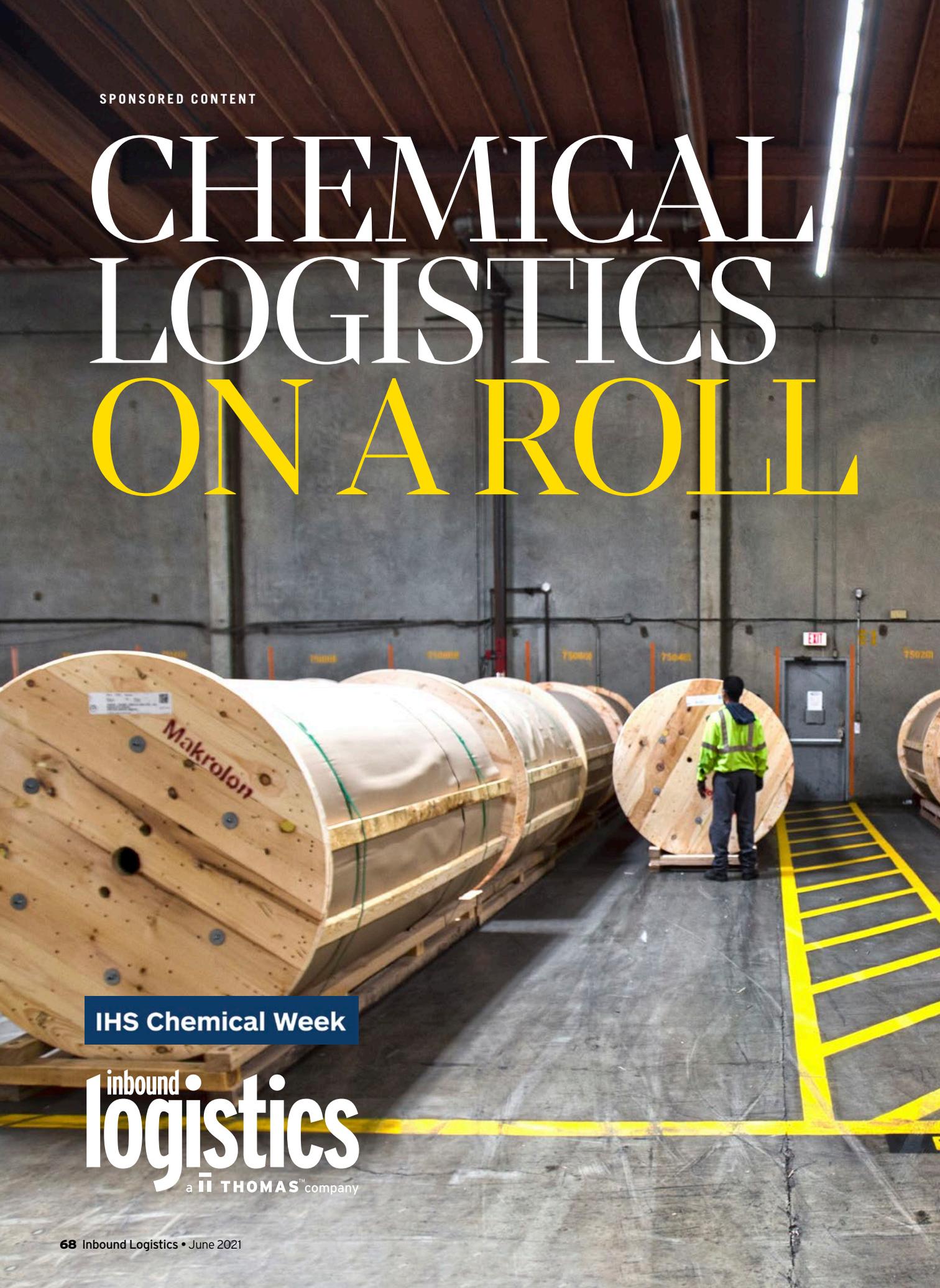


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CHEMICAL LOGISTICS ON A ROLL



IHS Chemical Week

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Overcoming capacity constraints, severe weather, and cyberattacks, chemical logistics service providers combine expertise and dedication to keep shipments moving safely and efficiently.

A WSI worker verifies labels on rolls of resin sheets before shipping.

From a pandemic and natural disasters to a driver shortage and cyberattacks—the chemical logistics industry confronted numerous challenges over the past year. To continue to serve their clients, logistics providers pivoted, adjusted, invested, and dug deep.

Early in the pandemic, demand for cleaning and sanitizing products prompted both price increases and supply shortages. For example, the price for isopropyl alcohol—a component in many sanitizers—more than tripled between March 10 and March 20, 2020, jumping from about \$880 to \$3,160 per metric ton.

“The pandemic created a volatile and vulnerable supply chain that turned inventory levels upside down,” says Curt Gonya, senior vice president, chemicals and specialty products with KAG Logistics. “The surges in some industries and the devastation in others was very real.”

CAPACITY CONSTRAINED

Along with price jumps and commodity shortages, transportation capacity was strained. The limited availability of cylinders and cryogenic storage tanks made it difficult to ship supplies.

The container shortage was largely due to uneven trade fluctuations. “If the rising water had lifted all boats at the same time, we would have been in better shape,” notes Jade Rodysill, Americas chemicals and advanced materials industry leader with EY.

In ground transportation, the driver shortage impacted many shipments, including fuel supplies, as not enough drivers were available to transport petroleum, says Chris Wright, senior vice president of operations with Rinchem Company, Inc., a chemical logistics provider.

The capacity challenges extended to the ports, where some ships waited weeks to discharge their loads. Several factors drove the delays, including the need to comply with social distancing requirements and use fewer employees, as well as absences due to workers who either needed to quarantine or became sick, says Scott Buber, director of chemical operations with WSI, a logistics provider based in Appleton, Wisconsin.

While port congestion is nothing new, most previous instances were isolated and short term, and often caused by regional weather events or specific geopolitical challenges, says Dustin Miles, director of global transportation, Rinchem. During the pandemic, congestion and disruption were global, and they continue to present challenges. Managing these hurdles requires a lot of thought and planning.

Warehouse space was similarly scarce, Buber says. Adding to the challenge, only a few areas within the United States have the capability to store certain products, such as substances that require temperature-controlled storage, ignition control, ventilation, and/or proper segregation.

EXTRAORDINARY TIMES

The development of COVID-19 vaccines also consumed transportation infrastructure and drivers, leaving fewer resources to handle other chemicals. “It was one of the first times a vaccine had been mass produced to this scale,” says Joe Hassenfratz, sales and marketing manager with The Logistix Company.

Adding another obstacle, the COVID vaccine products that are based on mRNA technology require temperature-controlled environments for storage and transport. This drove a spike in demand for dry ice. “Chemical logistics providers had to scrape through every bit of capacity available to meet the pressing concerns,” Kaitwade says.

In the United States and other markets, logistics providers directly partnered with dry ice manufacturers and providers on a scale never seen before, he adds.

The weather also presented unwanted surprises. Early in 2021, severe winter weather caused nearly every major chemical complex in Texas to shut down. “It’s the first time I’ve seen gas stations without fuel,” Buber says.

With some chemical shippers relocating their sources of raw materials, providers are tapping a different set of skills.

Add to this a fluke event like the *Ever Given*, a 20,000-TEU container ship, getting stuck in the Suez Canal for about a week. A chunk of world trade stopped during this time.

Cyberattacks against steamships, pipelines, and logistics providers add more uncertainty. The May 2021 attack against Colonial Pipeline Co. forced it to shut operations for a week. A 2020 Government Accountability Office study found the cybersecurity guidance



Odyssey Logistics & Technology ensures its customers' shipments—valued at approximately \$60 billion annually—arrive at their destinations safely and on schedule.

governing 3,300 high-risk chemical facilities across the United States hadn’t been updated in more than 10 years. Without a program of regular review, the facilities could be more vulnerable to cyber-related threats, the report stated.

NAVIGATING THE OBSTACLES

Over the past few years, some chemical shippers have relocated their sources of raw materials, adapting to changes in tax regulations and tariff agreements, says David Vieira, chief executive officer with CLX Logistics. For instance, a product that had been sourced in North America might now be sourced in Asia. Managing these new supply chains “requires a different set of skills,” he adds.

In response, logistics providers “dialed up” tactics on which they’ve long relied to manage congestion and weather

environmental impact of shipments.

Many logistics providers are relying more extensively on automation to minimize delays that can occur due to human errors, Buber says. Typical human errors include incorrect quantities or types of products being shipped, and inventory mistakes.

Visibility solutions that let companies know the location of their products in shipment, enabling them to act to counter any delays, also are attracting interest. Before a company can determine whether to change its sourcing strategy or inventory policies, it needs visibility to these functions, says Bob Boyle, vice president, North American managed logistics services with Odyssey Logistics & Technology.

Data is similarly key. “The proper use of data, as part of collaborating with customers and carriers, allows for faster recovery and improved service within the various segments of an organization’s supply chain,” Gonya says.

GROWING MARKET

Shippers’ need for visibility and leverage with carriers is a positive for many logistics providers, as it’s prompting a growing number of chemical shippers to use their services, Rodysill says. Valued at about \$253.7 billion in 2019, the global chemical logistics market is forecast to reach \$322.5 billion by 2027, for a compound annual growth rate of 3.9%, according to Allied Market Research.



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The macro changes impacting chemical logistics show no sign of slowing down. A more holistic approach to network modeling has become critical, Rodysill says. That means evaluating physical logistics networks on a global—rather than regional—basis and considering all costs, such as taxes, tariffs, and others. This in-depth analysis helps pinpoint where it makes sense to add inventory and where to stay lean.

Adding inventory tends to make sense when you can drive more sales at higher margins. Conversely, when managing regulated products, keeping inventory levels lean and expediting shipments to a location, when needed, can be more cost-effective, Rodysill says, since it's generally harder to move this inventory between countries, as regulations often differ.

Given the futility of trying to predict how regulations might change, the ability to model various scenarios becomes even more critical, Rodysill says. If a model shows a 25% chance a shift will go one way, and a 30% chance it will go another, organizations can decide how to plan for each possibility.

Stakeholders from the chemical logistics sector should increase collaboration with regulators across the globe to bring about "standardization and

regulatory singularity," says Kaitwade. This would allow more seamless transactions between markets with different regulatory regimes.

To ensure quality talent remains in the sector, a focus on improving the workplace environment also is key, Kaitwade says. This includes not only health and safety, but wage rates and other benefits.

Valued at about \$253.7 billion in 2019, the global chemical logistics market is forecast to reach \$322.5 billion by 2027.

The companies profiled here have been navigating the recent challenges with intelligence, dedication, and a commitment to their clients and the important work they're doing.

CLX LOGISTICS: PROVIDING ECONOMIC VALUE

The goal of every employee at CLX Logistics is "to provide economic value to our customers," says CEO David Vieira.

By drawing on its extensive history in the chemical logistics sector, CLX Logistics can provide the knowledge, technology, services, and processes needed to meet this goal, whether its clients are trying to optimize their

distribution network, rein in costs, or enhance shipment security.

CLX experts can help clients model their supply chains and determine which locations will be most effective for their operations. As part of that analysis, CLX can draw on extensive freight cost benchmarking data it has amassed, in part through its partnership with BluJay Solutions.

Another CLX offering, Gravity, provides enhanced data analytics and extensive data integration capabilities. It's able to work with information its customers generate internally or capture from external sources.

CLX LaneLogix™ offers freight cost and service level benchmarking. This software, which has been developed specifically for the chemical industry over the past 20 years, incorporates requirements particular to chemical shipments, such as dangerous goods, equipment, and service requirements.

"It does not compare the rate for a chemical shipment with, for instance, the rate for a food shipment," Vieira says.

A chemical company with more than \$100 million in annual transportation spend across multiple lanes and modes and with a mix of products turned to CLX to benchmark its costs and evaluate its procurement strategy. By leveraging its expertise and LaneLogix's capabilities, CLX was able to analyze the company's contracts and costs and gain visibility to all modes across the company's global network.

CLX then worked with the company to optimize its chemical supply chain. Among other results, CLX identified savings of about 9 million euros (US\$10.9 million), as well as opportunities to reduce complexity by combining and managing disparate systems.

In some organizations, the inbound logistics function doesn't always receive the attention it deserves from chemical



CLX Logistics helps chemical shippers enhance the security of shipments and optimize their distribution networks, leveraging its chemical 4PL division ChemLogix.

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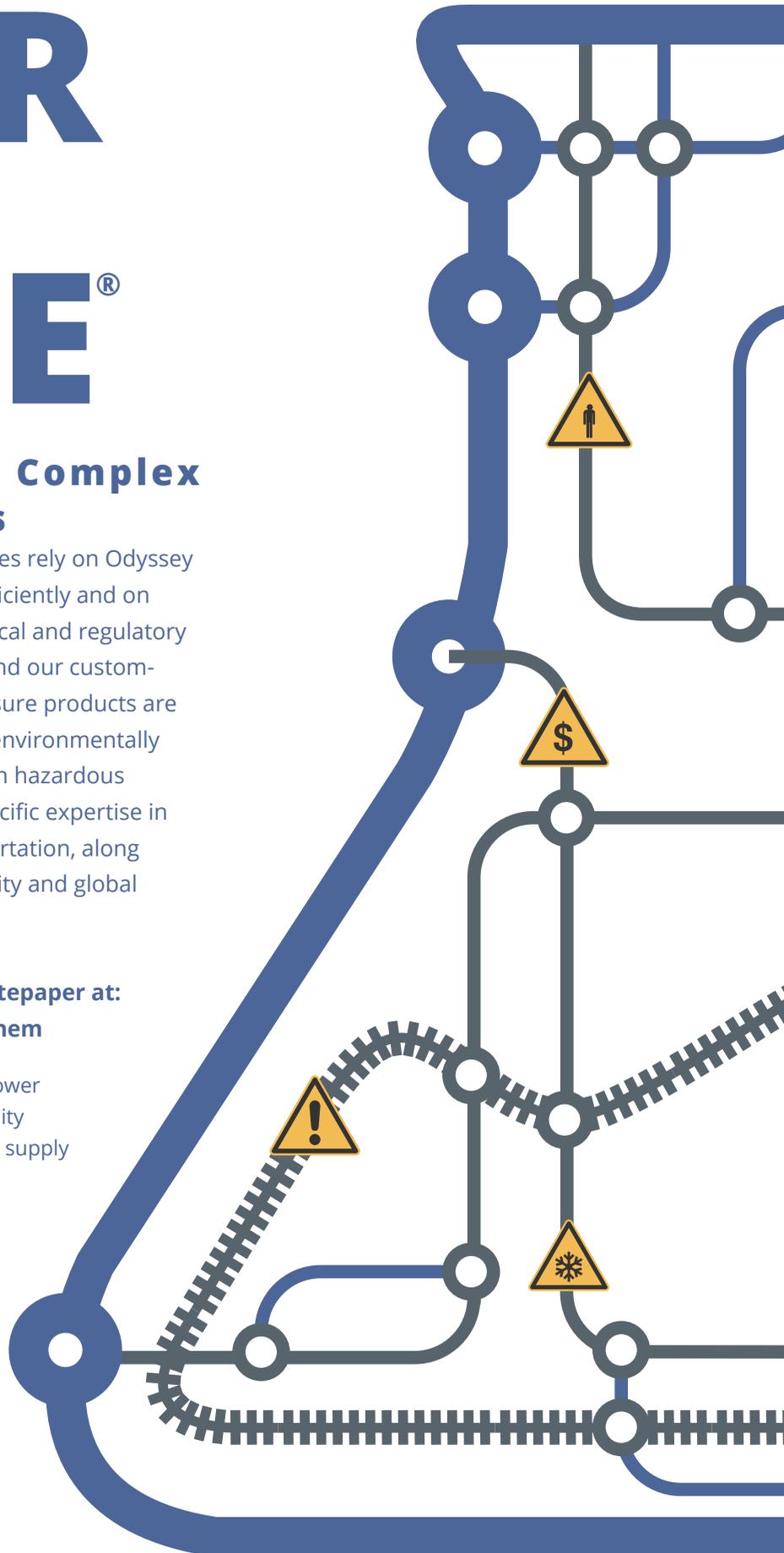
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KAG Logistics counts on its people as a key differentiator. With an understanding of the chemical industry, they act as extensions of clients' transportation and logistics functions.

shippers. “If you’re not looking at your supply chain both ways—inbound and outbound—you’re leaving a lot on the table,” Vieira says.

CLX works with clients to boost carrier utilization on both inbound and outbound loads. Vieira notes that a professional procurement function, like CLX can provide, is key to managing the financial pressures most companies face today.

CLX developed a new product, Global Special Products, to handle oversized shipments. One client using this service moves containment units for spent nuclear rods, which can weigh more than 225,000 pounds. This is just one example of how clients count on CLX to consistently deliver the solutions they need.

“Every day, the CLX team works with our customers to find creative solutions to their challenges,” Vieira says.

KAG LOGISTICS: PEOPLE AND PROCESS PROWESS

A critical component of the success KAG Logistics has enjoyed is its people.

“You win with people,” says Curt Gonya, senior vice president, chemicals and specialty products. “Our people are logistics experts with a deep understanding of the chemical industry.”

KAG’s culture fosters excellence and drives individuals to be the best they can, he adds.

KAG Logistics, based in North Canton, Ohio, serves multiple verticals across North America, including fuel, renewable energy, chemicals, food, and merchant gas supply chains. Its

Global issues during the pandemic, congestion and disruption continue to present challenges.

transportation management solutions include multimodal transportation, brokerage, dedicated transportation solutions and carrier management, and procurement. KAG also offers enhanced tracking and alerts (ETA), fuel management, inventory optimization, and other value-added logistics services.

As a wholly owned subsidiary of The Kenan Advantage Group, Inc., KAG Logistics can offer a range of unique transportation solutions, building on KAG’s North American bulk transportation network. “Our size and scalability allow KAG Logistics to act as extensions of our customers’ transportation and logistics functions,” Gonya says.

Along with its people, process is key. “KAG employs proven processes, time-tested to be best practices,” Gonya says. Its solutions are tailored to meet client-specific needs. KAG’s scale and access to big data allow it to deal with each customer individually, while simultaneously driving collaboration

with its customer and carrier base, to provide solutions that benefit all involved.

Leading technology solutions also underpin KAG’s logistics offerings. Among other solutions, KAG Logistics’ Optimate TMS selects the right mode, equipment, and contract to safely and cost-effectively transport customers’ shipments. Shipment plans are routed to the optimal routes and contracts, while complying with customers’ business rules. This reins in costs while ensuring contract requirements are met. Optimate TMS is supported by a dedicated logistics team and a 24/7/365 Logistics Operations Center.

KAG’s visibility solution, Enhanced Tracking and Alert Solutions, or ETA, continually tracks each load’s location and status and provides real-time visibility, no matter the carrier. It also issues alerts when shipments may be late or disrupted. This comprehensive

visibility to all shipments in transit allows supply chain executives to manage by exception.

“Over the years, KAG Logistics has undergone significant growth,” Gonya says. The experience and expertise it has gained has helped it withstand the challenges of the past year, he adds.

KAG plans to build on its success. “Our vision is to continue to grow and evolve, while staying at the forefront of our contemporaries,” Gonya says. “We will do this with a focus on our people and delivering every load on time and without incident.”

ODYSSEY LOGISTICS & TECHNOLOGY: LEVERAGING DATA INSIGHTS

Odysseus, the hero of Homer’s poem *Odyssey*, was known for the wisdom and strength he displayed when encountering challenges on his travels. Odyssey Logistics & Technology demonstrates similar qualities in ensuring its

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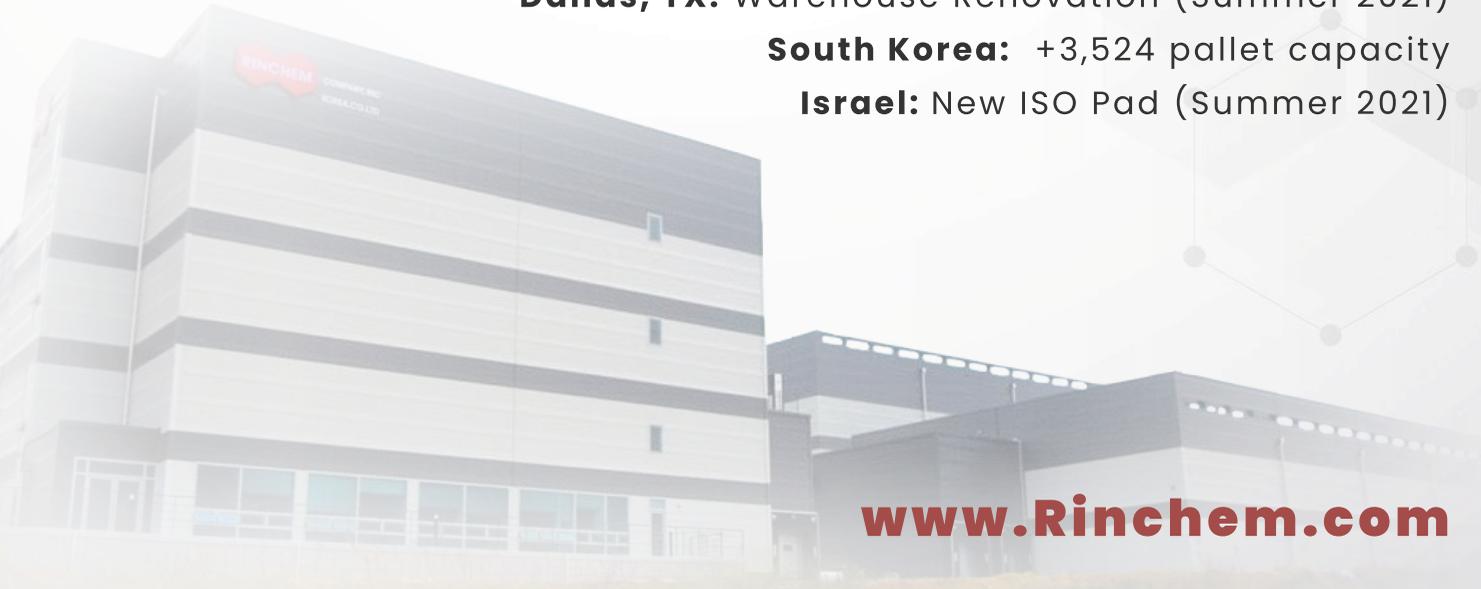
FEATURED LOCATIONS:

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Dallas, TX: Warehouse Renovation (Summer 2021)

South Korea: +3,524 pallet capacity

Israel: New ISO Pad (Summer 2021)



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customers' shipments, which are valued at about \$60 billion annually, arrive at their destinations safely and on schedule.

"Chemical logistics is in our genes," says Bob Boyle, vice president. Its employees possess in-depth knowledge of chemical logistics and the regulations governing these shipments. Odyssey offers end-to-end logistics services, including

with clients to review operational data and recommend opportunities to boost efficiency or cut costs and the environmental impact of its shipments.

Say a shipper is delivering a less-than-truckload shipment once a day, several days a week. Odyssey works with the customer to examine the feasibility of sending a truckload shipment once or twice weekly.

Visibility solutions, which enable shippers to act to counter delays, are attracting interest and investment.

shipment planning and execution, managed logistics services, intermodal and truck services, among others.

When Odyssey deploys these services, its customers look for several attributes: visibility, along with education and information, Boyle says. To provide these, Odyssey has invested in real-time data acquisition and business intelligence solutions, as well as network modeling software and GPS-enabled tracking.

With these tools, data isn't merely collected; it's also made available to customers, who can leverage it to inform and improve their decision-making. If the technology shows shipments are at risk, Odyssey's clients can work with their customers to mitigate any repercussions.

Members of Odyssey's continuous improvement program regularly meet

"We're able to use data to create actionable steps forward," Boyle says.

Because Odyssey has invested heavily in API integrations, it's able to bring in third-party information that can help in more effectively managing shipments. In 2020, this included the maps that showed COVID outbreaks across the United States. Odyssey could then identify shipments either coming from or heading to highly impacted areas and plan alternative routes as needed, Boyle says.

Odyssey's sample fulfillment service boasts a 99.99978% accuracy rate in safely storing, packaging, and shipping more than 12 million samples of both hazardous and non-hazardous materials.

Odyssey has earned acceptance into the American Chemistry Council's (ACC) Responsible Care partnership program, and also is an EPA SmartWay

Partner. An independent third party regularly audits the company's safety, health, environment, and security principles.

"We incorporate sustainability initiatives into all our logistics and supply chain strategies," Boyle says. This might mean shifting from trucks to rail or consolidating LTL to truckload shipments when practical. Odyssey also evaluates the carriers with which it works to make sure they're similarly focused on reliability, safety, and sustainability.

Customers' interest in visibility, reliability, and sustainability appears likely to continue. The network studies that Odyssey conducts provide "a control tower view" that allows its customers to optimize network flows.

"With this level of visibility, our clients enjoy an immediate improvement in performance and environmental impact," Boyle says.

RINCHEM: SOLELY FOCUSED ON CHEMICALS

For more than four decades, Rinchem Company Inc. has provided first-class logistics management and supply chain solutions specifically for temperature-controlled hazardous chemicals and gases.

"The chemical industry is not a vertical that we serve, it is the sole focus of our business," says Chris Wright, senior vice president, operations with the Albuquerque, New Mexico-based firm. Rinchem provides storage, handling, and transportation services covering final mile, interstate, ocean, and air shipments.

Chemical manufacturers and end users alike benefit from Rinchem's global network. It provides the flexibility needed to scale without significant investment in infrastructure or employee training. "Our assets, employees, systems, and expertise are customized for managing chemicals and gases on a global scale," says Dustin Miles, director of global transportation.

Chem-Star®, Rinchem's proprietary software, seamlessly links Rinchem's transportation and warehousing networks, providing customers with real-time



Rinchem Logistics provides logistics management and supply chain solutions specifically for temperature-controlled, hazardous chemicals and gases.



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visibility into inventory location and status. GPS tracking technology deployed in Rinchem's fleet of refrigerated tractors and trailers enhances security and visibility. The company's use of radio frequency technology boosts receiving and picking speed and accuracy.

Rinchem has accelerated its investment cycle to address customer needs. It continues to invest in its network's global infrastructure, with expansions in several U.S. states, as well as Israel, Taiwan, and South Korea.

To address the driver shortage, Rinchem has strategically acquired and partnered with select carriers that are experts in handling hazardous materials. This strategy enables Rinchem to

also has broadened its partnerships to include multiple ocean providers, further ensuring access to capacity. To minimize delays, Rinchem has developed relations with operators at multiple ports and diversified its routes.

"We'll continue to do all we can to ensure our customers' shipments move safely and on time," Miles adds.

And even as freight rates have jumped, Rinchem is able to leverage its global buying power and its strong carrier relationships to access the best rates possible and rein in costs, Miles says.

A significant portion of Rinchem's business is directly related to the semiconductor industry and the process chemicals used to fabricate microchips,

New Mexico, and other markets in the United States. "This is very exciting," Wright says. "Rinchem will be there to support them."

THE LOGISTIX COMPANY: NIMBLENESS AND EXPERTISE

From its base in North Kingstown, Rhode Island, The Logistix Company (TLC) has gained years of experience and expertise moving a range of chemicals and managing shipments for entire supply chains, says Joe Hassenfratz, sales and marketing manager.

TLC's expertise ranges from handling dry and liquid bulk chemicals, to managing over-the-road, less-than-truckload, and truckload shipments, and leveraging ocean, air, and intermodal options.

TLC also provides transloading services. In addition, TLC employees can arrange international moves across North and South America. Intermodal transportation can be more economical than other shipping methods, Hassenfratz notes.

At the same time, intermodal transportation requires detailed and in-depth planning to ensure shipments aren't lost or delayed due to miscommunication or regulatory concerns. TLC possesses the expertise required to ensure its shipments will move between transit modes seamlessly and accurately, he adds.

Customers who need blind or double-blind shipments to keep confidential the source of the product they're distributing can also rely on TLC.

To complement its expertise across multiple transportation modes, TLC offers a private fleet with various storage solutions, including ISO tanks, as well as heating, steaming, and anti-freezing facilities. TLC also provides tracking and tracing systems, as well as GPS technology. "Whatever the need, we can call on our own carrier fleet or work with our partners to help facilitate it," Hassenfratz says.

Behind the comprehensive range of capabilities TLC offers is strong, committed ownership. "They provide the

To manage congestion and weather events, chemical logistics providers have shifted modes or added locations.

leverage a range of assets, Miles says.

Rinchem also continues to invest in the newest equipment, driver amenities, and competitive compensation models. "These show how important drivers are to our business," Wright says.

To ensure access to capacity, particularly over the past year, Rinchem worked closely with its carrier partners, repositioned equipment, and increased its equipment pool. The breadth of its carrier relationships has been key in gaining access to capacity. Rinchem

Wright says. For years, the geographic locations for semiconductor fabs (fabrication plants) have been shifting to Asia Pacific countries such as Taiwan and South Korea.

However, the recent global chip shortage and the resulting impact on U.S. manufacturing have prompted the federal government to earmark \$50 billion for expansion and research. Multiple leaders in semiconductor manufacturing have announced multi-billion-dollar investments in Arizona,



The Logistix Company (TLC) moves a range of chemicals and manages shipments for entire supply chains. TLC offers a private fleet with multiple storage solutions including ISO tanks.



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Among the first American Chemistry Council Responsible Care 3PL partners, WSI ensures the safe storage, transport, sampling, packaging, and distribution of chemicals and other hazardous products. WSI acts as a single-source provider of logistics solutions for many companies.

resources we need to hire the best people and invest in technology,” he adds.

TLC’s relatively smaller size also is a benefit, Hassenfratz says, as it fosters nimbleness. The company is able to efficiently onboard new customers and evaluate multiple freight options. Its flexibility also allows it to quickly manage volume surges.

The company’s employees also have made a point of developing strong relationships with workers at multiple ports, particularly on the East Coast, as well as with drayage and freight companies across the country.

“Our relationships help ensure our customers’ shipments move quickly and aren’t overly delayed by congestion,” Hassenfratz says. And if one port is congested, TLC’s employees have the knowledge and relationships that allow them to quickly shift to another.

While TLC currently is a smaller

operations,” Hassenfratz adds.

**WSI:
ABOVE-AND-BEYOND SERVICE**

WSI was among the first ACC Responsible Care 3PL partners. “This shows our dedication to voluntarily operating above and beyond what’s required to ensure the safe storage, transport, sampling, packaging, and distribution of chemicals and other hazardous products,” says Scott Buber, director of chemical operations.

The company’s commitment to safe, sustainable operations has been a hallmark of operations for the approximately 30 years it has worked within the chemical industry, and is instilled in employees, from the front lines to executive leadership. “We take a lot of pride in how we operate, and we’re dedicated to providing the expertise required to meet our customers’ needs,”

and effectively.

Given the range of services and solutions it provides, WSI can act as a single-source provider of chemical logistics solutions for many companies. Many top-tier organizations have turned to WSI for just that reason. “We’ve completed just about every function within the chemical arena,” Buber says.

Along with its emphasis on safety, WSI is working to enhance sustainability and reduce the level of emissions its operations generate. Among other steps, the company is shifting to electric lifts, upgrading equipment to cut power consumption, and installing energy-efficient lighting. WSI tracks all improvements and works to continue reducing its environmental impact.

As part of these initiatives, WSI partners with its customers to help them reduce their environmental footprint where possible. This may mean, for instance, evaluating greater use of intermodal or rail transportation. These analyses can help customers cut costs and greenhouse gas emissions.

WSI’s chemical warehouse in Council Bluffs, Iowa, is a Free Trade Zone. Customers pay no duties while storing their products, only when moving them into the domestic market. “This provides huge tax benefits, especially when bringing in products from overseas,” Buber says.

The complexity of today’s chemical industry demands flexibility and responsiveness, as well as a strong culture of safety. “Safety is not just a priority at WSI, because priorities change,” Buber says. “It’s part of our culture. We strive

The complexity of today’s chemical industry demands both flexibility and responsiveness, along with a safety focus.

logistics provider, that might not be the case for long. “We have a strong customer base and we’re looking to grow,” Hassenfratz says.

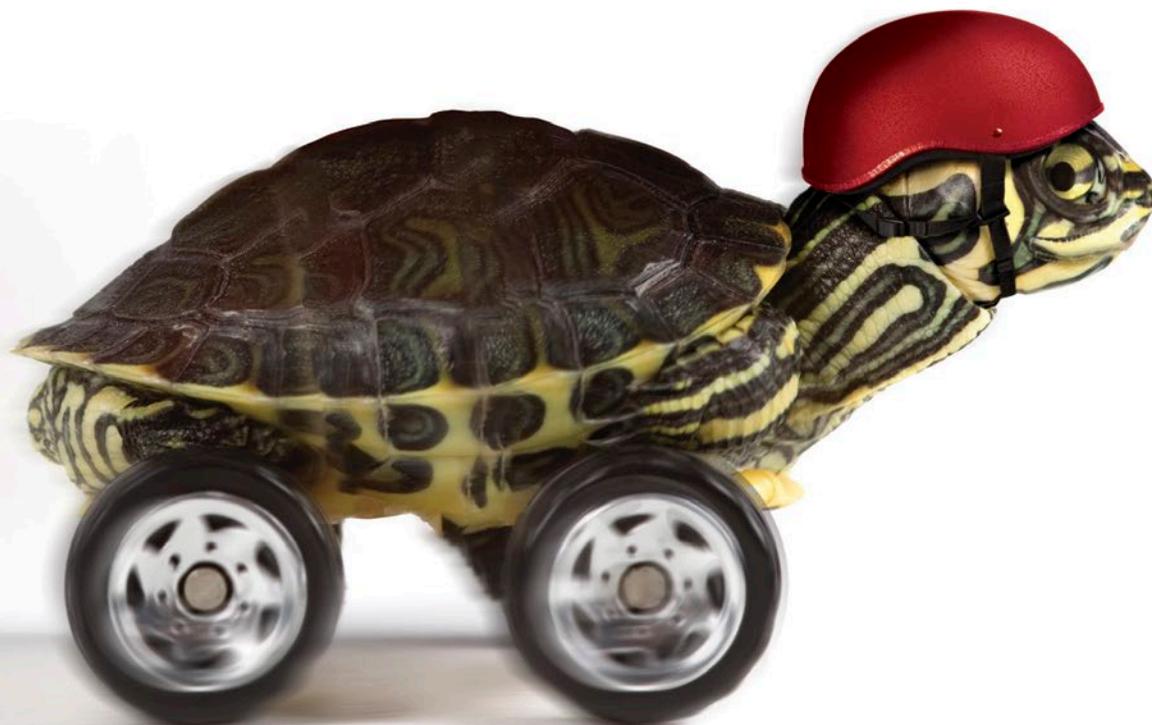
TLC’s clients recognize the value of the stellar customer service and competitive rates the company provides. They also appreciate the range of carriers with which TLC partners, and the breadth of its services. “We can manage entire supply chains, including for companies with multiple, complex

Buber says. WSI’s chemical facilities comply with myriad regulatory schemes, including DOT, EPA, DHS, and others.

In addition to outfitting all warehouses with the latest fire suppression and containment systems, WSI regularly invites local fire departments to conduct drills at all its chemical sites. “This helps build rapport and the firefighters become familiar with our operation,” Buber says. If anything unusual should happen, the department is prepared to respond quickly

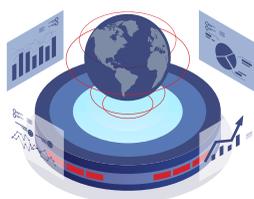
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