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CHEMICAL SUPPLY CHAIN: INNOVATIVE SOLUTIONS IN THE MIX



FROM SPECIALIZED REQUIREMENTS TO CAPACITY CONSIDERATIONS, FORMIDABLE CHALLENGES FACE CHEMICAL SHIPPERS. IN REACTION, LOGISTICS PROVIDERS ARE ROLLING OUT SOLUTIONS OF SUBSTANCE.

The chemical logistics sector is being impacted by the trends affecting most logistics functions, including tight capacity, a growing focus on safety and sustainability, and greater use of technology to help mitigate capacity concerns and ensure safety.

Some 70,000 people are employed in chemical distribution, reports the National Association of Chemical Distributors (NACD). More than 881 million tons of chemical products were transported in 2015, making the chemical industry one of the country's largest shippers, according to *Transporting Growth*, a PwC study for the American Chemistry Council.

What's more, the number of shipments is expected to grow. One reason is lower energy costs caused by the increase in production along the "chemical corridor" that spans several Gulf states, says Bob Daymon, senior vice president of operations with Transplace, a third-party logistics (3PL) provider. That's adding more supply at a time when transporters already are struggling to keep up.

In addition, a growing number of shippers are moving toward smaller, more frequent orders, minimizing their need to store large quantities of chemicals. "Rather than store 5,000 gallons for a week, they'll order 1,000 gallons each day," Daymon says.

The widening of the Panama Canal in 2016 continues to have a ripple effect on shippers and carriers in the United States, says Glenn Riggs, senior vice president, corporate strategy and business development, with Odyssey Logistics. Some U.S. ports are deepening their waterways to accommodate the larger ships the canal can handle. Once these larger volumes of freight make it to land, they need to be transported.

AMAZON EFFECT

While few chemical shipments go directly to consumers, the "Amazon effect" is hitting the chemical logistics sector.

"Business people are used to a one-click purchasing environment that provides real-time information at

their fingertips," says Chris Wright, vice president of sales and marketing with Rinchem.

Growth is a good problem to have, but it can present challenges, especially when combined with existing capacity constraints, such as the truck driver shortage. While this impacts all logistics functions, it can be especially pronounced with chemical shipments, given the priority placed on safety.

"That translates to a number of requirements," says Balika Sonthalia, vice president, supply chain, with consulting firm A.T. Kearney. Drivers need to meet more stringent qualifications and have the right capabilities, such as the ability to track shipments. Not all carriers can meet these requirements.

In addition, the cost of attracting and retaining employees to work with hazardous materials continues to climb. The products are often heavy and employees may need to wear protective gear, which can get cumbersome. Attention to compliance also requires costly recurring training and rigorous internal audits of processes.

"You either do chemical logistics right or you shouldn't do it," says Bob Lilja, chief operating officer with Weber Logistics. "It's foremost a public safety commitment."

CHOICE SHIPPERS

These trends in the chemical logistics sector have given rise to the concept of "shipper of choice." Carriers have been in such a strong position that they've been able to let go of clients who make their job harder by, for instance, keeping drivers waiting.

To ensure they remain shippers of choice, many chemical companies have made a conscious effort to improve in this area. This includes, for instance, implementing technology that allows them to communicate continuously

with drivers, so they can alert them to potential delays in loading or unloading.

At the same time, ensuring all capacity is used as completely as possible also is critical. "How can I make that capacity go faster with less downtime and better utilization?" asks Steve Tracey, executive director of the Center for Supply Chain Research at Pennsylvania State University.

TURNING TO TECHNOLOGY

Technology has a role to play here. For instance, a driver who's able to adjust the temperature of the trailer without having to stop and get out of the vehicle saves time and boosts utilization. Using route optimization software to schedule loading and unloading times can minimize unproductive downtime. Software also can link loads across a network to cut the frequency of empty backhauls.

Another solution to capacity constraints is boosting the pool of potential drivers. "What about the people who could participate in the driver workforce but don't?" Tracey asks. Women, for instance, make up about 8% of drivers, according to the Women in Trucking Association. Companies that can attract and retain more women drivers can alleviate capacity concerns.

Similarly, greater application of technology, such as the Internet of Things (IoT) and RFID systems to trace materials to their location "will bring efficiency to a fundamentally inefficient system," says Mihir Shah, industry and solutions strategy director with technology provider Infor.

The application of business intelligence constitutes the fourth industrial revolution, and it's impacting the chemical supply chain, Wright says. In the future, chemical manufacturers will leverage digitalization to capture critical data and draw insights, achieving improved output and lower costs.

Safety has always been critical within chemical logistics, and that focus isn't letting up. And while the chemical logistics sector has a history of safe operation, advances in technology, in



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addition to boosting efficiency, can also enhance safety. For instance, by using IoT, remote telemetry on tanks can provide real-time data, ultimately preventing hazardous situations, Odyssey's Riggs says.

To be sure, the increasing focus on risk exposure also is boosting costs. For instance, most insurers are raising rates for high-risk storage. The reason? The huge cost of a hazmat spill, including environmental hazard remediation, damage to the building and product, and risk to employees and the public.

On the other hand, some changes made to enhance safety can also improve operations. One example comes from the mandate for electronic logging devices. The information provided by the devices affords carriers and shippers greater visibility to shipments in transit. Some are "taking advantage of the data" to lower inventory levels and improve operations, says Mike Clark, executive vice president with KAG Logistics.

Even as technology improves chemical transportation safety, personal relationships still matter. "That one-to-one connection with the customer is very important," says Eric Byer, president and chief executive officer with the NACD. Shippers want to be confident their goods are being handled safely and appropriately. By personally connecting with their logistics partners, they're often better able to evaluate their safety procedures and how closely they're followed.

SUSTAINABILITY AND NIMBLENESS

Another macro shift impacting the chemical and other supply chains is the growing focus on sustainability and ethical sourcing. Safety, service, and cost remain priorities in supply chain and logistics operations. "However, sustainability is starting to creep up in importance," Tracey says.

One example is the International Maritime Organization regulation that will cut the allowable sulfur content in shipping fuel from 3.5% to 0.5%. "It will impact everyone when it goes into effect early in 2020," Riggs says.

More chemical logistics organizations also are interested in "flexibility and nimbleness," Clark says. This has been driven, in part, by recent flooding and fires at chemical factories that disrupted some supply chains. While they have further to go, many chemical supply chains are starting to catch up to the nimbleness some finished goods supply chains exhibit.

Growing economies across the globe also are driving the chemical logistics sector. "Innovation and accelerated globalization also will characterize the chemical logistics industry," says Matt Jensen, director of business applications with Rinchem. "The demand for advanced specialty chemistry continues to grow in emerging markets. Shrinking product lifecycles and the rush to commoditize products have increased the pace of globalization."

To thrive in this changing industry, many companies within the chemical logistics sector, including those profiled here, will continue to provide quality services and state-of-the-art technology to help their clients safely and effectively tackle these challenges.

C.H. ROBINSON: OPTIMIZING CHEMICAL SUPPLY CHAINS

With more than a century of industry experience, C.H. Robinson, based in Eden Prairie, Minnesota, is one of the

largest third-party logistics providers in the world. "We provide a variety of services in the chemical space, including consolidation, LTL, truckload, refrigerated, dry and liquid bulk, and flatbed," says Adam Kroupa, director of ChemSolutions at C.H. Robinson.

C.H. Robinson also has the largest network of quality, reliable capacity in North America. "Because of our experience in the industry and our network, we're able to offer a solution that works well for both our customers and carriers," Kroupa says.

C.H. Robinson can leverage its network to align shippers with carriers that best fit their lines of business, products, and location. This helps the shipper optimize service to its clients and often provides carriers with opportunities to grow their businesses.

Along with its transportation know-how, C.H. Robinson can help companies align their chemical supply chains, Kroupa says. Say a company needs to shift the locations at which it manufactures or stores its product to better meet changing demand patterns. By using its expertise to identify locations that are centrally located and near robust transportation networks and warehousing space, C.H. Robinson can help the company identify the optimal location.

C.H. Robinson analysts stay abreast of changing and new regulations to identify



3PL C.H. Robinson provides chemical shippers with a range of services, including consolidation, LTL, truckload, refrigerated, dry and liquid bulk, and flatbed.

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the impact on different sectors of the economy, as well as on its customers and carriers. One example is the Frank R. Lautenberg Chemical Safety for the 21st Century Act, which is an update to the Toxic Substance Control Act. While the Lautenberg Act was put in place in June 2016, many in the industry are still determining how it will impact production of new chemicals.

Kroupa outlines several potential scenarios. For instance, depending on how the EPA prioritizes a product, approval times could be longer than anticipated. “You could see a customer ready to ramp up production and build out its transportation network, only to hold everything until approvals are granted,” he says. “Conversely, a quick approval could mean ramping up production and aligning transportation faster than planned.”

Changing weather patterns are another area of focus for C.H. Robinson experts. “In 2019, we’ve seen a significant amount of flooding, which has altered some supply chains due to the inability to get products through certain areas,” Kroupa says.

He points to Houston as an example, noting that it’s the location for a significant portion of chemical production and shipping. “Weather changes the way that you’re shipping and where your freight is,” he says.

C.H. Robinson helps its customers adjust to these changes.

C.H. Robinson also remains connected to relevant industry organizations. “We can put our finger on the pulse of what’s going on and what other people are saying, and then synthesize that information so we can help our customers and carriers align their networks and supply chains,” Kroupa says.

With numerous forces, including ongoing changes in regulations, technology and capacity, as well as mergers and acquisitions, continuing to alter the chemical logistics space, “producers and buyers alike should be prepared for changes in their supply chain,” Kroupa says. They need to make sure that their transportation provider is prepared to adapt and offer solutions.

C.H. Robinson can help in these efforts. “We continually monitor regulations, shipping trends, and industry information,” Kroupa says. “We adapt with the ever-changing needs of our customers and carriers so we can help them succeed.”

KAG LOGISTICS: FROM THE LAST MILE AND BEYOND

KAG Logistics is one of the largest liquid bulk trucking companies in the United States, transporting more than 26 billion gallons of chemicals, specialty

products, and fuels each year. One area of focus is fuel deliveries to gas stations—the essential last mile in the energy distribution network. “Nobody wants to get to a gas station and find a yellow bag over the fuel pump,” says Mike Clark, executive vice president, chemicals and specialty products.

KAG, based in North Canton, Ohio, is the largest tank truck transporter and logistics provider with a nationwide scale, operating about 300 terminal and satellite locations throughout North America.

The company continues to grow, particularly in the specialty chemical sector, Clark says. That’s a result both of acquisitions by the company and the growing trend to manufacture more chemicals within the United States.

As it has grown, KAG also has expanded its offerings. In addition to liquid bulk trucking services, it now offers full-service logistics capabilities.

For instance, given KAG’s focus on liquid bulk delivery, it has developed substantial expertise that it can share with its customers. “Because of our years of experience, we know how to safely handle these products,” Clark says.

KAG also works with its customers to find the optimal mix of rail and truckload shipments. “We try to find the sweet spot of reliability, cost, and inventory optimization,” Clark says. Rail is less expensive, but disruptions can impact deliveries for weeks.

KAG Logistics offers its customers several technological tools. One is the Optimate Transportation Management Suite, which integrates technology, process, and expert logisticians to boost service levels and manage costs. Companies can leverage Optimate to dynamically size their fleets, optimize their routes, and access business intelligence, among other capabilities. “It’s an end-to-end solution for transportation management,” Clark says.

In addition, KAG’s Enhanced Tracking & Alert (ETA) Solutions provide visibility to all shipments, tracking to critical milestones. It also issues alerts when something could go



KAG Logistics, a liquid bulk trucking company and logistics provider, transports more than 26 billion gallons of chemicals, specialty products, and fuels each year.

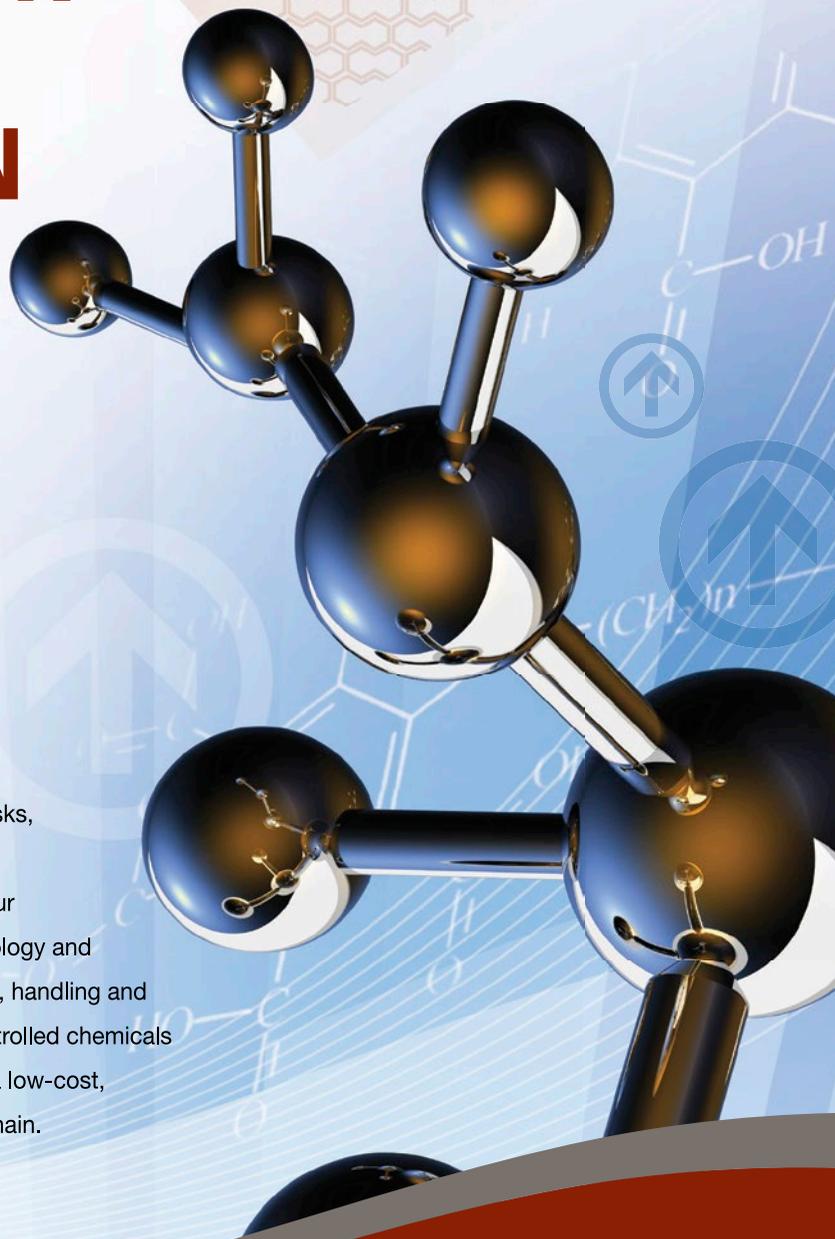


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KAG, by leveraging its expertise, technology, and view of the fuel delivery market across North America, can help its customers build nimble, efficient supply chains.

LINDEN WAREHOUSE AND DISTRIBUTION: RESOURCEFUL AND READY TO SERVE

Linden Warehouse and Distribution Co., Inc. is a third-generation family business dating back to the 1940s. From its initial focus on trucking, Linden has been providing warehousing services since the 1970s. Linden specializes in the storage and handling of chemicals and industrial raw materials. "We're experienced in servicing the chemical and regulated material industries," says Jared Stadlin, chief operating officer.

From its base in Linden, New Jersey, Linden operates 1.2 million square feet of space, serving large global manufacturers of chemicals as well as smaller regional distributors. "Our customers can store as little as one truckload of material with us, or have millions of pounds in inventory," Stadlin says. "Our service level doesn't vary based on the size of the customer, whether large or small, we remain focused on meeting and exceeding their needs."

To that end, Linden is committed to being "a value-added service provider," Stadlin says. One example comes from the company's packaging expertise. Linden operates in-house automated package-filling lines that can transfer liquid products from tank truck or ISO tank to smaller containers ranging from 2.5-gallon pails to 250-gallon totes. "We can transfer product from bulk to smaller container, and provide all the correct, compliant labeling," Stadlin says. Customers gain flexibility in their supply chains by pre-positioning liquid bulk in



Linden Warehouse and Distribution Co., Inc. specializes in the storage and handling of chemicals and industrial raw materials.

the region and packaging to tote, drum, or pail as demand dictates.

In addition, a growing number of customers are also looking to Linden to generate and apply customized barcode or other customer-specific labels to products. "We take pride in being a resource for whatever challenges our customers face," he says.

One catalyst for Linden's growth is the company's proximity to the Port of New York and New Jersey. With facilities less than 9 miles from the port, Linden is well-positioned to service its customers' regional and international import/export activities. On the export side, Linden is adept at "proper blocking and bracing and load securement for materials shipping internationally," Stadlin says.

Over the decades, Linden also has developed substantial expertise working with supply chains that must comply with the Customs-Trade Partnership Against Terrorism or C-TPAT.

As the number of larger containerships

calling on the port has grown, the demand for intermediate warehousing has also increased, as carriers have a limited time window to move containers on and off the ships.

"Because Linden is so close to the port, truckers servicing Linden can move several loads daily between port and warehouse," Stadlin says. This helps customers rapidly and cost-effectively facilitate intermodal activities to and from the port.

Faced with increasing customer demand, Linden is rising to the occasion and constructing a 125,000-square-foot building in the coming year. "This will bring additional capacity to a market that's continuing to expand," Stadlin says.

One of Linden's favorite challenges is coming up with solutions when a customer asks, "Can you do this?" Linden examines and researches the request in order to develop a creative and effective solution.

"We pride ourselves on being a resource, ready to help our customers address their challenges," Stadlin says.

ODYSSEY LOGISTICS: CHEMICAL SPECIALTY AND INNOVATION

Chemical logistics is embedded "in the DNA of Odyssey," says Glenn Riggs. Based in Danbury, Connecticut, Odyssey's founding partners came from the chemical industry and started the company with a focus on chemical



Working with all transportation modes, Odyssey ensures chemical supply chain safety, efficiency, and cost-effectiveness.

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- Mechanical section fits on side of container
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TANK CONTAINER HEATING UNIT

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logistics. They understand the unique challenges of the industry and possess the skills and experience to tackle them.

For instance, with its purchase of a chemical tank truck company, Odyssey gained a fleet of trucks and tanks, as well as terminals and cleaning racks that enable it to provide bulk chemical logistics capacity. And its bulk brokerage arm, Odyssey Overland LLC, offers a single source for safe and reliable end-to-end transportation management.

Optimodal, Inc., Odyssey's Chemical ISO Tank Transport Service, consists of a fleet of 6,500-gallon ISO tanks. They can move chemical shipments from truck to railcar to truck, safely, cost-effectively, and sustainably across North America. "We believe intermodal transportation is a solution to the capacity challenges," Riggs says.

To further alleviate capacity challenges, Odyssey spent several years researching and developing a next-generation "flexi-tank" for non-hazardous chemicals, Riggs says. This tank can carry a range of chemicals.

Odyssey's sample fulfillment services help chemical companies that need to safely and cost effectively meet their customers' requests for samples

of both hazardous and non-hazardous materials. Odyssey can store, package, and ship sample and small-revenue orders. To date, the company has processed more than 10 million sample shipments.

The Odyssey team also dedicates employees to staying ahead of regulations that govern the transport of hazardous and non-hazardous products. Odyssey is a Responsible Care Partner, a program of the American Chemistry Council, and an EPA SmartWay partner, which helps companies advance supply chain sustainability by measuring, benchmarking, and improving freight transportation efficiency.

Given its focus on the chemical industry, Odyssey works with all transportation modes across the globe, including rail, tank car, truck, marine, and freight forwarding services. As a result, it's "agnostic to individual answers," Riggs says. "We do what is safest, most efficient, and most cost-effective for customers, across their supply chains."

RINCHEM: DEDICATION AND PRECISION

Rinchem Company, Inc. is a leading logistics provider and serves both manufacturers and end users of

prepackaged specialty chemicals and gases. "Rinchem is the only asset-based logistics firm of its size that is completely dedicated to the safe and precise management of chemical supply chains," says Chris Wright, vice president, sales and marketing. "Chemicals is not an industry vertical that we serve. It's what we do."

CHEMICAL REACTION

To that end, all of Rinchem's systems, processes, and procedures are designed for chemical supply chains. Rinchem, based in Albuquerque, New Mexico, operates a network of temperature-controlled distribution centers that comply with hazardous materials regulations at locations across North America and in parts of Europe, the Middle East, and Asia.

Its transportation and warehousing network is linked through its proprietary software, Chem-Star®, which provides customers with real-time visibility into their inventory's location and status. Rinchem also employs more than 100 hazmat-trained drivers; they helm trucks and trailers that are hazmat-customized.

"Rinchem has built a strong asset-based trucking organization that enables the safe, reliable transportation of complex chemical supply chains," Wright says.

Several years ago, to address the shifts occurring within the chemical logistics industry, Rinchem's executive team developed a business plan focused on advancing its Chem-Star customer interface and technology platform to enable customers to easily place orders, track shipments, make unique requests, manage inventory, and leverage the latest business intelligence. Moreover, users can tap into Chem-Star's capabilities without any training.

In one example, Rinchem assumed the operation of a regional warehouse for a supplier of chemicals and raw materials to the commercial printing industry. The company chose Rinchem because of its ability to provide a range of services, as well as the tracking capabilities available through Chem-Star. In addition,



Logistics provider Rinchem Company designs its processes and procedures for chemical supply chains. It serves both manufacturers and end users of specialty chemicals and gases.

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Rinchem's simplified, weight-based pricing structure was another draw, as it enabled the company to easily estimate its costs.

Shippers can integrate Rinchem's technology systems with their own, thus leveraging the information available and driving unneeded manual work from their supply chains, says Matt

Jensen, director of business applications. Advancements in systems integration architecture have made the ability to link systems a more easily attainable best practice, he adds.

"We are dedicated and committed to perfection," Jensen says. "We pride ourselves on handling the most complex supply chains and doing it very well."

TRANSPPLACE: EXPERTISE AND EXPERIENCE

Transplace, a full-service 3PL, is one of the largest transportation management providers to the chemical industry in North America. From its base in Dallas, it offers safety and security compliance, real-time shipment visibility, business intelligence that allows for proactive

Klinge: Refrigerated Transport Specialist

Klinge Corporation, and its predecessor companies in Denmark, have been providing refrigerated transport containers for the chemical and other industries since the 1970s, says Allan Klinge, president and grandson of the company's founder. Paul Klinge, Allan's grandfather, started what would later become the Klinge group of companies shortly after World War II.

"We provide refrigerated systems that can handle even chemicals, such as organic peroxides, that need to be transported at below-zero temperatures," Allan Klinge says. Klinge also works with petrochemical, pharmaceutical, and food processing companies, as well as with military equipment.

In the United States, Klinge Corporation started in 1984 as a spin-off of York International's transport refrigeration equipment department, based in York, Pennsylvania.

Along with the approximately 400 refrigerated tank container systems it produces each year, Klinge manufactures the dual refrigeration systems required when transporting some chemicals, as well as the integrated generators that also make the trip. "In case of a power failure anywhere along the transport chain, you still can power the refrigeration system to keep it cold," Klinge says.

These are key safety features. "Nobody wants a chemical spill or combustion," Klinge says. Preventing these while transporting some chemicals requires careful planning, the right equipment, and strict adherence to safety protocols.

Some chemicals have a self-activated decomposition temperature, so they need to be maintained at temperatures below that level. "Otherwise, they'll combust, and the reaction is difficult to stop or even slow," he explains.

Klinge also manufactures tank

container equipment for bulk liquid transport that complies with the ATEX Directive, or the European Union regulations covering equipment intended for use in potentially explosive atmospheres. An "explosive atmosphere" refers to a mixture of gases, vapors, mists, dusts, and other substances combined in a way that could ignite under some conditions. These regulations often govern oil and gas drilling activity, and situations when a chemical introduces a hazardous gas environment.

CAUTION IN ABUNDANCE

In addition to the ATEX tank refrigerated unit, over the past five years, Klinge has developed an Explosion-Proof Refrigerated Box Container for offshore and chemical facility use that complies with the ATEX Directive for equipment used in potentially explosive atmospheres.

Every component in the evaporator section, as well as all external parts, is explosion-proof. The refrigeration unit is just 14 inches deep, allowing for maximum cargo space.

When some customers, in an abundance of caution, put dual redundant equipment on their tanks, even when not required by regulations, Klinge also provides assistance. "They want to be as safe as possible, and we work with them," Klinge says.

Along with its equipment, Klinge prides itself on stellar customer service. To start, it works diligently to prevent problems from arising. "We're continually training our service partners around the world," Klinge says. "We want to ensure a solid handoff of information to minimize gaps that could lead to challenges."

Klinge also makes a point of maintaining strong relationships with steamship lines' dangerous goods groups, as they're the ones receiving information about potential concerns. "We focus on building those relationships, as they help to undergird our service to our customers, as well as safety," Klinge says.

In the rare case when an issue arises, anywhere around the globe, Klinge works to resolve it quickly and safely. "Klinge's strong global network allows us to effectively support our equipment and safely move our customers' products," says Klinge.



Equipped with safety mechanisms, Klinge refrigerated systems can handle chemicals that need to be transported at subzero temperatures.

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3PL Transplace, one of North America's largest transportation management providers to the chemical industry, offers safety and security compliance and real-time shipment visibility.

measures, and tanker endorsement compliance, among other services. It's also a Responsible Care Partner.

"Our expertise and experience set us apart," says Bob Daymon, senior vice president of operations. Many Transplace employees involved in the chemical vertical average about 14 years of industry experience. They understand the many regulations with which chemical shipments must comply and know how to manage shipments that must maintain strict temperature or other controls.

This emphasis on expertise and qualifications extends to Transplace's partnerships with transportation providers. The company seeks out firms that have proven experience in the chemical logistics sector.

Technology is another differentiator, Daymon says. Transplace's Transportation Management System (TMS) offers shippers a comprehensive view of their shipments and leverages predictive analytics so shippers can move from a reactive to proactive mode. For instance, shippers can use the system to alert carriers to any requirements for personal protective equipment they'll need when they pick up a load, streamlining the pickup and delivery processes.

In one instance, Transplace worked with a supplier of carbon black, a

powder used in coatings, inks, and other materials. While non-hazardous, the powder can leave a residue on trucks. As a result, the carriers who would transport it charge a premium. The company turned to Transplace to automate, optimize, and track the company's daily shipments from multiple production sites across North America. The company now enjoys greater control over its supply chain costs and enhanced visibility to its shipments.

Transplace is taking multiple steps to address the capacity constraints impacting the industry. By using software, historical data, and proprietary analytics, Transplace can view data across all its chemical shippers to streamline operations and make greater use of available capacity. For instance, Transplace can accurately estimate shipments likely to be delayed, and may recommend adjusting the timing of a shipment to minimize this risk. "Even before the shipment leaves, we can predict what will happen while it's in transit based on a proprietary algorithm, and make recommendations to improve it," Daymon says.

In addition, Transplace is working to promote collaboration between its bulk shippers and receivers to consolidate shipments when possible. Transplace's system identifies infeasible product matches, so a truck doesn't shift from, for

instance, transporting a caustic substance to moving flour. Done correctly, as Transplace is doing, this capability can essentially "create capacity," Daymon says.

"We look at our chemical shippers as a network," Daymon says. "We work to optimize each individual shipper, as well as the power of the network."

WEBER LOGISTICS: CONQUERING COMPLEXITY

From its start in 1924, Weber Logistics has become a premier West Coast provider of integrated logistics services, with particular expertise in chemical logistics. One example is its hazardous material storage warehouse in Los Angeles county, which spans 220,000 square feet and encompasses 13 different storage rooms. "We've invested in sophisticated storage environments," says Bob Lilja, chief operating officer. For instance, each room can meet different requirements for temperature range, fire prevention, and hazard class, among other conditions.

The Los Angeles County Fire Department actually uses Weber's facility to train its employees. For instance, the department has intentionally flooded some of the rooms, allowing firefighters to practice emergency response in a contaminated environment.

Because most hazard classes can be stored in one specialized building, shippers often consolidate different hazard classes into a single shipment and lower their costs, Lilja says. "It's a one-stop shop." Weber Logistics also is a member of the National Association of Chemical Distributors.



Weber Logistics, an integrated logistics services provider, offers sophisticated, specialized storage spaces for chemicals.



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Employees working in the facility average more than 15 years of experience. And unlike some companies, Weber employs a separate safety compliance department; it doesn't expect operations employees to also handle safety. These employees scrupulously review the relevant safety data sheets (SDS) to ensure Weber is handling the products appropriately. "In today's regulatory world, process is key," Lilja says. "We have both the facility and a highly developed safety infrastructure in place to ensure this."

For instance, Weber has established a special cage for U.S. Department of Justice-controlled chemicals. It conducts background checks on everyone who comes into contact with it, Lilja says.

Once materials are ready to leave the warehouse, Weber can ship them using its refrigerated truck fleet so customers don't have to find a different trucker.

Weber also can provide transloading

services at the Port of Los Angeles. This includes breaking up containers that come through the port at more than the allowed gross weight, to bring them down to legal weight for over-the-road transportation. This is key for many chemical shippers, given the density and weight of their shipments. "We can quickly reduce the weight, so within 24 hours, they're on their way," Lilja says.

Weber's robust RF-driven warehouse management system can manage complex compliance requirements and provide real-time data on customers' inventory. Customers can log into their portal to easily access this information.

Weber employees monitor legislation and regulations, both nationally and within California, which often has its own requirements. "Given the number of states and municipalities developing their own laws governing the storage, transportation, and distribution of chemicals, companies either need very

strong compliance competency, or they have to partner with a 3PL that makes it their business to monitor these," Lilja says. Weber is one such firm.

THE FUTURE OF CHEMICAL LOGISTICS

The size and significance of the chemical logistics industry likely will continue to grow, following increasing chemical production. By 2020, new capacity will lead to 1.8 million more annual shipments, according to the PwC and the American Chemistry Council report. That translates to an additional 270,000 railcars, 723,000 truckloads, and 808,000 marine TEUs annually.

"If the economy remains healthy, the chemical industry will need to ensure its supply chain is robust and agile, and goods move through the system without interruption," notes Stadlin of Linden Warehouse and Distribution Co.

These service providers can help chemical companies achieve that. ■

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CHEMICAL LOGISTICS RESOURCE GUIDE

THESE LOGISTICS PARTNERS HAVE THE FORMULA FOR SUCCESS IN THE CHEMICAL LOGISTICS SPACE, HELPING SHIPPERS MEET SPECIALIZED REQUIREMENTS AND MOVE CHEMICALS AND HAZARDOUS MATERIALS SAFELY, RELIABLY, AND COST-EFFECTIVELY.

C.H. Robinson

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C.H. Robinson's dedicated chemical logistics team, ChemSolutions, helps companies with their large liquid bulk, dry hazmat bulk, and domestic ISO tank shipments. The team works with chemical companies to proactively navigate the changing transportation marketplace and implement custom solutions to address the risks and added considerations of shipping these materials.

KAG Logistics

optimatetms.com

800-969-5419

As a Responsible Care Partner, KAG Logistics delivers chemical products safely and according to stringent industry standards. The company designs and implements transportation management programs focused on maximizing resources. Its Optimate TMS integrates technology, process, and an experienced team to drive up service levels and manage costs.

Klinge Corporation

klingecorp.com

717-840-4500

Klinge Corporation manufactures specialized refrigerated transport container solutions for the chemical sector, as well as the oil and gas, pharmaceutical, food processing, and military industries. Klinge offers specialized transport refrigeration equipment for the safe transport of chemicals, including dual refrigerated containers, tank container refrigeration units, and tank container heating units.

Linden Warehouse & Distribution Co.

lindenwarehouse.com

908-862-1400

Linden Warehouse and Distribution has provided warehouse-based logistics services for more than 45 years. With 1.2 million square feet in northern New Jersey, the company specializes in handling and storing hazardous commodities. It also provides specialized storage for flammables and products requiring temperature-controlled facilities.

Odyssey Logistics

odysseylogistics.com/industries/chemicals

855-412-0200

With its origins in chemical logistics, Odyssey offers in-depth knowledge of the chemical transportation environment and the changing regulations governing the transport of hazardous and non-hazardous products. Its global multimodal freight network and Odyssey Global Logistics Platform deliver supply chain efficiencies that enable cost optimization and control across all modes of chemical transportation.

Rinchem Company

rinchem.com

888-375-2436

Rinchem Company is a chemical management solutions provider with expertise in creating and managing safe and efficient supply chains for high-purity, pre-packaged chemicals and gases. Rinchem operates a broad network of temperature-controlled, hazmat-compliant warehouses across North America and in parts of Europe, the Middle East, and Asia.

Transplace

transplace.com

866-413-9266

Transplace's logistics technology and experience in the chemical industry streamline operations and help chemical shippers realize greater visibility to the entire shipment lifecycle. Transplace provides electronic tendering capabilities for a clear view of shipments, and an automated process for securing the lowest-cost approved carrier to save time and reduce freight costs.

Weber Logistics

weberlogistics.com

855-469-3237

Weber specializes in storing and distributing chemicals, including flammables, corrosives, gases, and powder coatings. Its chemical warehouse in Los Angeles provides a safe, compliant, and economical distribution point for West Region customers. Chemical shippers gain 24/7 visibility to products using its systems and customer portal.