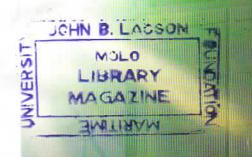
MH&L

Material Handling & Logistics

THE SHAPE OF LOGISTICS THINGS TO COME

Our annual attempt to shed some light on how disruptive technologies will change how you do business.

p. 12



Pharmaceutical Labeling

p. 20

Smarter Recycling p. 23

The Evolution of AS/RS p. 25

Intermodal on the Fast Track p. 27

> Reusable Packaging p. 29

CHRSON CH 30242-1333 S1131 HURBELLA AVE HELITA DALEDA HELITA DALEDA

#SE #E188

MIN OOT SELLTY OOTS #100385378/6#

SEPTEMBER 2017

COVER FEATURE

12
THE SHAPE OF LOGISTICS
THINGS TO COME

The more things change in the industry, the more it takes a collection of industry experts to make some sense of it all. Fortunately, MH&L's Editorial Advisory Board is up to the challenge.

BY DAVE BLANCHARD



MHL MATERIAL HANDLING & LOGISTICS (ISSN:2157-0302) is published monthly, except for conissues in January/February, July/August and November/December, by Penton Media, Inc., 9800 Meters Ave. Overland Park, KS 66212-2216. Phone 216-696-7000. Editorial FAX 216-696-2737. Internet address. mhinews.com. Periodicals Postage Paid at Kansas City, MO, and at additional mailing offices. POSTMASTER Send address changes to Material Handling & Logistics, PO Box 2100, Skoke IL 60076-7800. 💷 🖼 #R124631964. Canada Post International Publications Mail, Canadian Publications Mail Agree 40612608. Return undeliverable Canadian addresses to IMEX Global Solutions, PO Box 25542, Lambon. ON N6C 6B2 Canada: Paid subscription rates; U.S.: 1 year/\$70, 2 years/\$100, single copy \$10. Canada: 1 year/\$85, 2 years/\$130, single copy \$15. International: 1 year/\$105, 2 years/\$165, single copy \$20. Send remittance in advance to Penton Media Inc., PO Box 2100, Skokle II. 60076-7800. For subscription custo service go to material/handlinglogistics@halldata.com or mail to Customer Service, PO Box 2100, See IL 60076-7800, Phone: 847-763-9670, Printed in U.S.A. Copyright © 2017 by Penton Media: Copyring Permission is granted to users registered with the Copyright Clearance Center Inc. (CCC) to photocopy any article with the exception of those for which separate copyright ownership is indicated on the first page of the article provided that a base fee of \$1.25 per copy of the article plus 60 cents per page is paid directly to the CCC, 222 Rosewood Dr., Danvers, MA 01923. (Code No 0025-5262/09 \$1.25 + 60).









teatures

20

MAKE

Pharmaceutical Labeling Improves Efficiencies in a Highly Complex Supply Chain

Regulatory and supply chain pressures are causing drug companies to rethink their product labeling strategies.

BY LAURA JOHNSON

Al Offers a Smarter Path to Sustainable Packaging

Artificial intelligence and robotics are changing the carton recycling game.

BY DERRIC BROWN AND MATANYA HOROWITZ

25

STORE

Supply Chain Evolution from Unit Loads to Mini-Loads

The latest generation of automated storage and retrieval systems focus on speed, flexibility and energy efficiency.

BY JIM MCMAHON

27

MOVE

The Intermodal Sector is On the Fast Track for Growth

The future is bright for shippers making the shift from road to rail or increasing intermodal shipping.

BY PHIL SHOOK

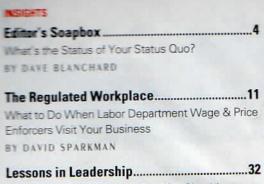
29

COMPETE

A Reusable Way to Tackle a Top Supply Chain Initiative

The pressure to increase supply chain sustainability is causing companies to scrutinize their entire supply chain to uncover solid waste, energy and carbon emissions reduction solutions.

BY CHRISTOPHER SHEPARD



Warehouse or Boardroom: Benefits Should

Still be the Same

BY ADRIENNE SELKO

DEPARTMENTS

Marke	Dogt	5
News	Deal	

- > CSX Service Deterioration Is Driving Freight to Other Railroads and Trucks
- > Amazon's Bezos Named to Logistics Hall of Fame
- > Top Food Manufacturers Collaborate on Blockchain Technology for Safety
- > UPS Enhances Driver Safety Training with Virtual Reality
- > Smart QR Code Developed for Reverse Logistics
- > News Briefs

Advertiser Index.....31

online contents WWW.MHI NEWS.COM

Online Exclusive News & Features

- Could This Warehouse Drone Cut Inventory Costs?
- Can You Fire an Employee for Attending a Protest? Yes. Depending on Your State
- Supply Chain Experiencing High Rate of Terrorist Attacks
- Nearly 10% of US Trucking Impacted by Hurricane Harvey
- Battle Against China's Fake Foods in Supply Chain Drives New Tech Frontier

EDITORIAL ADVISORY BOARD

Joseph C. Andraski, founder of Collaborative Energizer LLC

Roger Bostelman, engineering project manager, Intelligent Systems Division at the National Institute of Standards and Technology

Ann Christopher, vice president & general counsel, Kenco Group, Inc.

Ron Giuntini, consultant and principal, Giuntini & Company, Inc.

John Hill, director, St. Onge Company

Russell Meller, VP of R&D, Fortna

Tan Miller, director of the Global Supply Chain Management Program, Rider University, College of Business Administration

Alex Scott, assistant professor, Supply Chain Management, Northeastern University

Jim Shephard, president, Shephard's Industrial Training Systems

David Sparkman, founding editor of ACWI Advance, and head of David Sparkman Consulting

Enan E. Stillman, corporate and transportation attorney/partner, Stillman Welch LLP

James A. Tompkins, Ph.D., CEO, Tompkins International

Alan Will, retired Marine Colonel, logistics specialist, and president, PWG Distribution Solutions, LLC



Volume 72 / No. 7 / September 2017

1100 Superior Avenue, Cleveland, OH 44114 • (216) 696-7000 • www.mhlnews.com

CORPORATE OFFICE:

Penton, 1166 Avenue of the Americas, 10th Floor, New York, NY 10036

EDITORIAL

Dave Blanchard

 Editorial Director/Associate Publisher
 dave.blanchard@penton.com Adrienne Selko . Senior Editor . adrienne.selko@penton.com

Karen Field . Executive Content Director, Industry & Infrastructure Group . karen.field@penton.com

Samantha King • Art Director • samantha.king@penton.com

CONTRIBUTORS

Derric Brown • Matanya Horowitz • Laura Johnson • Jim McMahon Christopher Shepard • Phil Shook • David Sparkman

BUSINESS

Jacquie Niemiec . Vice President and Market Leader Penton Design & Manufacturing • jacquie.niemiec@penton.com

Dave Altany • Brand Sales Director • dave.altany@penton.com

Carey Sweeten • Ad Operations Manager, Display Production • carey,sweeten@penton.com

Frank Chloupek . User Marketing Director . frank.chloupek@penton.com

Donea Boiner . Marketing Manager . donea.boiner@penton.com Nick Giallourakis • Product Development Manager • nick.giallourakis@penton.com

List Rentals • Zach Sherman • (212) 204-4347 • zach.sherman@penton.com

Reprints: Wright's Media . Nick lademarco . (877) 652-5295

Paul Miller . President, Industry & Infrastructure Group

SALES

Dave Altany • IL, MN, MD, WI, CO, KS, NE, OR, WA, ID, WY, MT, ND, SD, AK, Western Canada • (216) 931-9245 • dave.altany@penton.com

Jeffrey C. Asher • AL, AR, FL, GA, LA, MS, NC, OK, SC, TN, TX • (678) 547-0800 • jeff.asher@penton.com

Russell Brody • ME, VT, NH, MA, CT, NJ, RI, NY, VA, DE, MD, DC, PA, Eastern Canada • (732) 275-1167 • russell.brody@penton.com

Emily Capaccioli . CA, IA, NV, AZ, HI, NM, UT . (817) 513-1941 emily.capaccioli@penton.com

Joe DiNardo • MI • (440) 487-8001 • joe.dinardo@penton.com

David S. Jones • OH, KY, IN, WV • (513) 860-4842 • david.jones@penton.com

Media Kit: manufacturing.penton.com

INTERNATIONAL SALES

U.K., Europe (except Germany and Italy), RODRIC LEERLING, 31 (0) 683 23 2625, office@leerling.biz • Japan, YOSHINORI IKEDA, 81.3.3661.6138 • Germany, Austria and Switzerland, CHRISTIAN HOELSCHER, 49 (0) 89 950027-78, christian.hoelscher@husonmedia.com • Italy, CESARE CASIRAGHI, 39 (0) 31 261407, c.casiraghi@tin.it . UK, Scandiavia and Spain, STUART PAYNE, 44 1932 564999, stuart.payne@husonmedia.com



Penton is an Informa business.