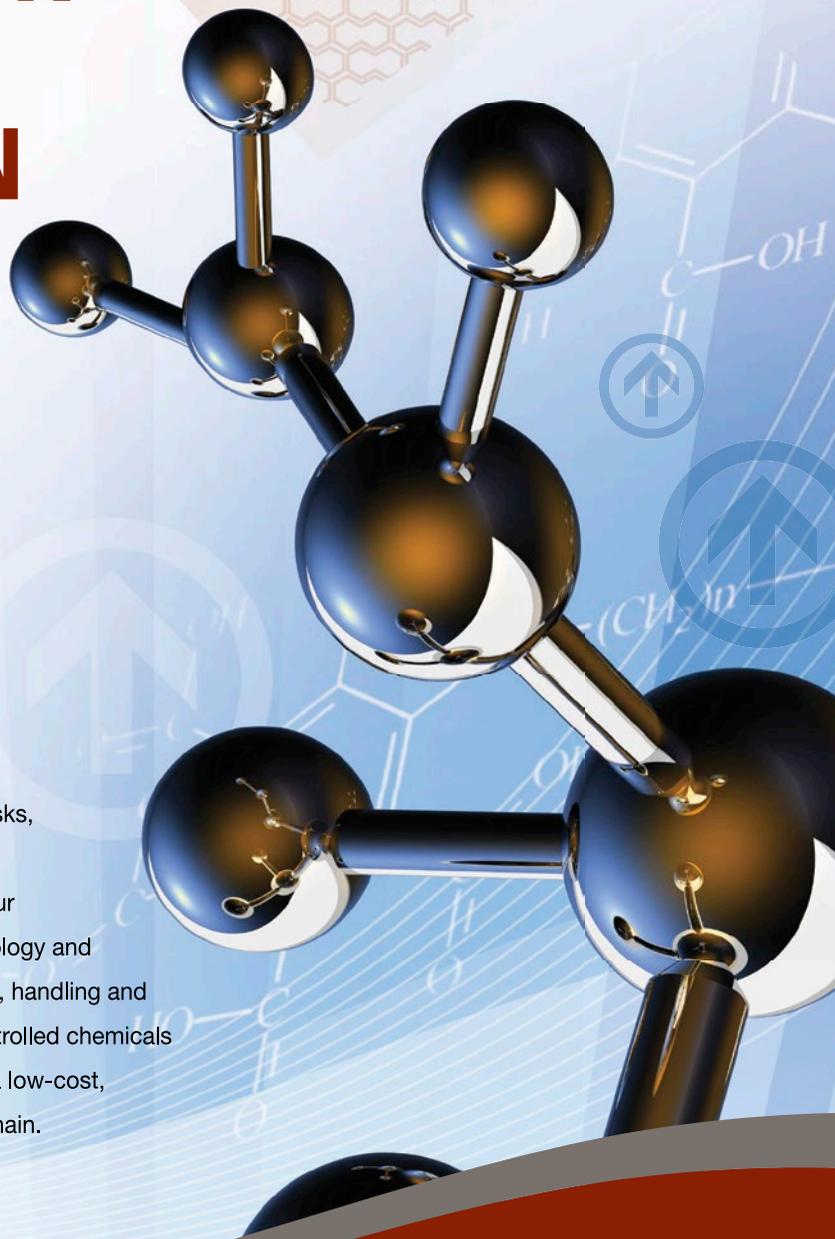


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established several years ago requires some drivers who haul hazardous chemicals in van trailers to add tanker endorsements to their commercial drivers' licenses (CDLs).

"If a shipment includes liquid or gaseous containers larger than 119-gallon capacity, and the aggregate combined volume in

those containers exceeds 1,000 gallons, you're required to get a tanker endorsement," says Greg Umstead, vice president of transportation management at 3PL Transplace in Frisco, Texas. "A lot of chemical shippers move large totes. If more than two of those totes are on the trailer, you need a tanker endorsement."

The ELD mandate, which took effect in December 2017 and came under full enforcement in April 2018, has not only tightened up the hours when drivers are available to work, but has also knocked some capacity directly out of the market.

While many carriers adopted ELDs years ago, the industry as a whole did not fully embrace the

Regulatory Relief

While some regulations make life harder for chemical companies, several recent moves by the federal government could give the industry a boost, according to Adam Kroupa, general manager of the ChemSolutions business at third-party logistics provider C.H. Robinson in Eden Prairie, Minnesota.

One helpful development is the Ozone Standards Implementation Act of 2017, which modifies the National Ambient Air Quality (NAAQS) standards in the Clean Air Act.

"If shippers in the marketplace don't collaborate quickly and efficiently with service providers, we will only run into other problems, especially in a contracting driver market," notes Mike Forbes, vice president of logistics solutions at Kenan Advantage Group (KAG) in North Canton, Ohio. KAG provides tank truck transportation and logistics management services for companies that ship fuel, chemicals, industrial gases, and food-grade products.

Collaboration can take many forms. At industry meetings, shippers and service providers have been sharing ideas about how to improve efficiency. Those discussions lead to specific initiatives that might involve several shippers or even several carriers.

For instance, in some cases, KAG and other bulk liquid carriers can establish programs to use each other's facilities to wash out their tanks after deliveries. "Not all carriers have wash stations at every location or key market," Forbes says. Such cooperation helps carriers bring greater value to their customers.

In other cases, a carrier and shipper might join forces to eliminate empty miles in the supply chain by tying outbound finished product shipments to inbound raw materials. "A lot of best-practice sharing and problem solving goes on through these collaborations," Forbes says.

Chemical shippers and their partners also need to think more broadly about their transportation options. "Everyone should continue to look for situations that

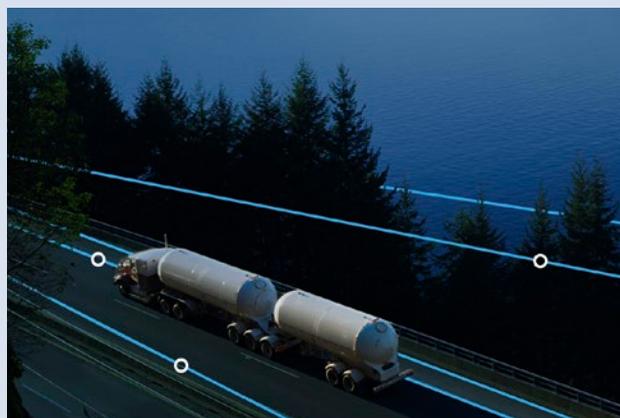
help shippers eliminate the 'lumpiness' over a delivery week," Forbes says. "We need to consider programs that influence end users to accept loads on broader time tables, versus an '8 a.m. Monday' standard."

In the ongoing quest for greater logistics efficiency, information technology continually offers new capabilities, such as "being able to anticipate and better provide predictability," Forbes says. "More and more, predictive analytics are becoming a component of decision making.

"In the past, what we called 'real-time data' wasn't actually real time; it had a lag to it in most situations," Forbes says. "Now, some of the applications collect and share data in actual real time. You can make predictions from that data, to change and anticipate different scenarios, which makes all parts of the supply chain more efficient and lean."

New mobile apps for operations, sales, and customer service also deliver benefits for chemical shippers and their transportation partners.

"For example, the apps let drivers provide more timely information about shipments or unplanned events that could impact cost and service," Forbes says. "Mobility also extends sales and customer service activity any time, anywhere."



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devices. Some trucking companies and drivers were not able to equip their trucks, and were hoping that stricter enforcement of HOS rules would never actually come to pass, says Steve Haskins, president and CEO of Miller Intermodal Logistics Services, Inc. (MILS), based in Ridgeland, Mississippi.

Carriers and drivers who anticipated government intervention, or who chose not to spend the capital to equip their fleets, vanished from the market. “With that void, the industry suddenly felt a vacuum of eight to 10 percent fewer trucks that simply aren’t on the road today,” he says.

The regulations have hit bulk tank transportation—including the transportation of chemicals—particularly hard. Drivers transporting bulk loads are experiencing significant dwell time waiting to load and unload. “Many drivers’ Department of Transportation (DoT) hours of service are consumed with waiting in staging areas to load and unload at chemical industry plant sites or tank farms,” Haskins says.

Haskins suggests that chemical shippers could assist with DoT compliance if they would be more flexible in their schedules. “Shippers expanding loading and delivery times with off-hour, night, or weekend options would provide additional windows for drivers to load and unload,” he says.

MILS provides transportation and logistics services with its own fleet of tank trucks, dry vans, and dedicated freight. In partnership with other carriers, MILS offers services that include a strong emphasis on tank truck, van, rail, and intermodal transportation. It provides supply chain management, order fulfillment, inventory management, a transload and warehouse facility, equipment leasing, and maintenance.

The company also offers specialized services, such as transporting goods in totes via dedicated less-than-truckload (LTL) or full truckload.

Carriers cannot solve capacity issues on their own, Haskins notes. Chemical shippers and receivers must come to the table with changes in the way they consume drivers’ time. “We must collaborate for better use of truck and driver resources, and invest in plant infrastructure and site improvements for safer and more efficient handling of trucks,” he says. “This, along with better scheduling, will bring the needed capacity results.”

Different Dynamics

Stricter enforcement of HOS regulations hasn’t had the same effect across the board, but rather has changed the dynamics for shippers tendering loads to carriers, says Reggie Dupré, CEO of Dupré Logistics Services in Lafayette, Louisiana. Given the limit on the number of hours a driver can work in one day, a carrier is more likely

to want a 450-mile load—requiring a one-day trip—than a load that has to move 750 miles, which takes about a day and a half.

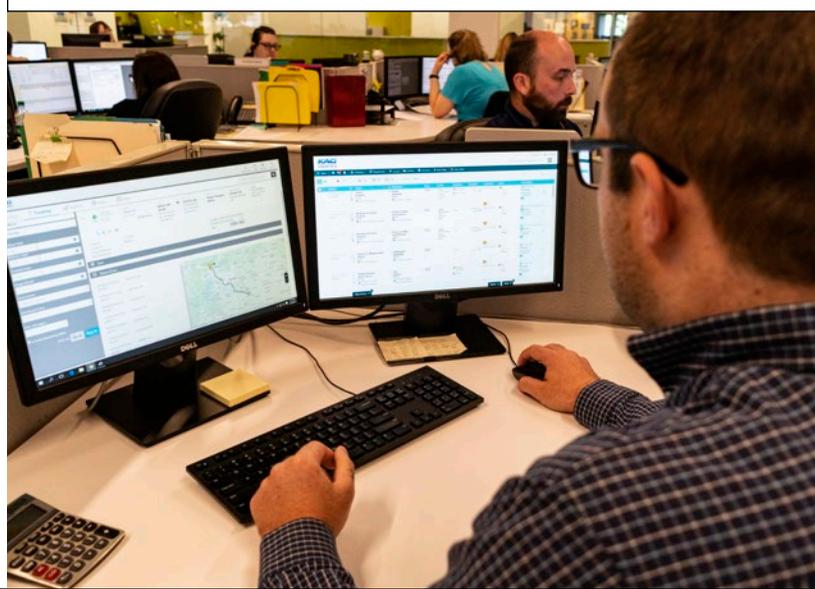
“We in the trucking industry are selecting the loads that give us the highest productivity,” he says. “Those in-between ranges are not as desirable.”

Shippers that can’t avoid those 750-mile runs pay a premium, Dupré says. Shippers are also working with carriers to eliminate those awkward runs.

“Some shippers are positioning inventories into regions and getting those regional depots supplied by either barge or rail,” he says. “And then they’re doing more local deliveries via truck. But a ‘local’ delivery could still be less than 500 miles.”

Dupré Logistics focuses largely on the chemical and energy industries with three levels of service. The first level offers spot transportation via the company’s own fleet and through its trucking brokerage. The second provides managed transportation, and the third provides dedicated contract services.

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The Form Factor

Although chemicals often move in bulk containers, they may also move in barrels, totes, or custom-made packaging. The size and shape of these packages can make a significant difference in transportation and storage costs.

"Sometimes the packages are light, but tall, and cannot be stacked," says Chuck Breinholt, president of 3PL Rinchem in Albuquerque.

"And sometimes the configuration is too wide, so they cannot be placed side by side on a truck," he adds. "Or once they make it to a warehouse, their unique size doesn't fit the racking configuration."

Container sizes and packaging configurations can lead to ineffective space utilization, and wasted space costs money. So when companies source or design packaging for chemicals, they need to think about how the packaging will cube in transit, as well as in storage and at the ultimate destination.

"That can help them drive out unexpected and potentially significant costs," Breinholt says.



While strategies such as the use of regional depots can help shippers avoid some problems in over-the-road transportation, companies may also run up against other capacity challenges, ranging from congested ports to scarce space on the rails. "Domestic logistics services are at their maximum right now," Dupré says. "The collision between the increase in demand and the restricted supply is the biggest challenge that we and our customers face."

In part, today's capacity shortfall springs from an overabundance a few years back, when the economy was weak. "Everybody was forced to reduce their assets and service offerings to some extent because capacity levels were higher than demand," Dupré says. Now, service providers in all modes are scrambling to accommodate greater volumes.

Yet another factor complicating access to capacity for chemical shippers is the proliferation of mergers and acquisitions in the industry. "A lot of mid-level companies are joining up together," says Michael Clark, executive vice president, logistics, chemicals, and specialty products at KAG Logistics in North Canton, Ohio. "The strong keep getting stronger. And, in some cases, they demand a little more from their supply chains."

Larger companies with well-designed supply chain strategies have an advantage when it comes to capacity, Clark says. For example, rather than serve customers from one supply point, today a big company might ship product from multiple facilities.

"Big companies can take advantage of capacity, where it is, at any given time in the cycle," he says. Big companies also have greater clout in the marketplace.

In addition, larger chemical companies are becoming more

strategic in the way they use dedicated capacity and brokerage services. Consider a firm that uses dedicated capacity to handle its regular volume, but then sees a surge in demand due to a sales campaign. Rather than pull trucks from its contracted fleet or capacity from its traditional carrier partners to handle this extra volume, the company might make spot buys through a broker.

"In the past, larger companies had a fleet that traveled the same routes every day," Clark says. "Now, they're responding to the market much more quickly and creatively."

Longer Lead Times

Because capacity is so tight, especially for companies that need bulk tankers, shippers must start their transportation planning earlier. "Large bulk shippers used to have to give carriers three to five days notice," says Bob Daymon, senior vice president of operations at Transplace. "They're now being required to give 10 days notice."

Chemical shippers and their service partners use various strategies to beat the capacity crunch. For instance, they use information technology to anticipate the shipper's upcoming needs and locate capacity that meets specific requirements.

"We're investing more than \$150 million in technology in 2018 alone," says Kroupa. Those information systems help ChemSolutions find available trucks and match the right equipment to the right jobs.

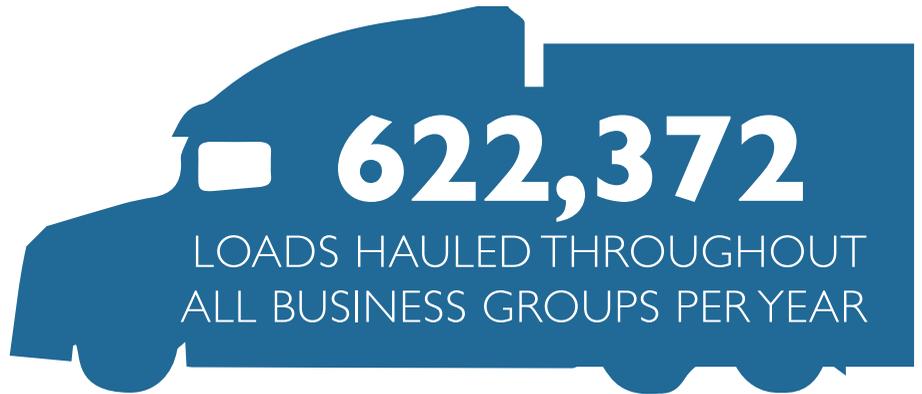
"Our technology can look at freight that's being shipped and make sure it aligns with customer needs," he explains. "There's also a security aspect to align tank requirements with any commodity controls the customer has in place."

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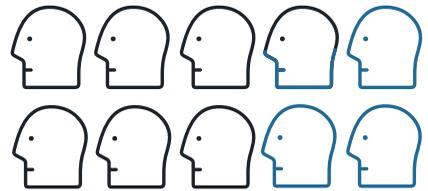


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transportation management system (TMS), called Navisphere, to spot trends and understand where capacity is available. “If we have capacity from a carrier in a specific area, for example, we can relay that information to customers and try to get ahead of things,” Kroupa says. “We can secure that equipment for them ahead of someone else.”

In addition, the company uses data analytics to understand customers’ shipping patterns and make preparations even before the customer places its orders.

Shippers also use technology to forge closer relations with carriers and 3PLs, so they can work together on challenges such as securing capacity. “Companies now have the ability to more tightly manage the supply chain with their partners, through the availability of data and better collaborative capabilities,” says Montanari.

Planning Ahead

Transplace uses technology to anticipate the needs of chemical shippers, start the planning process early, and find opportunities for continuous moves. “We want to know where the capacity is going, and how we can leverage it in a continuous loop,” Daymon says.

Predictive analytics help Transplace anticipate seasonal demand spikes, or shorter spikes due to upcoming storms. “We usually know two weeks out if a hurricane is coming. How do we prepare for that?” Umstead says.

Obviously, that strategy applies to all kinds of commodities. “But I see a lot of it specifically with chemical shippers,” he adds.

Also, Transplace works with carriers to lock in capacity for shippers who need it regularly. “We’ve established several dedicated fleets among our chemical



The KAG Logistics support center serves all its drivers, field operations personnel, and customers.

customers, not only for packaged chemicals, but also with bulk truck,” Umstead says.

In a third strategy, Transplace has created a preferred shipper program for chemical clients. The 3PL surveyed carriers to find out what they do or don’t like about serving particular shippers and then sent the results to its chemical customers. The survey shows, among other things, that carriers like to take loads from shippers that: get drivers in and out of their facilities fast; offer amenities such as wi-fi, lounges, and bathrooms; and let drivers park their trucks overnight.

“Some shippers have taken steps here to better accommodate drivers,” Umstead says.

The advent of ELDs is forcing shippers to become especially creative about eliminating driver waiting time. Shippers need to establish drop trailer programs, or else implement sophisticated load rack scheduling, Umstead says. In load rack scheduling, a company pre-loads trailers before drivers arrive to pick them up, or times its loading to get the driver back on the road as quickly as possible.

For smaller chemical companies competing for capacity against the big guys, a partnership with a 3PL can help. A service provider buys

far more transportation than a small chemical shipper, allowing it to strike better deals with carriers. And it may be better equipped to spot opportunities.

“Smaller companies sometimes lack the broader network knowledge about what’s going on across all the chemical networks,” says Clark at KAG Logistics. Some also lack the technology to take advantage of that knowledge.

In the Know

As a subsidiary of Kenan Advantage Group, KAG Logistics has access to its company’s own bulk liquid tankers, as well as a large network of outside carriers. KAG Logistics provides dedicated transportation, managed logistics services, truckload services, and supportive services such as transloading from rail to truck and inventory management.

“We know what’s going on in the marketplace, and we have processes and technology in place that smaller companies can leverage,” Clark says. The 3PL can also help smaller chemical companies optimize their supply chains.

“They may not have enough volume for a large dedicated

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In 2017, Rinchem expanded its chemical distribution center in Pyeongtaek, South Korea. The new site provides four additional warehouses capable of storing a wide variety of materials including flammable, toxic, corrosive, oxidizer, and miscellaneous dangerous goods with strict temperature requirements.

fleet, but we can help give them dedicated-like service by marrying up some of their capacity demands with other customers' capacity," he explains.

Getting the Meter Running

At MILS, one additional solution available to shippers who want to use capacity more efficiently is employing metered tank trucks. Usually, a bulk liquid is transported in a "single barrel" tank trailer or in a compartmented tank trailer. Those options limit a shipper's flexibility when it comes to the size of the loads it can deliver, Haskins explains.

About 15 years ago, MILS worked with a meter manufacturer to install meters on its tank trucks. Now, a shipper can provide a series of multi-stop deliveries in variable amounts to its customers. "This helps customers get their goods to market more efficiently while optimizing shipment orders via best routes for cost-effective deliveries," Haskins says.

Chemical shippers could also find more capacity if they were more flexible in their requirements.

"Today's chemical shippers want it their way," says Haskins. Each shipper that tenders a load has precise specifications for the equipment the carrier will provide.

Sometimes, a carrier has a truck available to carry a load, and it's just a few miles from a shipper, but can't fill the need because that truck doesn't meet every one of the shipper's requirements. "If shippers would collaborate more with carriers to ask, 'What can I do to make my freight fit your truck and your truck fit my freight?' that would help us free up more capacity resources in the market," Haskins says.

Dupré agrees that collaboration among shippers and service providers is becoming essential. "We're all trying to solve the same problem," he says. "If we come at it adversarially, we won't be using the available brain power of all the teams."

One more area where collaboration could pay off is in the timing of shipments. In the petrochemical industry today, carriers are wrestling with such a big backlog that a shipper who calls to book a truck often has to

wait two weeks to get one. "We're asking our customers to look at how they set up loads, when they place orders, and when they ask their customers to place orders," Dupré says.

Many chemical companies promise customers shipment within 48 hours, or sometimes even 24 hours. "It's very difficult to meet that demand right now," Dupré says. Shippers are critically aware of the capacity shortage, but they haven't yet responded with new processes, he adds.

Inventory Management

Just as 3PLs are helping customers in the chemical industry secure the capacity they need, those service partners can also help chemical companies manage inventory more effectively. To that end, Rinchem has recently made some new investments in its Chem-Star warehouse management system (WMS). The 3PL has upgraded its solution to provide simple, low-cost links with suppliers and customers, providing visibility that helps chemical companies make better decisions about how they manage and transport inventory, Breinholt explains.

One new feature, called Easy Link, integrates Chem-Star with shippers' own management systems. "Now we can easily automate advanced shipping notifications, order receipt confirmations, inventory reconciliations, and all sorts of data links so companies don't have to worry about whose system they're working in," Breinholt says.

Rinchem uses business intelligence technology to extract valuable information from the data and then to recommend alternative supply chain options to the customer.

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Landstar focuses its chemical business on product transported in drums and totes, such as this shipping container, which contains class 7 radioactive materials.

Breinholt cites an interesting insight that emerged from the data belonging to one of Rinchem's large customers. "For a certain product line, they had about 8,000 SKUs [stock-keeping units], and among those SKUs, more than 80 percent hadn't moved in the past five months." This is crucial information, given chemicals' finite shelf life.

"Once chemicals age, it's difficult to find a primary or secondary use for them, and then they become hazardous waste," he says. "The whole idea is to figure out how to reduce inventory, put it in the right places, and make sure decision makers know what is going on."

Training for Safety

Because many chemicals are hazardous materials, chemical shippers and their logistics providers must work diligently to keep their products safe and secure, both in transit and while in storage. At Landstar Transportation Logistics, based in Jacksonville, Florida, safety efforts start with a requirement: every owner-operator

leased to the company must be certified to haul hazmat.

"We put owner-operators through live training and orientation," says Mike Cobb, Landstar's vice president, safety and compliance. "At the end of the training, they are required to complete an in-depth hazmat course online. And then we recertify them every three years."

Landstar's nearly 10,000 contracted owner-operators do most of their hazmat hauling

with platform equipment and van trailers, not tanks, so the company's chemical business focuses on product transported in drums and totes. Although Landstar offers transportation for a wide range of commodities, it insists on hazmat certification for all its drivers. This helps to ensure that when a customer needs to move a hazardous load, there will be a driver available.

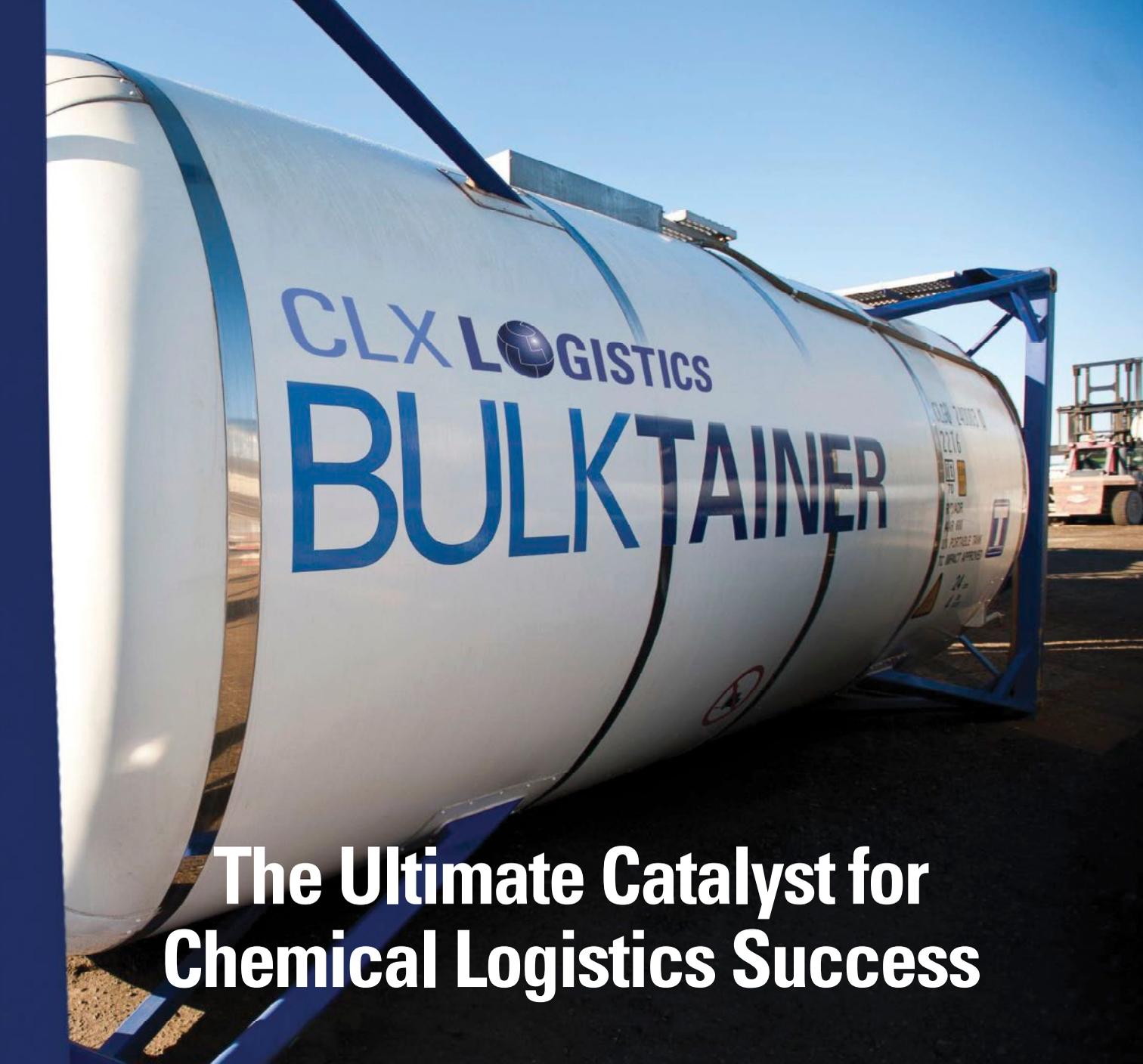
"If a driver is in the middle of New Mexico, and we need them to pick up a hazmat load nearby, we know they are certified to haul that load," Cobb says. "We don't need to have another driver deadhead 400 or 500 miles to pick that up."

Landstar hauled more than 200,000 hazardous loads in 2017, Cobb says. The company has established a hazmat department to make sure everything runs smoothly, and that all drivers get recertified on schedule. The department also ensures that Landstar's independent sales agents maintain hazmat certifications, so all agents bring the necessary safety knowledge to their work.

Furthermore, the hazmat department functions as a help desk. "If an operator is picking



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up a load and something on the paperwork doesn't look right, and it's not something they feel comfortable correcting or speaking with the shipper about, they can call our number 24/7/365," Cobb says. An employee will provide whatever assistance the owner-operator needs.

On top of its certification requirement, Landstar participates in Responsible Care, a program the ACC developed to promote health and safety. "A lot of the tank carriers are Responsible Care certified, but many typical van transportation providers are not," says Cobb.

Every year, a third-party Responsible Care auditor visits Landstar to evaluate its processes with an eye toward safety, compliance, risk management, and loss prevention. "Fortunately, we have met the standard every time," Cobb says.

No matter how careful its transportation partners are about safety, ultimately a shipper is accountable for any mishaps involving its hazardous products.

"When you manufacture the chemical, you can have the best safety protocols, the best people, the best training, the best record," says Notarangeli. "But as soon as it leaves your direct control, your entire supply chain has to be subject to those same standards. That adds complexity, cost, and a pretty steep layer of governance and due diligence."

Close collaboration is the key to getting safety right when working with service partners. "The carrier has to have access to the same information the shipper has in terms of safety sheets and safety protocols," Notarangeli says. Ideally, service providers would join the chemical company's employees for safety training, so everyone is working from the same

set of guidelines, he adds.

Along with the safety issues attached to hazmat transportation, many chemical shippers also contend with safety issues that are specific to bulk transportation, where loading and unloading can be complex processes. MILS has alleviated some of those concerns by making a commitment to redesigning the trailers in its tanker fleet to include fixtures and

controls for ground-level access, which greatly mitigate slip and fall incidents, Haskins says.

With their eyes always fixed on safety issues, while also searching for new ways to improve capacity utilization, chemical shippers and their partners have a lot to watch out for. If the chemical market continues to heat up, they'll be watching even more intently, and needing to work even smarter.

Who's Responsible?

Identifying a hazardous material is the shipper's first step, and frequently the most difficult. Of all the shippers' responsibilities, the requirement to properly classify a hazardous material is critical. The other requirements are based on the proper identification of the hazardous materials.

HAZARDOUS MATERIALS SHIPPER RESPONSIBILITIES:

- Determine whether a material meets the definition of a "hazardous material"
- Proper shipping name
- Class/division
- Identification number
- Hazard warning label
- Packaging
- Marking
- Employee training
- Shipping papers
- Emergency response information
- Emergency response telephone number
- Certification
- Compatibility
- Blocking and bracing
- Placarding
- Security plan

When moving hazardous materials, many carrier and shipper responsibilities frequently overlap. When a trucker performs a shipper function, the carrier is responsible for performing that function in accordance with 49 CFR. The cargo space of the vehicle should be suitable for the material being shipped. The vehicle itself must be in sound mechanical condition. The carrier must check to ensure that the material offered by the shipper is properly described and packaged. In addition to the provisions of 49 CFR Parts 100-180, interstate motor carriers of placarded loads must comply with the hazardous materials requirements in 49 CFR P.

HAZARDOUS MATERIALS CARRIER RESPONSIBILITIES:

- Shipping paper
- Placard and mark vehicle
- Loading and unloading
- Compatibility
- Blocking and bracing
- Incident reporting
- Security plan
- Employee training

Source: Federal Motor Carrier Safety Administration

CONSUMERS SEE

SC PORTS SEES



A plastic suitcase.

A dynamic business partnership that maximizes shipping predictability, flexibility and efficiency while minimizing risks and unforeseen problems to create a streamlined supply chain so your resins can be delivered seamlessly to customers faster.



Chemical Logistics Resource Guide

These chemical logistics partners offer supply chain solutions that help shippers move chemicals and hazardous materials safely, quickly, cost effectively, and as efficiently as possible.

C.H. ROBINSON WORLDWIDE

www.chrobinson.com

800-326-9977

The company's ChemSolutions team connects shippers with reliable, safe, and compliant carriers. ChemSolutions experts help shippers establish and refine stringent carrier scorecard requirements and pair them with trained drivers to ensure the safety of chemicals and dangerous materials during transit.

CLX LOGISTICS

www.clxlogistics.com

800-288-4851

Its ChemLogix division provides chemical logistics expertise—from regulatory compliance to safety and security considerations—for smooth outcomes, risk reduction, and cost savings. The ChemLogix team and solutions focus solely on chemicals, helping companies find ways to streamline and optimize their logistics networks.

DUPRÉ LOGISTICS

www.duprelogistics.com

337-237-8471

Dupré provides transportation and site logistics, ranging from truck transportation to yard management, for chemical producers. Its team of industrial engineers maps the process for chemical shippers to ensure peak efficiency, with a focus on safety.

KENAN ADVANTAGE GROUP

www.thekag.com

800-969-5419

Kenan Advantage Group offers a network of integrated hauling solutions to meet custom needs. Its chemical transport solution applies strict safety and security measures to provide chemical shippers with reliable hauling service and guaranteed capacity.

LANDSTAR SYSTEMS

www.landstar.com

800-872-9400

Landstar agents understand the complexity of the chemical supply chain. The company constantly monitors shipment temperatures throughout the transportation lifecycle to maintain product stability and integrity. Landstar's transportation services utilize a range of specialized equipment.

MILLER INTERMODAL LOGISTICS SERVICES (MILS)

www.mils3pl.com

601-709-8000

MILS offers metered tank trucks to help chemical shippers use capacity more efficiently. This lets shippers provide a series of multi-stop deliveries in variable amounts to their customers. In addition to transportation and logistics services, MILS provides supply chain management, order fulfillment, inventory management, a transload and warehouse facility, equipment leasing, and maintenance.

RINCHEM COMPANY

www.rinchem.com

505-345-3655

Rinchem provides customized logistics solutions to manufacturers of chemicals and gases. Rinchem manages and coordinates all logistics-related activity, evaluating costs, modes of transport, customer service levels, and opportunities for consolidation. Rinchem's Chem-Star warehousing management module offers real-time inventory visibility and the use of RF technology to improve receiving and picking speed and accuracy.

SOUTH CAROLINA PORTS AUTHORITY

www.scspa.com

843-723-8651

The port's Supply Chain Authority team works across port functions—operations and terminals, commercial and economic development, information technology—to provide a customer-centric process to meet chemical shippers' unique logistics challenges.

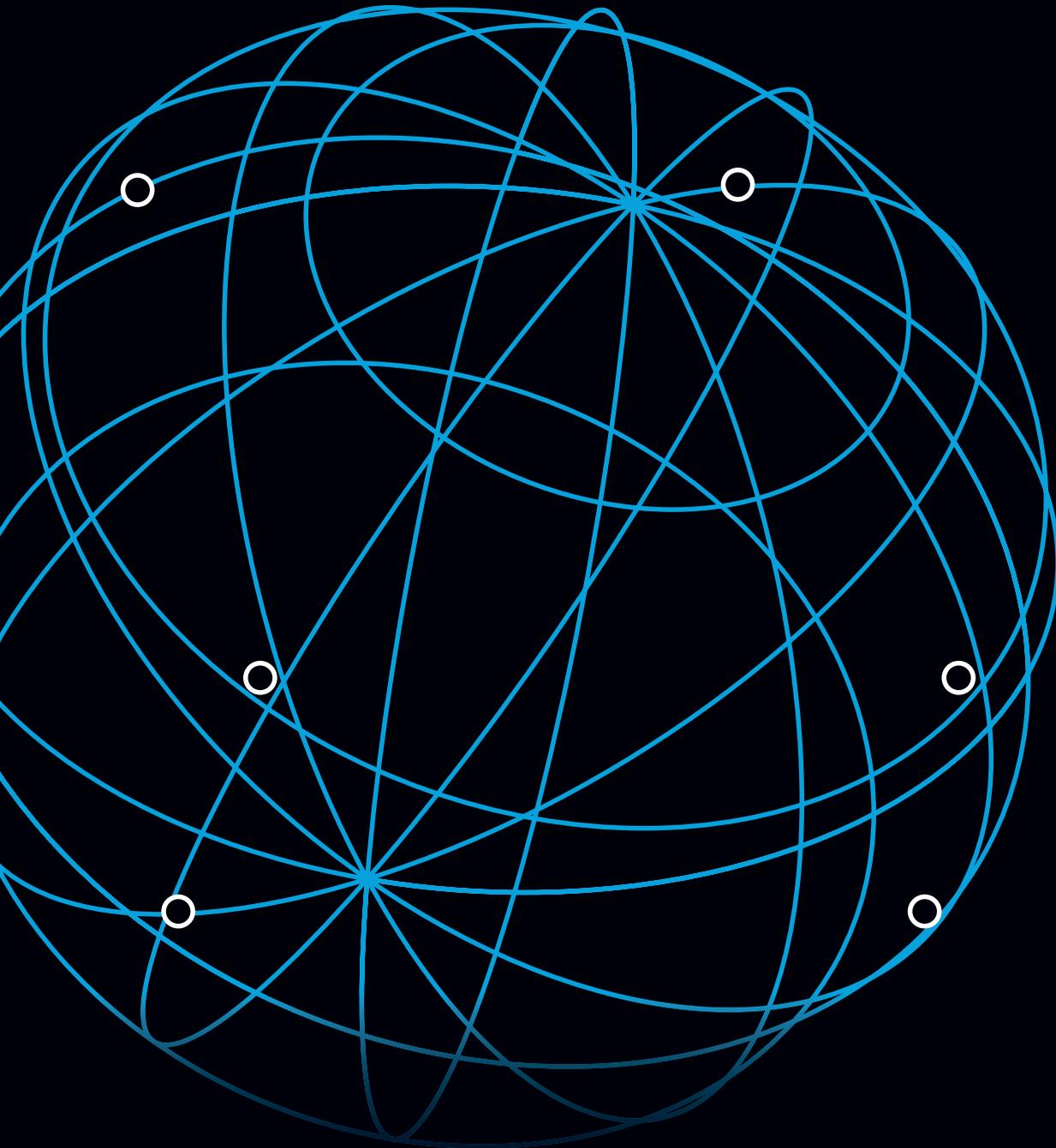
TRANSPLACE

www.transplace.com

866-413-9266

Transplace helps chemical shippers streamline operations and realize greater visibility of the entire shipment lifecycle, optimizing and tracking shipments in real time while providing status updates to customers. Electronic tendering capabilities provide a clear view of shipment tenders. ■

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solutions@chrobinson.com

800.323.7587 www.chrobinson.com



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