CFCM
CANADIAN FINISHING & COATINGS MANUFACTURING MAGAZINE

$12.00 March/April 2012

Quality Spray, Better Transfer and More

WAGNER's newest manual Air- Coat gun: GM 4700AC.

Finishers continually demand better performing, more efficient manual liquid paint spray guns.

CUSTOMER DEMAND

Wendy Hartley, Worldwide Product Marketing Manager, **Graco** says, "Customers are demanding spray guns that reduce the cost of manufacturing."

"They want high quality spray performance while improving transfer efficiency and reducing air usage," explains Hartley. "This can be accomplished with a spray gun when enhancements are made to aircaps, nozzles and tips."

"In Canada, I see my customers demanding a great finish, gun dependability, and the right fit and feel in their hand." says Joe Nieradka, Account Manager for **Binks, DeVilbiss**, **Ransburg** and **BGK (ITW-FEA)**. "Ergonomics has been a big focus of Binks and DeVilbiss. Our engineers balance and reduce the gun weight to put less strain on the hand and wrist. We've really met the needs of both ergonomics and finish quality in the

continued on page 23

ALSO IN THIS ISSUE

- Adhesion in Paint and Coating Manufacturing
- REACH Everywhere
- Mixing and Dispersion
- UV Coating Formulation
- UV Curing
- Vapour Degreasing
- Testing Equipment in Plating and Anodizing

AND MUCH MORE!

HIGH QUALITY in Low VOC Finishes

Concerns for the environment are still and will most likely always be a high priority as Finishers are required to chose products that are low in volatile organic compounds to please their customers, government and themselves. Manufacturers of wood finishes are working toward a September 2012 deadline for compliancy.

THE TRENDS IN LOW VOC FINISHES FOR WOOD

Suppliers of low VOC products discuss the marketplace and what customers are demanding.

Peter Pecore of Premium Finishes, an importer of high-end urethane wood finishes and water-based finishes from Italy says, "Although it's always on everyone's plate, when it comes to low VOC coatings, it becomes a matter of economics." He adds, "In today's business climate, any discussion of finishes will always boil down to three questions: will it lower my costs, can it increase my business, and what are the production risks? Showing or spraying samples is one thing, doing it in production is a totally new ball game. Most finishing rooms are quite hectic and on a deadline, so the last thing anyone wants is to have any production problems. When thinking of lowering your VOCs through water based finishes, most customers have a fear of consistency from batch to batch."

Pecore continues, "For major manufacturers that mass produce kitchens or store fixtures, they can look at installing the proper equipment for application of low VOC products and curing of these finishes. Since low VOC products come in both solvent based high solids finishes and water based coatings, the manufacturer can decide which will work best for the company.

However, for the vast majority of

continued on page 21

IN THE NEWS

Association News

Ontario to License Toxic Reduction Planners by Summer of 2012

Dave Saucier of the CACD attended a workshop recently regarding the role of licensed Planners in Ontario. Saucier intends to become licensed to be able to assist member companies to meet the regulatory requirements that come into play later this year. The ministry will be licensing planners by summer 2012. Due to anticipated demand, the ministry will be accepting applications on a first come, first serve basis.

Section 27.1 of Ontario Regulation 455/09 sets out the qualifications required to become a licensed planner. An individual must:

1. Meet a combination of education and/or work experience: BSc/MSc/PhD in a related field + 4 years of relevant full-time work experience or the part-time equivalent; College diploma in a related field + 6 years of relevant full-time work experience or the part-time equivalent; or 8 years of relevant full-time work experience or the part time-equivalent (with at least 2 years in environ-

continued on page 4

PM # 41515012 Return undeliverable Canadian addresses to Wilkinson Media Canada Inc., 225 The East Mall Suite 1103, Toronto, ON, Canada M9B 0A9

New, patented Triple-Seal Snap Lock Closure produces an air tight seal that eliminates leaks and product contamination.

Exclusive proprietary surface treatment prevents product skinning.

Superior Performance at last...

- Zero rust/corrosion on plug, ring or body!
- Zero dented, damaged, discounted product on display!
- Zero lid skinning issues!
- Zero leakage when properly closed!

Available in 4-liter, gallon, liter, quart, 1/2 liter, pint and 1/2-pint capacities.

• See us at ACS • Booth 900

The research, engineering and continual improvement behind KW's ALL-Plastic and Hybrid Container family is unparalleled in container manufacturing. Why pay more for less? The KW ALL-Plastic Container clearly delivers performance, protection and value for your water-based coatings.

KW's ALL-Plastic Container is the CLEAR CHOICE for containing and delivering your valuable formulations.

KW Container

Expect more from your container supplier.

Made from 100% Recycled Material • 100% Recyclable • User Friendly

110 Henderson Hwy • Troy, AL 36079 • (800) 633-8744 • www.kwcontainer.com

Value for **Money Procurement**

I recently had a chat with Andrew Sefton, Executive Director of the Ontario Painting Contractors Association (OPCA) located in Toronto, ON and they have things they are quite concerned about. Sefton mentions several documents below, which are available through the association, that outline their concerns.

"The issues that warrant attention which are referred to in the documents are not mutually exclusive," says Sefton. "Those being (1) value-for-money procurement practices and two factors consistently cited as factors impacting bids, those being (2) availability of skilled labour and (3) project specifications."

Perhaps the largest issue is Value for Money Procurement. In other words, the lowest bid in a tender shouldn't always win and isn't always the wisest choice. Everybody thinks they can slap paint on a wall, but that is just not the case. If it is not done correctly the first time, there will be costly repairs needed in the long term.

These are Sefton's words: "Public construction continues to seek solutions to higher costs of construction due to limited bidders. In addition to an absence of standard construction documents and construction practices across ministries and municipalities, in the absence of an accepted standard qualification for contractors and craftworkers, procurement continues to select the lowest bidding contractor. According to the report The Value of Quality and the QP

1 Contractor, the cost of a qualified contractor exceeds an unqualified contractor by 10 to 20 per cent but the long-term savings amount to a reduction of maintenance costs between 70 to 90 per cent. In a time of austerity, public (and private) procurement must seek to work with the trades and/or sectors to identify contractor and craftworker 'qualifications'. The OPCA welcomes the opportunity to collaborate with government to define contractor and craftworker 'qualifications' to ensure value-for-money construction."

Another issue is Labour Supply.

Sefton says: "In the Construction Sector Council Report, Contractor Capacity – National Paint Contractor Profile, the most identified barrier to securing work is limited labour supply. In their annual Labour Market Study, the Construction Sector Council projects the requirement for 4,500 new painters in the industrial, commercial and institutional sector before 2019. Should public (and private) procurement exclude an obligation for a formal apprenticeship program when defining a contractor and craftworker 'qualification', the cost of construction will escalate beyond projections and most public budgets.

The OPCA welcomes the opportunity to collaborate with government to define contractor and craftworker qualifications to ensure value-for-money construction."

The third main issue for the OPCA is Specification Documents.

"In the Construction Sector Council Report, Contractor Capacity – National Paint Contractor Profile, the second most identified barrier to securing work is the absence of standard construction documents and construction practices across ministries and municipalities," says Sefton. "The OPCA welcomes the opportunity to collaborate with government to define industry standards to ensure value-for-money construction."

If you would like to discuss these issues further or get more information, here is the Association's plug: The Ontario Painting Contractors Association fosters collaboration to achieve success in advocacy, education, industry standards and labour relations. The OPCA welcomes your interest and participation on all issues that impact the architectural and decorative paint and protective coating contractor. Please contact Andrew Sefton at (416) 498-1897 or (800) 461-3630 or by email at andrew.sefton@opcatrusted.ca.

Please contact me with your news or new product press releases or industry concerns.
sandra.anderson@cfcm.ca

CONTENTS

FEATURES

Paint and Coatings Manufacturing

10 **Adhesion**
Promoting Adhesion: A look at Adhesion Promotors, adhesion testing and more.

11 **REACH Everywhere? Or is it…**
Dave Saucier examines the Registration, Evaluation, Authorization and restriction, of CHemical substances.

15 **Mixing and Dispersion**
Versatility, Reduced Time and Energy in Mixing and Dispersion.

16 **UV Coating Formulation**
Formulating UV Curable Coatings.

Industrial Finishing

14 **UV Curing**
A look at the process and principle of Ultraviolet Curing.

21 **Low VOC Wood Finishes**
Continued from page 1, manufacturers and distributors talk about the regulations, compliance and the newest innovations.

23 **Manual Liquid Paint Spray Guns**
Continued from page 1, Manufacturers and Distributors talk about how their newest products answer Finishers' needs.

Plating and Anodizing

20 **Testing Equipment**
Technology – Testing Your Metal.

28 **Vapour Degreasing and Precision Cleaning**
A discussion about vapour degreasing and other forms of precision cleaning.

Trade Show Pre-Coverage

13 **American Coatings Show 2012**

19 **RadTech 2012**

26 **FabTech Canada 2012**

23

DEPARTMENTS

In The News	4
People	6
CPCA Corner	7
Calendar of Industry Events	8
Annual Strike Out Challenge	17
New Products and Technologies	18
AD Index	30
Subscription Form	30

Volume 6 Number 2 March/April 2012

EDITOR
Sandra Anderson
519-442-4071
Fax 519-442-1359
sandra.anderson@cfcm.ca

COPY EDITOR/PROOFREADER
E. J. Burns Anderson

PUBLISHER AND SALES
Pete Wilkinson
416-255-1808
Fax 416-519-1313
pete.wilkinson@cfcm.ca

VICE-PRESIDENT, ACCOUNTING, CIRCULATION AND SALES
Brian Jones
905-405-1500
Fax: 416-519-1313
brian.jones@cfcm.ca

GRAPHIC DESIGN
Allan S. Bates
416-485-9229
Green Apple Prepress
allan.s.bates@sympatico.ca

CFCM Canadian Finishing & Coatings Manufacturing is published bi-monthly by Wilkinson Media Canada Inc. Subscriptions are free to qualified Canadian finishers and coatings manufacturers and their suppliers. Subscriptions (six issues): Canada $60.00 per year plus taxes (GST #858877210 RT0001). United States U.S. $57.00. Foreign U.S. $85.00. Single copy $12.00. Buyers Guide $40.00 CDN plus taxes.

Postal Information:
Printed in Canada. Publications Mail Agreement PM # 41515012
Return undeliverable Canadian addresses to CFCM Magazine, 225 The East Mall Suite 1103, Toronto ON M9B 0A9, Copyright 2012.

WILKINSON MEDIA CANADA INC.
225 The East Mall Suite 1103
Toronto, Ontario,
Canada M9B 0A9
416-255-1808
Fax 416-519-1313

Continued from page 1

mental management and 2 years in operational activities in a manufacturing or mineral processing facility).
2. Complete a Ministry approved course
3. Write and pass a Ministry approved examination
4. Pay a fee

The Toxic Substance Reduction Planner Training Course is currently being developed. Participants will be required to complete on-line modules that will take approximately 2.5 days. Once this portion of the course has been completed, participants will attend classroom training for 2.5 days. These modules contain content related to the requirements of being a planner. The classroom modules will also include examples, case studies and exercises. The exam will be held on the afternoon of the third day of classroom training. Classroom training will be held in the Greater Toronto Area with the possibility of hosting sessions elsewhere in the province depending on enrolment and demand.

This spring, a form will be available to all applicants to register for the training course, the exam and to obtain a licence. The application will list the fee for each of: the course, the exam, and the licence. For more information on the Toxic Substance Reduction Planner program, please visit this Ministry's 'Reducing Toxics' website: http://www.ene.gov.on.ca/environment/en/subject/toxics/index.htm

Montreal Manufacturing Technology Show

Featuring a Bigger, Better and Refreshed Show Experience

Highly anticipated manufacturing event aims to break traditional trade show mould

In light of a recent report forecasting a surge in manufacturing growth in the Quebec aerospace industry, coupled with newly-released statistics that show manufacturing accounted for 16.1 per cent of the Quebec economy last year (compared to 12.8 per cent elsewhere in Canada), the upcoming Montreal Manufacturing Technology Show (MMTS),
May 14-16, 2012, Place Bonaventure,
Montreal, 800 de la Gauchetière Street West, Montreal is gearing up for a record event. This positive industry momentum could not be more evident than in the excitement building up for the show, which is back, bigger than ever, featuring a 15 per cent increase in show floor space, a revitalized educational component and more opportunities for networking through on-site interactive sessions and social media.

"This is the event the Quebec industry has been waiting for," said Nick Samain, Group Show Manager with the Society of Manufacturing Engineers (SME), organizer of the event, noting that exhibit booking sales are fast approaching capacity well in advance of the show's start. "Just as the Quebec manufacturing sector has had to re-invent itself in recent years, we're also returning with a 're-booted' event designed to better serve heightened interest in manufacturing innovations and trends," said Samain.

The new MMTS format includes a greater emphasis on social media outlets – such as Facebook, Twitter, LinkedIn and Instagram – as a means to deliver a truly interactive user experience that will keep attendees and exhibitors engaged, and sharing information, before, during and after the show. Plans are also under way to introduce a brand new Interactive Practical Education Component (IPEC) that will feature sessions held right on the show floor. Rather than traditional classroom-style sessions in private conference rooms, IPEC demonstrations will take place alongside equipment exhibits and will highlight key advances in such areas as high-speed machinery, aerospace, transportation, energy, efficiency, lean manufacturing and much more.

"We're making it easier than ever for participants to engage in real conversations with suppliers who can help them achieve their goals, whether those conversations take place face-to-face or on-line," said Samain, noting that the bi-annual event is as much about education and networking as it is about purchasing new products. "Our goal is to connect manufacturers with the technology, equipment and services they need to remain competitive and we're embracing modern ways to do that."

Key exhibitors already secured for MMTS include: Sandvik, Elliott Matsura, Machineries BV, Huron Canada, Megatel, Ellison Technologies/Mori Seiki, and AW Miller. More than 5,000 attendees are expected to attend the show, representing a cross-section of more than 20 manufacturing industries. The event is produced in partnership with the Quebec Aerospace Association (AQA), Canadian Machine Tool Distributors' Association (CMTDA), Canadian Manufacturers and Exporters (CME), Canadian Tooling and Machining Association (CTMA), Canadian Wind Energy Association (CANWEA) and Les Affaires.
www.mmts.ca

About the Society of Manufacturing Engineers (www.sme.org)

The Society of Manufacturing Engineers (SME) is the world's leading resource for manufacturing information and knowledge. With Canadian headquarters in Toronto, the society promotes an increased awareness of the value of manufacturing among industry professionals and the general public, while supporting educational initiatives and introducing career options for those entering the industry. For half a million manufacturing engineers, executives and members in more than 70 countries around the globe, SME is the source for knowledge, networking and skills development opportunities that help them advance their careers, their companies and their industries.

OPCA Events

The Ontario Painting Contractors Association (OPCA), posted several upcoming industry in its recent newsletter.

Night At The Races, Sponsored by the Federation of Painting and Decorating Contractors of Toronto, takes place May 9, 2012 at Woodbine Racetrack.

The OPCA GOLF CLASSIC will be held June 27, 2012 at Angus Glen Golf and Country Club. The Association's Annual Conference is scheduled for October 12-14, 2012 at Langdon Hall Country House Hotel and Spa.
www.opcatrusted.ca

decaBDE Recommendations Published in Canada Gazette I

Decabromodiphenyl ether (decaBDE) belongs to a group of structurally related chemicals known as the polybrominated diphenyl ethers (PBDEs). The primary use of decaBDE in Canada is as a flame retardant in the manufacture of thermoplastics and polymer resins. DecaBDE does not occur naturally in the environment and is not manufactured in Canada. However, decaBDE may be imported into Canada as a commercial mixture, DecaBDE, or in consumer products such as electronic and electrical goods and textiles.

The health effects of decaBDE have been well studied. In laboratory animals, decaBDE affects early fetal/neonatal development, the liver, the thyroid and potentially the endocrine system. The

available studies suggest that decaBDE does not have significant genotoxic potential, and there is limited evidence for carcinogenicity in experimental animals.

The draft human health state of the science report of decabromodiphenyl ether is available on the Government of Canada's Chemical Substances Web site (www.chemicalsubstances.gc.ca).

New Regulation is Causing Trucking Headaches

What was meant to be a small rule tweak in the definition of a "tank vehicle" by the Federal Motor Carrier Safety Administration (FMCSA) has turned into a major glitch for trucked shipments of coatings around North America.

The change was not meant to affect coatings shipments, but coatings manufacturers are reporting delays in product shipments, and drivers being ticketed.

The American Coatings Association says the new definition is "overly broad" by including all shipments of bulk tank or tanks that have a total aggregate capacity of 1,000 gallons or more.

The paint and coatings industry trucks product in totes (small portable tanks) and intermediate bulk containers(IBCs), which typically carry 275 to 500 gallons. Before the rule, drivers hauling these containers did not need a tank vehicle endorsement.

Coating manufacturers have complained that their drivers are being cited for violations of the new rule, so ACA has met with law enforcement to request "soft enforcement" of the regulation until it can get FMSCA to change the definition to exclude totes and IBCs.

DuPont Performance Coatings on Auction Block

DuPont Chemical's Performance Coatings segment, one of the world's largest manufacturers of automotive paint, is accepting bids for the business.

DuPont Performance Coatings was formed in March 1999 by the merger of Herberts GmbH and DuPont Automotive Finishes. It includes DuPont Industrial Coatings, DuPont Aviation Finishes, DuPont Commercial Finishes, DuPont Refinish, Standox, Spies Hecker and Nason Finishes.

Performance Coatings accounted for 12 per cent of DuPont's $31.5 billion in revenue last year. Although fourth-quarter sales showed an overall 8 per cent increase, those gains were built on 10 per cent price increases imposed to offset rising raw material costs; segment volume declined by 2 per cent over the same quarter of 2010.

Potential buyers include competitors PPG Industries, BASF and Akzo Nobel, according to reports. Several buyout firms have also reportedly been preparing for the auction since late last year. Private equity firms find the unit especially attractive as they believe costs can easily be cut to make it more profitable.

ITW Gema 2012 Training sessions

ITW Gema has begun their training dates for the year in Las Vegas.

That session will be followed by several other dates around North America, including a Canadian date on Aug 1-2, 2012 in Toronto, ON, Hampton Inn & Suites, Toronto Airport.

The classes are dealing with Automatic Systems Training, Manual Gun Training and "Old School Meets High Tech" Powder Coating Workshop sponsored By ITW Gema and TIGER Drylac USA, Inc.. (Direct Link to classes is: http://www.itwgema.us/powdercoatingworkshop/)

www.itwgema.com

Sign Up for the CFCM Buyers Guide

It is that time again–a new year, a new listing. Every year, after the Buyers Guide is published in July, CFCM receives several emails and phone calls from companies asking how they can be included. Our Buyers Guide is online. Go to http://www.cfcm.mercuryemail.com and click on "add new listing", follow the instructions and include your information. In time for a July release we will use all the online information for our printed Buyers Guide. Don't miss the boat. Sign up today.

Canada Partners In Launch Of New Global Climate And Clear Air Initiative

The Honourable Peter Kent, alongside United State Secretary of State Hillary Clinton and Environment Ministers from participating countries, launched a new global initiative aimed at making rapid

progress on countering climate change and improving air quality. The new initiative, the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants, is composed of six participating countries—Bangladesh, Canada, Ghana, Mexico, Sweden and the United States and supported by the United Nations Environment Programme (UNEP).

It is estimated that SLCP emissions, such as methane, black carbon (soot), and tropospheric ozone, will contribute about half of the climate warming from current anthropogenic emissions over the next 20 years. They have critical impacts on water cycle, crop yields, air quality and human health. This issue is of particular importance for Arctic countries, as black carbon has an additional warming effect when deposited on snow and ice.

Smart Paint

Scottish scientists are developing a low-cost "smart" paint that can detect microscopic faults in wind turbines, mines and bridges before structural damage occurs.

The environmentally friendly paint uses nanotechnology to detect movement in large structures and could shape the future of safety monitoring, according to researchers at the University of Strathclyde in Glasgow, Scotland.

The paint can be sprayed onto any surface, with electrodes attached to detect structural damage long before failure occurs. It is made with fly ash and highly aligned carbon nanotubes. When mixed, it has a cement-like property and can endure harsh environments.

Company News

Mining Pyrophyllite in Newfoundland, Company Expansion

Situated in Manuels, Newfoundland, just outside St. John's, Trinity Resources and Energy owns and operates a large pyrophyllite mine supplying alumino silicate products to the ceramics, refractory, cement and fiberglass industries. Originally owned by Armstrong Tile, the deposit was mined primarily to supply Armstrong's ceramic wall tile plants in Tennessee and Pennsylvania.

Trinity Resources and Energy took ownership of the mine and related assets in 1998, with a view of developing mineral products in markets beyond the ceramic tile market. Milling and classification facilities were added to the plant in 2003, which allowed for the introduction of the company's ALTIFIL line of products. These products were initially designed for the ceramics and refractories markets, which benefit from the unique thermal properties of the material. ALTIFIL products are produced from select ore comprising of pyrophyllite, quartz and mica.

More recently, Trinity has expanded its operations and with the introduction of ore- sorting technology, removes the quartz and non-platy impurities from the ore. The ALTIPLUS and ALTIBRIGHT line of products are produced from high purity, inert pyrophyllite ore, which is 92 per cent pyrophyllite and 8 per cent white muscovite mica.

What is Pyrophyllite?

Pyrophyllite is hydrous aluminum silicate with a monoclinic structure and physical properties similar to talc (hydrous magnesium silicate). Like talc, pyrophyllite in its purest form has excellent thermal stability, low electrical conductivity and excellent chemical resistance. As an alumino silicate, pyrophyllite has chemical properties similar to clay.

Trinity's Unique Pyrophyllite Properties, Trinity's Altiplus and Altibright extenders are platy, soft, inert, and exceptionally high brightness. Benification of the pyrophyllite ore not only removes undesirable impurities, it also increases clay purity, and the overall platy nature of the mineral. As a pigment extender with brightness ranging from 92-95, ALTIPLUS and ALTIBRIGHT offer exceptional pigment extension benefits in water and alkyd based systems.

Trinity's products are available in 50-pound bags, palletized and semi-bulk bags through Brenntag Specialties in Canada. The company is seeking additional distributors in the United States.

People

New at Ferguson

Ferguson Chemical Innovation has recently announced that Ms. Riki Gogna has accepted a position of Business Line Manager for the Coatings, Adhesives, and sealants group (CAS), effective February 6, 2012.

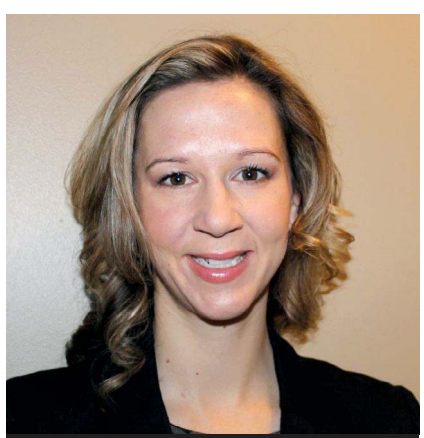
Ms. Riki Gogna

Gogna will be responsible for creating new and maintaining existing strong customer relationships to drive sales growth; Leading the training and development of a strong CAS sales force to support the present and future growth of this dynamic growth organization; Developing the selling strategy that will enable Ferguson Chemical Innovations achieve market leadership in the Canadian marketplace and Collaborating with the Marketing Managers to develop the Canadian sales plan and operating expense budget as part of the Company's business plan.

Gogna is a recent MBA graduate, and brings a great deal of coatings industry experience. She formulated coatings at ICI Autocolour (Automotive and industrial), she synthesized phenolic and aylkd resins at Schenectady Canada, and was product champion for coatings raw materials at Univar and Min-chem.

The company has also hired Ms. Christina Pross as Marketing Manager.

Pross brings an experienced track record of success with a high degree of technical expertise in Coatings, Graphic Arts, Plastics, Functional, Per-



Christina Pross

Federal Government Seeks to 'Reduce' Regulation

Gary LeRoux, CPCA

Over the past several months the landscape at the federal level in Ottawa has been experiencing a quiet, but significant shift on the regulatory front. The transformation is part of the Conservative government's business-friendly agenda in a freshly minted majority government environment. This will be positive for industry.

REGULATORY COOPERATION COUNCIL

The first initiative began with the meeting of Prime Minister Harper and President Obama in February of 2011 when they announced the creation of the Canada-United States Regulatory Cooperation Council (RCC) to increase regulatory transparency and coordination between the two countries. The announcement noted that, "Regulation plays an important role in both our countries. Effective regulations protect our health, safety and the environment while supporting growth, investment, innovation and market openness." The RCC went on to note that, "While our regulatory systems are very similar in the objectives they seek to achieve, there is value in enhancing the mechanisms in place to foster cooperation in designing regulations or to ensure alignment in their implementation or enforcement. Unnecessary regulatory differences and duplicative actions hinder cross-border trade and investment and ultimately impose a cost on our citizens, businesses and economies."

Since the utterance of those very important statements officials in both Canada and the United States have been diligently working to create a concrete 'joint action plan' to breathe life into this new policy framework. The working groups on the Joint Action Plan continue to meet in Ottawa and Washington fleshing out practical approaches to enhance harmonization. In the coming months CPCA will work closely with our counterpart in Washington, the American Coatings Association, to ensure that every effort is made to facilitate more effective collaboration and provide input where appropriate and necessary to the relevant working groups.

This ongoing initiative will lead to important gains for the paint and coatings sector, which is a highly regulated sector of the economy. It is also a sector, which has long argued for stronger harmonization of regulations on both sides of the border given the highly integrated nature of the products produced and sold by member companies. In fact, recent VOC coatings regulations for key product categories revealed that the industry fully accepted the need for harmonization on both sides of the border to ensure a level playing field for companies doing business in both countries. This initiative will provide new opportunities for both countries to work more closely on future regulations and other risk management approaches.

RED TAPE REDUCTION COMMISSION

On the heels of this important bilateral initiative, came the Red Tape Reduction Commission's report in January 2012, chaired by the Hon. Maxime Bernier. The Commission's first task was to "identify irritants to business that stem from federal regulatory requirements and review how those requirements are administered in order to reduce the compliance burden on businesses, especially small business." The Commission identified 2,300 irritants created by federal regulations and have recommended 90 specific solutions to eliminate or alleviate them. The second part of the Commission's mandate was to "recommend options that . . . will control and reduce compliance burden on a long-term basis."

The Commission is seeking ways to reduce the regulatory burden by reducing regulation. This is the first time in Canada a government has stated that it has a plan to 'reduce' regulations. Since Confederation regulations have increased year after year after year.

While there has not been any new legislation on this groundbreaking approach as yet, it has signaled to federal officials that the goal is to seek ways to manage risk without resorting to more regulation. Federal officials fully understand the intent of the government's new policy push to reduce regulatory burden. CPCA has witnessed this firsthand in recent weeks with respect to consultations on a number of products that were scheduled for new regulation. However, we are now proceeding down the path of a risk management approach instead of a regulation.

We believe that new, more innovative approaches can be found to ensure that risk is indeed managed without new regulatory burdens being placed on industry. However, it is incumbent upon industry and industry associations like the CPCA to bring forward new risk management approaches for particular products currently on the radar screen. This is especially so in cases where there is clearly a low level of risk from both a health and environmental perspective.

Reducing regulation, however, does not mean that there will be no government oversight for the many risks that exist and that require some form of risk management. The Commission recognizes this indisputable fact when it says, "Governments sometimes try to eliminate all risk, which is an impossible goal, and trying to do so can unnecessarily stifle innovation and growth in the process." Clearly, the federal government recognizes the need to use other instruments besides regulation. These include, but are not limited to, both mandatory and voluntary instruments such as pollution prevention plans, environmental performance agreements and codes of good practice all of which can stipulate the level of acceptable standards for particular product categories.

TIMES, THEY ARE A CHANGIN'

Clearly, the federal government believes that the administrative burden, and more importantly costs, can be greatly reduced when there are more appropriate risk management approaches beyond simply regulating. The savings in time, cost and aggravation for both industry and government is greatly reduced. The government may go as far as initiating a 'one-for-one rule', which was part the Conservative Party's policy platform in the last election. It is also a recommendation in the Commission's report. In this case the government must eliminate a regulation every time it proposes a new one. This approach has been adopted in other countries and now it may become part of the Canadian government's regulatory toolkit. Indeed, the times they are a changin'.

Gary LeRoux is the president of the Canadian Paint and Coatings Association.

IN THE NEWS

Regulatory Review Completed

The ACC (American Chemistry Council) has recently been informed that the Office of Management and Budget (OMB) Office of Information & Regulatory Affairs (OIRA) has completed its regulatory review (as of 2/21) on the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (HCS) Final Rule to implement the UN Globally Harmonized System (GHS) of Classification and Labeling for workplace chemicals. This action clears OSHA to publish the final rule "consistent with change" in the Federal Register, which could take several weeks.

Calendar of Industry Events 2012

March 20-22, 2012: FABTECH Canada, Toronto, ON, *www.fabtechcanada.com*

April 10-12, 2012: ECOAT 2012 will be held at the Rosen Centre Hotel in Orlando, Florida. *electrocoat.org/conference*

April 17-20 2012: PaintExpo, Karlsruhe Exhibition Centre, Germany, Tuesday through Thursday from 9 a.m. to 5 p.m., and on Friday from 9 a.m. to 4 p.m. *www.paintexpo.com*

April 30-May 2, 2012: RadTech UV & EB, Chicago IL, *www.radtech.org*

May 7-10, 2012: American Coatings Conference and Show, Indianapolis, IN, USA, *www.american-coatings-show.com*

May 14-16, 2012: Montreal Manufacturing Technology Show, Montreal, QC, *www.sme.org*

June 6-8, 2012: Canadian Association of Chemical Distributors' (CACD) 26th Annual General Meeting, Whistler BC. Online registration at www.cacd.ca/agm, or email to Fatima@cacd.ca, fax to 905-844-5706.

June 11-13, 2012: SURFIN Las Vegas, NV, *www.nasf.org*

October 9-11, 2012: Coating 2012, St. Louis, MO, *www.thenaicoatingshow.com*

November 12-14, 2012: FABTECH, Las Vegas, NV, *www.sme.org*

sonal Care and Cosmetics Industries. The company says Christina also has an excellent understanding of chemical distribution, and marketing knowledge, which will be valuable in allowing her to meet her departmental goals and objectives.

New Canadian CFO at Bayer

John Lemmex has been appointed chief financial officer, Bayer MaterialScience LLC. In this role, Lemmex is responsible for all finance and controlling activities in the NAFTA region. He also serves as a member of Bayer's North American Leadership Team.

Lemmex, a native of Canada, joined Bayer nearly 25 years ago as a process chemist at a rubber operations plant in Sarnia, Ontario. He transitioned into a business analyst role in 1991, holding positions of increasing responsibility in the field of finance, controlling and accounting. Prior to taking on his new role, Lemmex spent several years at Bayer headquarters in Leverkusen, Germany, where he led the restructuring of the Bayer Polymers and MaterialScience controlling functions. Most recently, Lemmex served as vice president and controller, Bayer MaterialScience LLC.

Lemmex earned a degree in chemistry from McMaster University in Hamilton, Ontario, and a master's degree in business administration from Syracuse University in Syracuse, NY. He holds a CGA from The Certified General Accountants Association of Ontario and a CPA from the Ohio Society of Certified Public Accountants.

He is active in the community, serving on the board of directors for the Blind Vision & Rehabilitation Services, as well as Variety the Children's Charity, both in Pittsburgh.

Lemmex is married and has two children. He resides with his family in Cranberry Township, PA.

Pricing Updates

Arkema Coating Resins Announces Price Increase for Latex Products in North America

Effective February 21, 2012 or as contracts allow, Arkema Coating Resins will increase pricing on all latex products sold in North America. ENCOR acrylic, styrene-acrylic, styrene-butadiene and NEOCAR Acrylic latexes will increase by $0.05 to $0.07 per wet pound. ENCOR™ vinyl-acrylic, vinyl acetate-ethylene and NEOCAR Latexes will increase by $0.02 to $0.03 per wet pound.

This action is necessary due to escalation in the cost of raw materials and transportation for latex products.

Customers should contact their Arkema Coating Resins account representative for additional details.

COATEX Inc Announces Price Increase for Coatings Market - NAFTA Region

Effective March 1, 2012 or as contracts allow, COATEX Inc will increase the list and off-list selling prices of its Thickener and Dispersant product lines sold to the Coatings Market as defined below for the NAFTA Region:

Coatings Market	Increase
Acrylic Based Dispersants	+$0.05/LB
Acrylic Based Thickeners	+$0.04/LB
All Other Products	+$0.03/LB

This increase is necessary to respond to increasing raw material costs needed to manufacture our product lines

Creating the connections that cover the world

nexeo™ solutions

AC American Coatings Show 2012

Visit us at **booth #217**

On-Time. Accurate. Complete.

As a global leader supplying the coatings industry, we connect formulators with quality components and expertise from world-class suppliers and manufacturers that accelerate go-to-market results.

We want to be your partner. We know that working with the right partner is critical to your business. As a trusted leader in the marketplace, we are dedicated to delivering the highest level of service and flexibility to the coatings industry while ensuring the success of your product from conception to commercialization.

Your connection to distribution solutions:

- Reliable, efficient supply chain
- Comprehensive product lines
- Local service and support

Nexeo Solutions, LLC
1.800.531.7106, option 3
www.nexeosolutions.com

Promoting ADHESION

As occasionally happens with people, when mixing polymers with other components, such as fillers or other polymers, the two or more components may not necessarily get along. In some cases there will be a repelling force and very poor or even no adhesion. This will happen while mixing or even when trying to adhere such components. Similar to the mixing of oil and water in a salad dressing, without mixing the components will separate. An example in the polymer world is Polyamide (PA) and Polyethylene (PE).

In order to improve adhesion, adhesion promotors can be added. The easiest to handle are polymeric adhesion promotors, which can also be called compatibilizers or coupling agents. They act as surfactants. For example, detergent powder as surfactant will compatibilise the dirt with the water in the washing machine and facilitate the washing cycle.

When adhesion promotors are used to increase the compatibility of two immiscible polymers, they are called compatibilizers. When adhesion promotors are used to increase the adhesion between a polymeric system and a filler, they are called coupling agents. Chemically, these are the same materials in both cases.

Chlorinated polyolefins (CPOs) are widely used as adhesion promotors for coatings.

Jeff Morehouse Regional Sales Manager, Inorganic Materials – BL Functional Silanes Evonik Degussa Corporation says, "Trends and concerns for adhesion include adhesion to lower energy polymer substrates, as well as improving adhesion of waterborne and environmentally compliant formulas."

"For polymer substrates," says Morehouse. "Evonik has introduced Dynasylan 202 and 203, which are specialty aminosilanes designed specifically to improve adhesion to polymers. We have also developed many silanes for waterborne and VOC compliant formulas - the Hydrosil product range is waterborne and suitable as both a primer and in-situ additive, while other silanes in our product range are reduced or zero VOC while maintaining the high performance of a silane."

This is just one example of how a manufacturer is meeting the needs of the marketplace when it comes to adhesion.

The purpose of adhesion promotors is to act at the interface to increase the adhesion between two substrates through the reduction of the interfacial tension.

> **"When the adhesion promotor is used to increase adhesion between two incompatible polymers it is also called Compatibilizer."**

Compatibilisers or coupling agents can be reactive or non-reactive. In the case that they are reactive, they will essentially chemically interact with the components of the mixture to form a covalent bond and this way reduce or entirely eliminate the repelling effect of the components of the mixture.

The general principle of compatibilization is to reduce interfacial energy between two polymers in order to increase adhesion and also help dispersion. Generally, the addition of compatibilizers also allows finer dispersion, more regular and stable morphologies.

The addition of compatibilizer generally increases the mechanical performance and surface aspect.

Compatibilizers are: Block copolymers (non-reactive); Reactive functional copolymers (in-situ formation of block copolymer) and Non reactive polar copolymers (specific interaction by polarity).

A coupling agent/polymeric coupling agent is a polymer that attaches an inorganic filler to the polymer matrix. Typical fillers are Calcium Carbonate, Glass fibers, Talc, or flame retardants such as ATH (Aluminumtrihydrate) or Mg(OH)2 (Magnesiumhydroxide).

Fillers are added to lower the cost of the polymer (CaC03, Talc), make it tougher or stiffer (glass fibers, CaCO3) or make it flame retardant. The addition of the filler will reduce the elongation at break, the flexibility and in many cases the toughness of the polymer because the fillers will be present up to very high levels. (E.g. ATH; 20% Polymer, 80% Filler). The reason for this is that the fillers are often not compatible with the polymers, and may even repel them. Coupling agents are then added to reduce the repellency of the polymers and fillers respectively. The filler will adhere to the polymer matrix and the properties of the final mixture, such as elongation, flexibility, solubility of the filler in the polymer will be enhanced.

Coupling agents or adhesion promotors have to be compatible with the polymer (ideally, they have to be the same chemistry of the polymer) and they have to react/interact or stick to the filler.

PAINT ADHESION TESTING

Paint adhesion testing is needed to determine if the paint or coating will adhere properly to the substrates to which they are applied. Tests to measure the resistance of paints and coatings from substrates include cross-cut test, scrape adhesion, and pull-off test.

Cross-Cut Test: A right angle lattice pattern or X-cut (contingent on paint thickness) is used to measure the resistance of paints and coatings to separation from substrates. The pattern is cut into the coating and penetrates through to the substrate. An uncalibrated pressure sensitive tape is applied to the sample and pulled off. This testing method is usually used to establish whether the adhesion of a coating to a substrate is at a generally adequate level. Assessment of the resistance to separation of individual layers of the coating from each other can be made if this test is used on a multi-coated sample.

Scrape Adhesion Test: This measures the determination of the adhesion of organic coatings when applied to smooth, flat panel surfaces. It gives relative ratings for a number of coated panels showing significant differences in adhesion. The materials being tested are applied at uniform thickness to flat panels, mainly some sort of sheet metal. When the materials have dried the adhesion is determined by pressing panels under a rounded stylus that is loaded with increasing amounts of weight until the coating is removed from the substrate surface.

Pull-off test: The adhesion of a coating or multi-coated sample of any paint product is measured by assessing the minimum tensile stress needed to detach or rupture the coating perpendicular to the substrate. Unlike the other methods, this method maximizes the tensile stress, therefore results may not be comparable to the others. The test is done by securing loading fixtures (dollies) perpendicular to the surface of a coating with an adhesive. Then the testing apparatus is attached to the loading fixture and is then aligned to apply tension perpendicular to the test surface. The force that is applied gradually increases and is monitored until a plug of coating is detached, or a previously specified value is reached.

Editor's Note: SpecialChem was a key source for this article. Thanks also to Univar Specialties and Evonik. ■

Reach Everywhere? Or is it…

By Dave Saucier

You might ask yourself, why am I reading an article about REACH? Your answer might be – the coatings sector has gone global, so why haven't the regulations? Or you might read this out of sheer curiosity because you want to know what the buzz is about this REACH you are constantly bombarded with. Regardless, this article will help you navigate the REACH world, bringing the world of REACH to within your reach.

WHAT IS REACH AND WHERE DOES IT COME FROM

During 2006 the European parliament enacted EC-1907/2006 - the Registration, Evaluation, Authorization and restriction, of CHemical substances; now universally known as REACH. This European law came into force on June 1, 2007.

Here's the official gospel from the European Commission official website: (http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm) "The aim of REACH is to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances. At the same time, REACH aims to enhance innovation and competitiveness of the EU chemicals industry. The benefits of the REACH system will come gradually, as more and more substances are phased into REACH."

RATIONALE FOR REACH

One of the primary reasons Europe adopted REACH was to ensure that reliable and scientific data would be available for those chemicals substances in commerce for many years in Europe. Many of the substances have insufficient data regarding the hazards posed to humans and the environment. REACH intends to fill the data gaps thus ensuring adequate hazard and risk assessments are concluded resulting in effective risk management tools.

REACH AROUND THE WORLD

Since 2006, governments around the world have been prolific on the subject of new and existing substances regulations; so much so that REACH is now a household name in our coatings universe. In fact, many countries are identifying their national chemical regulations as "REACH-name of country" or identifying regulatory amendments published as "REACH-like".

Since implementation of REACH in Europe, many Asian countries (China, Korea, Japan, etc), which had limited or no new or existing substances regulations in place, have been frantic to close the regulatory gaps between REACH and their own individual regulatory systems.

China has the New Chemical Substance Notification (CNNC) aka "China-REACH". The October 2011 legislation regulates the environmental risk and hazards of China's new chemical substances, which has adopted several of the same principles and concepts of the European REACH regulations.

Korea amended its Toxic Chemicals Control Act (TCCA) with REACH-like changes to existing and new chemical substances. Japan amended its Chemical Substances Control Law (CSCL) during 2011. Malaysia also introduced its mandatory version of its chemical management plan called the Environmentally Hazardous Substances Notification and Registration (EHSNR). The Turks now also have their REACH-like regulation "Inventory And Control Of Chemicals" (CICR).

COST OF DOING BUSINESS

All of the REACH-like regulations placed on existing chemicals in commerce have significant price tags assigned to the individual data elements required for each notification. Depending on the country, some toxicological data elements are required at the >100 kg limit while other jurisdictions have the same data requirement kick in at >1,000 kg or >10,000 kg. These various trigger quantities cause havoc to the coatings raw material producer, who may decide not to market in a given country due to unreasonable "REACH-like" testing costs associated for very low volume business potential.

Paint manufacturers, like all other businesses, are loath to accept price increases and these "REACH-like" regulations are driving costs out of reach (again pardon the pun). The best is yet to come as the mid and low volume substances come up for notification and data delivery in the coming years. Of major concern will be sustainable profits for the low volume raw material suppliers and coatings manufacturers alike.

When all is said and done, it's important to remember that REACH and its similar "look-alikes" around the world are simply data gathering tools. Nothing yet is done with the data. This is critical point when completing the comparisons with how we are managing our version in Canada.

NORTH AMERICA

We'll start with what we have here at home. Canada's Chemicals Management Plan (CMP) has been lauded as a world-leading program that owes its success to the working relationship developed by representatives from industry and their government peers. CMP is Canada's alternative to REACH. Canada has the same objective as every other country relative to assessing and managing risks. Rather than send data on all substances in commerce, our program uses a screening and categorization process, followed by a data call on substances of concern. What's really, really important, is that not only is Canada's model a data-gathering exercise like all the other REACH-like programs, but it also concludes with an outcome immediately. If the outcome is toxic or suspicion of toxic still looms, appropriate risk management tools are deployed. It's a one-stop-shop.

Our new substances notification regulations have been successful for the past 18 years and are the base model all these REACH-like new substances regulations.

Like Canada, our major trading partner to the south, the United States, has a well-entrenched program for notifying new substances. However, the United States is on the fence on how to go about assessing and developing risk management protocols for its existing substances on the Toxic Substances Control Act (TSCA). We are talking about 83,000 sub-

"Our new substances notification regulations have been successful for the past 18 years and are the base model all these REACH-like new substances regulations."

stances (circa 2009) in commerce, not a paltry sum.

I would be remiss for not providing this important reminder – NOT ALL SUBSTANCES ARE TOXIC!

In both Canada and the US, neither government nor industry could effectively manage a European REACH "develop and send us data" type of regulation. Who will read and assess all the data for over 100,000 substances in the combined US/Canada market? Picture in your mind for a brief moment this thought. Truckload after truckload of test studies clogging the desks, corridors and data warehouses of the government and industry. How would we sift through the tonnes of paper? What gets priority? What would we do with all this data, especially where test results do NOT indicate a high level of concern or risk?

All is well and fine if the individual assessment outcomes are in line with non-government organizations or government preconceptions of toxicity. Great - gotcha! But, the recent results from phase I of the CMP in Canada resulted in only 43 of 350 substances being found to meet Canada's definition of toxic. Most of those that have been declared toxic will be effectively dealt with via risk management tools agreed upon by the government and substance users. The few that meet the criteria for virtual elimination are being eliminated. Other tools available are Significant New Activity (Canada's SNAc) or the Significant New Use Rule (US SNUR) that are efficient tools to ensure existing substances are tested before being considered for new or alternative uses. These test requirements have very similar or more severe data submission requirements when compared to new substances notification requirements. So we've covered our bases.

We need to be typically un-Canadian and start bragging to the world about what we've done in Canada to achieve and surpass other countries REACH-like programs. We are a very small market, indeed, in the grand scheme of things. The paint and coating market is global and we definitely need to align the regulatory effort to be global; but we must be very selective in the flavour of REACH we choose to promote.

MOVING FORWARD

The Canada Paint and Coatings Association has a very impressive sectoral track record working with their government peers in getting things right with respect to managing chemical risks.

Again, we need to be typically un-Canadian and carry the message to everyone we encounter outside of Canada through the various international paints and coatings associations and partnerships. Political currency must be wisely spent on ensuring a unified global regulatory approach that is rational, cost effective and efficient. The risk assessment outcomes that identify coatings raw materials that are of concern should be managed with efficient and effective risk management tools designed to make our colourful world a safer and healthier place.

Canada has developed a significant and important alternative to Europe's REACH that is cost effective, efficient, and meets identical objectives. Be un-Canadian – yell loud and yell proud! ■

Dave Saucier, Vice President, HDTS Chemicals Inc. www.hdtschemicals.com

AC American Coatings Show 2012

American Coatings Show 2012 Drives Industry to Indianapolis

The American Coatings Show & Conference, held every two years, will take place from May 7 – May 10, 2012, at the Indiana Convention Center in Indianapolis, IN, in the heart of the Manufacturing Belt, the oldest and largest concentration of industrial companies in the Midwest. The American Coatings SHOW & CONFERENCE is organized by the American Coatings Association, Washington DC, and Vincentz Network, Hanover/Germany, and run by NürnbergMesse North America, Atlanta, GA.

The American Coatings CONFERENCE will be held May 7 – May 9, 2012, and the American Coatings SHOW, May 8 – 10, 2012.

The selection of products and services on display at the American Coatings SHOW will include:

COATING RAW MATERIALS

Resins / Binders / Solvents / Pigments / Fillers / Additives

LABORATORY AND PRODUCTION EQUIPMENT

Mixers / Extruders, kneaders / Mills, triple roller mills, and accessories / Apparatus construction, engineering / Filters and filtration / Pumps / Metering devices, balances / Conveyor systems / Filling systems / Packaging / Labeling machines / Storage systems / Tinting systems / Screening machines and sintering plants / Coolers / Pipe technology

TEST AND MEASUREMENT TECHNOLOGY

Quality control and laboratory measuring technology / Production and process control

ENVIRONMENTAL PROTECTION AND OCCUPATIONAL HEALTH AND SAFETY

Occupational safety / Container washing / Emission treatment / Waste water treatment / Solvent recycling

SERVICES

Software, hardware / E-commerce / Training and advanced training, qualification / Technical information and literature / Consulting / Research and development / Contract manufacturing

Venue in 2012 Indiana Convention Center
100 South Capitol Ave
Indianapolis, IN 46225
American Coatings SHOW:
May 8-10, 2012

Hours:
Tuesday and Wednesday, May 8 and 9, 2012 9:00 am – 5:00 pm
Thursday, May 10, 2012 9:00 am – 3:00 pm
American Coatings CONFERENCE:
May 7-9, 2012

Hours:
Monday, May 7, 2012 8:30 am – 7:00 pm
Tuesday, May 8, 2012 9:00 am – 7:00 pm
Wednesday, May 9, 2012 9:00 am – 12:30 pm

For an exhibitors' list contact:
http://www.american-coatings.com/ac-market-navigator.

THE UV CURING PROCESS

Energy Savings, Environmentally Friendly

UV curing typically describes the use of ultraviolet (UV) or visible light to polymerize a combination of monomers and oligomers onto a substrate. The UV material may be formulated into an ink, coating, adhesive or other product. The process is also known as radiation curing or radcure because UV is a radiant energy source. The energy sources for UV or visible light cure are typically medium pressure mercury lamps, pulsed xenon lamps, LEDs or lasers.

WHY CONVERT TO UV?

Energy Savings and Improved Productivity: Since most systems are solvent-free and require less than a second of exposure, the productivity gains can be tremendous compared to conventional coating techniques. Web line speeds of 1,000 ft/min. are common and the product is immediately ready for testing and shipment.

Suited for Sensitive Substrates: Most systems do not contain any water or solvent. In addition, the process provides total control of the cure temperature making it ideal for application on heat sensitive substrates.

Environmentally and User Friendly: Compositions are typically solvent-free so emissions and flammability are not a concern. Light cure systems are compatible with almost all application techniques and require a minimum of space. UV lamps can usually be installed on existing production lines.

UV CURABLE COMPOSITIONS

Monomers are the simplest building blocks from which synthetic organic materials are made. A simple monomer derived from petroleum feed is ethylene. It is represented by: H2C=CH2. The symbol "=" between the two units or atoms of carbon represent a reactive site or, as chemists refer to it, a "double bond" or unsaturation. It is sites like these, which are capable of reacting to form bigger or larger chemical materials called oligomers and polymers.

A polymer is a grouping of many (i.e. poly-) repeat units of the same monomer. The term oligomer is a special term used to designate those polymers, which often can be further reacted to form a large combination of polymers. The unsaturation sites on oligomers and monomers alone will not undergo a reaction or crosslinking.

The principle of Ultraviolet Curing

UV Curing is a photochemical process by which monomers harden upon exposure to ultraviolet radiation. A specifically formulated monomer will polymerize when exposed to ultraviolet radiation. This UV Curable monomer includes a sensitizer that absorbs UV energy and initiates a polymerization (cross linking) reaction in the monomer.

Oligomers: The overall properties of any coating, ink, adhesive or binder crosslinked by radiant energy are determined primarily by the oligomers used in the formulation. Oligomers are moderately low molecular weight polymers, most of which are based on the acrylation of different structures. The acrylation imparts the unsaturation or the "C=C" group to the ends of the oligomer.

Monomers: Monomers are primarily used as diluents to lower the viscosity of the uncured material to facilitate application. They can be monofunctional, containing only one reactive group or unsaturation site, or multifunctional. This unsaturation allows them to react and become incorporated into the cured or finished material, rather than volatilizing into the atmosphere as is common with conventional coatings. Multifunctional monomers, because they contain two or more reactive sites, form links between oligomer molecules and other monomers in the formulation.

Photoinitiators: This ingredient absorbs light and is responsible for the production of free radicals or actions. Free radicals or actions are high energy species that induce crosslinking between the unsaturation sites of monomers, oligomers and polymers. Photoinitiators are not needed for electron beam cured systems because the electrons are able to initiate crosslinking.

Additives: The most common are stabilizers, which prevent gelation in storage and premature curing due to low levels of light exposure. Colour pigments, dyes, defoamers, adhesion promoters, flatting agents, wetting agents and slip aids are examples of other additives.

EQUIPMENT EXAMPLES

Ongoing research and development devoted to UV technology over the last 20 years has brought it from a technological innovation to a widely used procedure for coating surfaces. As the technology has advanced, the UV market has dramatically expanded and now includes a wide variety of industrial applications.

"Customers are looking for heavy duty, high performance UV curing equipment that can be versatile at the same time," says Ana Hetzel Marketing & Sales Miltec UV. "Our Labcure allows the user to configure it for a wide range of UV curing applications utilizing either or both of our two high performance UV curing system technologies: The MPI-400 Microwave Powered Electrodeless Bulb System OR our HPI High Peak Irradiance Arc Lamp UV Curing System, or again, both can be used together making a hybrid version."

Miltec UV offers two small standard UV conveyors that can be configured for a wide range of UV curing applications such as simple colour proofing of small flat test samples in R&D labs, or curing 3-D objects in an industrial production environment – the Labcure Mini, which is a table-top configuration and the Labcure PRO, a floor standing model. The compact size of these conveyors makes them easy to fit in a confined space. These conveyors are offered with Miltec's arc lamp UV system (model HPI), Miltec's microwave powered UV system (model MPI-400), or with both.

Annadale Finishing Systems has a complete line of ovens used to preheat, dry, flash off and cure. Ovens are available in batch or continuous production style. Ovens can be direct fired gas and propane convection, gas or electric infrared, and ultraviolet.

UV Canada, is part of RB Atlas out of Toronto, ON announces an important breakthrough in ballast technology... High-Efficiency UV Ballasts.

The new line of compact, high-efficiency ballasts from Hanovia. Maximum usable power and peak electrical efficiency unlike previous generations, Hanovia's compact mercury vapor lamp ballasts require only half the usual cabinet space, and operate with far greater electrical efficiency. The result is increased design flexibility in a system that operates at 95 per cent electrical efficiency, requiring less power to operate (reducing heat) and producing the same output to the lamp. Operates from any standard line voltage. The unit's variations will run standard mercury vapor lamps at 300 watt/inch up to a 20" arc-length and 200 watt/inch bulbs up to a 30" arc length. ■

Editor's Note: RadTech International was one of the key sources for this article.

Versatility, Reduced Time and Energy in Mixing and Dispersion

Manufacturers of Mixing and Dispersion equipment are offering products that address the needs in the marketplace of different mixing blade styles, mixing challenging materials, reduced production time, use of less energy and much more.

THE DEMAND

Tim Delong of Quickblades Inc. says, "Our customers are looking for versatility...one machine or blade design that can be used for manufacturing dispersions for several different products." He adds, "Quickblades Inc. has been working on some new styles of blades, and plan to have samples at the American Coatings Show in May."

Payam Towfigh, StateMix Ltd. says, "Customers are interested to mix more challenging materials these days. These are more viscous or highly filled materials, which makes the mixing part of the process more important." He adds, "We also have applications where the mixing process has to done in a very short amount of time. (A few seconds)."

Cathy Strahan of Myers Engineering says customers are demanding, "Reduced production time and high quality, low maintenance performance."

René Eisenring Bühler Inc. says their customers are looking for automated mixing and dispersion equipment that allows them to manufacture products with consistency and ease.

"The equipment should use less energy and be simple to operate." Eisenring adds, "They are also looking for high quality equipment that will give them the best ROI. A high level of service and support is essential for us to grow from a supplier to a partner with our customers."

INNOVATIONS IN THE MARKETPLACE

Towfigh of StateMix Ltd. says, "With advances in development and availability of Nano tubes, Carbon and glass fibers and trying to mix these new materials more efficiently in various liquids, mixing has become a more important factor."

Photo courtesy of Buhler Inc.

Fast, uniform mixing with no need for secondary de-gassing are all possible with the Vortex Mixer from StateMix.

The Vortex Mixer is a rugged mixer that quickly and efficiently mixes and de-aerates raw materials normally too difficult to blend. The Vortex Mixer blends the raw materials by spinning the container simultaneously in two axes at very high speeds, causing the materials to be forced to the far side of the container. The secondary rotation of the container creates a high-shear, vortex effect providing uniform blending and de-aerating of the mixed materials.

Strahan of Myers says, "Advanced composites like odor absorbing nanotubes, among many others, are driving the need for a finer non-destructive mixer performance." She adds, "Experienced manufacturers like Myers are quickly able to adjust the power, tank sizing and blade choices to fulfill these standards."

Myers Engineering has developed a 1-liter lab vacuum mixer to help lower the cost of R&D formulation work. The unit allows research on the value of vacuum in an existing formula as well as reduces the amount of ingredients for new formulations; therefore, lowering the expense of raw material waste. Strahan explains, "To further drive the improvement of a mixing plant, we have added IMS – an Intelligent Maintenance System for pilot and production plant size mixers. This unique PLC driven maintenance advisor helps avoid unexpected equipment failures. IMS monitors the actual equipment use pattern. It then prompts the appropriate maintenance action items based on those patterns."

Photo courtesy of StateMix Ltd.

When it comes to innovations, Eisenring of Buhler says a hot trend right now is CleanTech. "Several companies are concentrating on clean energy, such as solar and battery mass products. Clean water and renewable energy is also an up and coming trend."

At Bühler Inc., the Bühler MicroMedia Mill is one of the company's most popular products. "This mill allows our customers to produce products like never before – with grinding media down to 20 microns while maintaining very high flow rates," says Eisenring.

Manufacturers of mixing and dispersion equipment have products that address every need. ■

Editors Note: Companies contributing to the article can be reached at:
www.buhlergroup.com
www.myersmixer.com
www.statemix.com
www.quickblades.net

FORMULATING UV CURABLE COATINGS

Ultraviolet (UV)-cure coating technology is one of the fastest-growing segments in the coatings industry. The global UV-cured coatings market is expected to reach approximately $1.8 billion this year. UV-cure coatings have evolved from being used in mostly wood applications to now being used in Direct-to-metal applications, Aerospace, Composite repair, Site-applied polyurethane dispersions (PUDs)/100 per cent solids for flooring, Sunshine-cure coatings for decking and more.

THE CHEMISTRY

One-component (1K) UV-cure coating technology is one of the fastest chemistries taking second to cure.

Two main UV coating platforms are a 100 percent solids UV formulation and waterborne UV systems. Both are sustainable chemistries, having low-volatile organic compound (VOC) levels.

Acrylate chemistry is at the heart of UV Coating Formulation. And the formulator has such a vast choice among different reactive diluents (monomers, oligoetheracrylates etc.) and a wide range of oligomers that it is a challenge to select the raw materials that will give the desired performance properties.

Oligomers are raw materials that are like a resin in regular coatings. Choice is critical as it has impact on the final performance. The oligomer is often the most important component in the formulation by weight. Performance characteristics include reactivity, gloss, adhesion, chemical resistance, scratch resistance, abrasion resistance and non-yellowing. Often a combination of these properties is desired. In addition to this, cost is also an important issue.

The main oligomer families are: epoxy acrylates; urethane acrylates; polyester acrylates; polyether acrylates; amine modified polyether acrylates; acrylic acrylates and miscellaneous acrylate oligomers. Dedicated research has refined polyurethane chemistry and delivered a next-generation product for the field of UV coatings – acrylated allophanate oligomers.

The chemistry behind traditional UV-cure coating formulations typically contains acrylated oligomers based on a polyurethane, polyether, polyester or epoxy resin. The new acrylated products offer the advantages of low viscosity and reduced crosslink density due to the reduced isocyanate functionality, therefore allowing greater freedom in designing new high-solids systems. Low-viscosity resins are environmentally friendly, because they do not require reactive diluents or organic solvents. These acrylated allophanate resins also display good outdoor weathering ability, making them a suitable choice for use on a variety of substrates, including polycarbonate plastic and metals.

Monomers are used as reactive diluents in formulations. Low cost, multipurpose products are desirable, but because sometimes high levels of monomers are used in the formulation, especially in low viscosity applications, the influence of the monomer on the performance properties of the system is significant. Choice of monomer becomes critical. In addition to being reactive diluents, monomers are also used to achieve a variety of desired properties: improve adhesion, reactivity, chemical resistance, scratch resistance etc. Some monomers are not used as reactive diluents at all, but only to achieve a desired effect, like the reactivity boosters.

Parameters that can vary in monomer chemistry include functionality, type of chemical backbone, chemical structure and molecular weight.

CATIONIC CHEMISTRY

The products available to the formulator for cationic curing are essentially: cycloaliphatic epoxies, triarylsulfonium photoinitiators, vinyl ethers and polyols. The chemistry is completely different to acrylates, so different formulating rules apply. It is important to remember that polyols are used in combinations with cycloaliphatic acrylates to improve reactivity and flexibility. This is because polyols will lead to chain transfer reaction, which will increase the mobility of the polymerising species, resulting in higher cure speeds and reducing the average molecular weight of the polymerised film, resulting in better flexibility. In formulating cationic systems, one has to respect stoichiometric ratios between the cycloaliphatic epoxies and the polyols.

IN THE MARKETPLACE

Several manufacturers specializing in Ultra Violet (UV) Coating Formulation have developed products to meet the needs of the marketplace.

They have developed a range of UV acrylate based on renewal raw materials, for example. There are bio-based glycerol derivative triacrylates and bioligomers - a bio-based alternative to the standard triacrylate reactive diluents. Combined with the bioligomers other products provide the ability to formulate an energy curable coating with significant bio-based renewable content. Many manufacturers are deeply committed to environmentally friendly coatings and have several products with unique performances including high gloss mirror effect finishes meeting the trend for no/low Volatile Organic Compound (VOC) environmentally friendly coatings and the development of water-based alternatives for such mirror image finishes, preferably without a polishing step. They are also helping the growing trend of UV Haptic Finishes – coatings providing special tactile effects. There are energy curable resins with features that make it possible to obtain a broad range of haptic finishes with 1K formulations (meaning easier handling and low/limited VOC content).

In the UV area, there are also low gloss oligomers for use in UV coatings to deliver matte finishes. Low gloss coatings are very popular in various industries such as packaging, furniture, wood coatings, automotive and others. They are traditionally formulated with conventional solvent and water-based systems or UV cured systems containing solvents. Although it has proven to be difficult, manufacturers deem it

important for environmental reasons to develop solvent-free UV curing systems which could be applied by spraying.

Some products for use in low viscous matt UV curing coatings (UV coatings) are unique oligomers that give superior matting properties with only low amounts of fillers, while still maintaining a reasonable reactivity.

These are just a few examples of how manufacturers are answering the need for high performance low VOC Coatings with water-based products and much more.

The scope of aerospace applications for UV Coatings is expanding. It is also spreading into conventional coatings areas such as residential decking. Additionally, sunshine-cure coatings are potentially poised to spread from the contractor into the do-it-yourself market.

One of the latest markets for UV-curable coatings is the soft-touch coatings sector. Soft-touch coatings impart a silky feel, while providing stringent performance properties. The end product appears leather-like but is actually created from a polyurethane coating. UV-curable PUD and 100 percent solids soft-touch coatings are currently being developed for use in cell phone, computer housing and automotive applications.

UV coating formulation chemistry continues to evolve. And as the trend toward environmentally friendly coatings continues, manufacturers are offering products which answer a formulator's needs. ■

IN THE NEWS

13th Annual Strike Out Arthritis Coatings and Plastics Industry Charity Challenge

Over the past 13 years the Paint Challenge Bowling tournament has raised $300,000 for the Arthritis Society and on Feb. 18, 2012, the industry raised another $13,000.

While arthritis is commonly thought to be a disease of the elderly, the reality is that two thirds of people with arthritis are of working age. It is a cause that has been close to the Ontario Coatings industry.

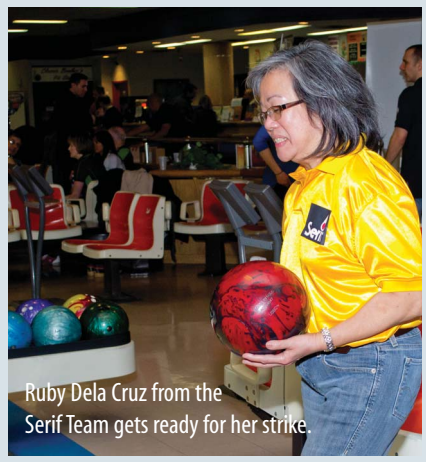
Companies providing teams in the tournament this year were Akzo Nobel, Brenntag Canada, Chemroy, CAPO Industries, Dominion Colour Corp. Ferguson Chemical Innovation, LV Lomas, Northspec Chemicals Corp., Serif Coatings, Unipex and Univar Canada.

Serif Coatings won the tournament with their bowling prowess. Top individual fundraiser was Therese Giaschi from Akzo Nobel. Top Team fundraisers were also Akzo Nobel.

Participants received a traveling mug and there were several tables full of prizes to be won and silent auction items to bid on.

Organizers were very pleased with the event and fun was had by all.

Photos by Sandy Anderson

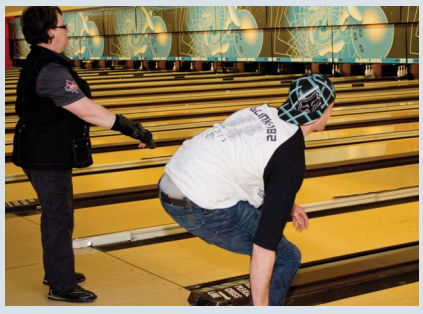


Ruby Dela Cruz from the Serif Team gets ready for her strike.

Pasky Oliveria of Serif Coatings announces the winners of the last round off the scoreboard, which was his own team.

The Northspec Chemical team: David Hazell, Noel Shahnazarian, Derek Singh and Joseph Loncar.

The Unipex Team. From left to right: Lannie Garcia, Charlie Camilleri, Barney Bailie and Paige McPeake.



A good time was had by all at the 13th Annual Strike Out Arthritis Coatings Challenge.

NEW PRODUCTS AND TECHNOLOGIES

Troy Introduces Two New High Performance Defoamers for Aqueous Systems

Troy Corporation announces the introduction of two new highly effective defoamers, Troykyd D742 and D745. Representing a direct response to the needs of industry, the two new defoamers offer a cost-effective solution to foam-related issues across many applications. D742 and D745 provide excellent foam elimination while effectively maintaining surface properties such as appearance and gloss.

Troykyd D742 provides excellent air release in a wide range of aqueous applications, including wood finishes, architectural latex paints, industrial enamels, inks, and overprint varnishes. The product is highly effective at low concentrations.

Troykyd D745 offers highly effective air release performance in high shear applications, such as overprint varnishes, inks, adhesives, and wood coatings. The product eliminates microfoam while maintaining excellent film appearance.

"Troykyd D742 and D745 are engineered for air release in high performance aqueous applications and do not contribute to a reduction in the desired properties of surface appearance and gloss," says Dr. Izzy Colon, VP and General Manager, Additives at Troy. "The products' broad compatibility further allows manufacturers to inventory fewer defoamer products, which ultimately saves them money."

Graco Launches Integrated Series of Reactor® Proportioning Systems

Graco Inc. recently unveiled the new Reactor E-30i and Reactor E-XP2i Integrated Proportioning Systems at the SPFA (Spray Polyurethane Foam Alliance) Expo in Dallas, Texas. Designed for polyurethane foam or polyurea applications, the integrated system combines an electric Reactor proportioner and a diesel generator into one package, making it a true Graco engineered solution. Complete turnkey models are also available with a fully integrated air compressor and three-stage air dryer.

"One of our goals for this product is to save the end-user money on diesel fuel," said Nick Pagano, High-Performance Coatings and Foam Product Marketing Manager. "We accomplished this by re-purposing waste heat from the engine coolant to heat the A and B materials. By utilizing this waste heat, we eliminated or minimized the heater requirements. Smaller heaters mean a smaller generator, and a smaller generator means less diesel fuel, resulting in diesel fuel savings for the end user."

This is also the first Reactor proportioner system to employ Graco Control Architecture. The system's advanced control technology tracks, monitors and saves project information, plus it stores key setup data such as temperatures and pressure set points for up to 24 material recipes. It provides the end-user with on-screen troubleshooting advice, and an easy to view data display with information such as drum fluid levels and daily chemical output.

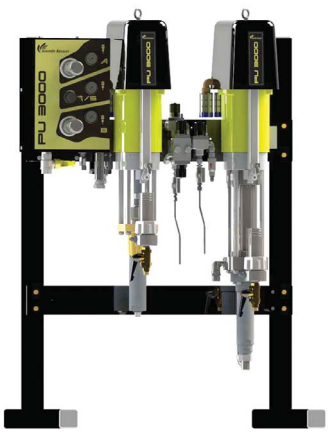
Introducing PosiTector Inspection Kits

DeFelsko is pleased to announce new PosiTector Inspection Kits. Available with your choice of Standard or Advanced Gage features, each NEW PosiTector body accepts the PosiTector 6000, DPM, and SPG probes included in the kit easily converting from a coating thickness gage to a dew point meter or surface profile gage.

Select from a variety of kits. Each Inspection Kit contains a PosiTector gage body (Standard or Advanced) and 3 probes – coating thickness, environmental and surface profile, as well as accessories, in a convenient hard shell carrying case.
www.defelsko.com

Kremlin Rexson PU3000 Plural Component Electro- Mechanical Mixing Equipment

EXEL North America is pleased to introduce the New Kremlin Rexson PU3000.



The PU3000 incorporates a unique "Plug and Play" concept for mixing two component paints. The patented "Pulse Free Control" technology delivers pulsation free performance for improved quality of mixing and application. Electronic, variable-ratio pumps ensure accurate, reliable mixing and controlled fluid delivery. The control panel can be remote mounted or machine mounted.

On average, the PU3000 will save or add about 50 minutes of production time each day. The PU3000 will reduce material waste and facilitate faster clean-up, which significantly lowers operational costs.

EXEL also offers a PU3000PH unit specifically designed for acid catalyzed materials. The PU3000 is great for applying primers and top coats to metal, plastics and wood.
www.exel-na.com

Arkema Coating Resins introduces Celocor opaque polymer for partial replacement of TiO2

Arkema Coating Resins has introduced Celocor opaque polymer, a voided latex product that imparts hiding and functions as a partial replacement for titanium dioxide (TiO2). Compared to competitive opacifiers with similar functionality, Celocor opaque polymer offers a more balanced approach to performance attributes such as tint strength, gloss development, burnish resistance and scrub resistance.

"We recognize that the cost and availability of TiO2 are among the most important issues that coatings formulators are facing today," Eric Kaiser, Global Marketing Director for Arkema Coating Resins, explained. "Celocor opaque polymer gives paint developers more formulating options in their approach to TiO2 reduction."

Celocor opaque polymer provides an effective way to reduce raw material costs and improve hiding in a wide range of products, including interior or exterior coatings from flat to semigloss. Additionally, this product meets the standards of Arkema Coating Resins EnVia program and is designed to help formulators achieve their sustainability and regulatory goals in finished coating products. Celocor opaque polymer has low odour, contains no added Alkyl Phenol Ethoxylate (APE) surfactants or formaldehyde and is compatible with low VOC (0-50 g/l) formulations.

"Everything we do is based around the needs of the formulator," Kaiser said. "In speaking with our customers, we found that they are very interested in having more options for TiO2 reduction while maintaining a good balance of performance attributes in their products. Our new Celocor opaque polymer meets that need."

Radtech UV/EB Technology Conference & Expo 2012

RadTech UV/EB 2012 is the World's Largest UV & EB Event and is a 3-day conference and exhibition, April 30 – May 2, 2012, Hyatt Regency Chicago, Chicago, IL, dedicated to fostering educational, technical, and scientific advancement in the manufacture and use of ultraviolet (UV) and electron beam (EB) curable products.

RadTech International North America is the nonprofit organization dedicated to the technical, educational and market advancement of Ultraviolet (UV) and Electron Beam (EB) Technology. RadTech has over 600 members that supply and use UV/EB equipment, raw materials and formulated products.

Hyatt Regency Chicago will host RadTech UV/EB 2012. Located in the heart of Chicago, IL, the Hyatt Regency Chicago is within walking distance to restaurants, shopping, and nightlife. Local transportation and parking available.

TECHNICAL CONFERENCE

The RadTech UV/EB 2012 Conference will consist of two elements:
UV/EB University
RadTech UV/EB 2012 Technical Conference

SOLUTION SESSIONS – END USER CONFERENCE

Leading industrial and consumer product companies, as well as suppliers to the UV and EB industry will be presenting various industry sessions focused on presenting the solutions offered by UV and EB technology as well as practical application information on the technology.

Carefully review the entire conference program to select the sessions that are right for you!

THE EXHIBITION

Whether you are involved in Adhesives, Aerospace & Defense, Automotive OEM & Tier One Manufacturing, Automotive Repair & Refinish, Composite Applications, Commercial Printing, Converting/ Packaging, Decorative Applications, Electronics/Electrical, Graphic Arts, Industrial Finishing, Opto Electronics, Metals, Photoresists, Plastics, Automotive, Wood Industries, and more, you'll find products and services on the RadTech UV/EB 2012 show floor for you.

EXHIBIT HOURS:

Monday, April 30: 10:00 AM—6:00 PM*
Tuesday, May 1: 10:00 AM—6:00 PM*
Wednesday, May 2: 10:00 AM—2:00 PM
*On Monday & Tuesday there is a show floor reception from 5:00 PM—6:00 PM

AGE RESTRICTION

Due to insurance liability issues, no one under the age of 18 will be admitted onto the show floor.

CAMERA USE

You must have a press badge or have prior written approval to use a camera on the show floor. If you use a camera without permission, you will be escorted off the show floor and your badge will be confiscated.

WHAT TO WEAR

Spring will be arriving while we are in Chicago but we may still encounter some Winter-like conditions so temperatures can be expected to be in the high 50's – 60's to low 40's – 50's. We recommend business casual for the conference and exhibition.

SOLICITING BY NON-EXHIBITORS

Non-exhibiting companies and employees are restricted from any type of solicitation on RadTech 2012 Show Floor, in conference session and at the Hyatt Regency Chicago

www.radtech2012.com

EXHIBITOR LIST

(accurate as of February 21, 2012)
Aceto Corporation
Alberdingk Boley, Inc.
Allied Photochemical
American Ultraviolet
BASF Corporation
Bayer MaterialScience
Bomar Specialties Company
BYK USA
Canadian Finishing & Coatings Manufacturing Magazine
Chitec Technology Co., LTD.
Clearstone Technologies
Colorado Photopolymer Solutions
COMET Technologies USA
Craig Adhesives & Coatings
Cytec Industries
DoubleBond Chemical Industries USA, Inc.
DSM
Dyna-Tech Adhesives/Quretech
EIT Instrument Markets
Emitted Energy Corporation
Energy Sciences Inc.
Esstech Inc.
Evonik Degussa Corporation
FlexTech Alliance
Fusion UV Systems, Inc.
H &S Autoshot Manufacturing
Henkel Corporation
Heraeus Noblelight
HID Ultraviolet
Honle UV America
IGM Resins
Innovations in Optics
Jelight Company
Kawasaki
Kowa American Corp.
Kromachem Inc.
Lambson LTD.
Luminus Devices, Inc.
Miltec UV
MinusNine Technologies, Inc.
Miwon Chemical
Nanophase Technologies Corp
Nedap Light Controls
NETZSCH Instruments North America, LLC
Nissan Chemical America Corp
Nordson Corporation
Orion Engineered Carbons LLC
PCT Engineered Systems
PL Industries
Prime Coatings
Qualipoly Chemical Corp.
RAHN USA Corp.
Red Spot Paint & Varnish
Rodman Publishing
Runtec Chemical Co., LTD.
San Esters Corp.
Sartomer USA, LLC
Shamrock Technologies
Siltech Corporation
Spectra Group Limited, Inc.
Strathmore Products
Synasia Inc.
Unimin Specialty Minerals, Inc.
Ushio America Inc.
Zhejiang Fanyang Chemical Co., Ltd
ZXCHEM USA, Inc.

TECHNOLOGY – Testing Your Metal

It is all about technology. Customers demand more accuracy in their testing methods. They want to measure parts as small as a #2 screw to as large as an electro-galvanized coil, or from multilayer coatings to alloy layers formed during or after manufacturing. They want 98 plus per cent accuracy.

They want direct readout, print capability, evaluation of inter-metallic layers, digital calibration, interface to a computer and more.

The testing performed on deposits and finishes is often required by specifications and standards. However, it is wise to test, even if it is not required. Maintaining quality saves costs, time and labour.

TESTING METHODS

Volumetric: Inorganic constituents make up the bulk of any solution. For example: copper sulfate, sulfuric acid and the chloride concentrations are analyzed by simple titrations. Testing will verify that the components or constituents are in the range set by the chemical suppliers. If not, additions can be made to the plating bath. Volumetric methods include reactions of simple acid base, oxidation-reduction, complexing, and precipitation. The ease, speed and relatively low cost of volumetric methods make them the most widely used.

Gravimetric: The component(s) of interest is separated from other components of the sample by precipitation, volatilization, or electro-analytical techniques. Precipitation is the most widely used of the gravimetric methods. Chemistry is added to form a precipitate that is only slightly soluble. The precipitate is weighed after it is filtered from the solution, washed, and dried. A finishing guild book can be used to find the non-metals/metals that are easily analyzed gravimetrically. Some common components analyzed by gravimetric methods include chloride, sulfate, carbonate, phosphate, gold, and silver

Instrumental: Finding just the right instrument to analyze plating solutions can be challenging. The analytical instrument needs to be capable of analyzing the substance you are looking for with precision, at the right price. Today's instruments often have a computer in order to automatically sample, analyze, and record the results. Analytical instruments for plating solutions can be categorized in four types: spectroscopic (based on the release of light), photometric (based on the absorption of light), chromatographic (based on the speed of the material through media/column) and electro-analytical (uses an electrical current during analysis).

The Hull Cell (a small model of your electroplating bath) can be used to predict the future health of an electroplating bath. It can be used in combination with chemical analysis to analyze all of the major constituents of the bath. Making the additions required by analysis to the Hull Cell before adding anything to the main bath, avoids costly mistakes to the plating electrolyte.

The key to using a Hull Cell is correctly interpreting the appearance of the test plate and how this relates to the condition of the electroplating bath.

Thickness has a tremendous influence over the results of the final product/deposit. A thin deposit negatively influences corrosion protection, wear resistance and micro-hardness. Thick deposits can negatively affect the properties of the part by imparting high stress and dimensional changes.

Methods used to determine coating/deposit thickness are:

- X-Ray fluorescence
- Beta backscatter
- Eddy-current
- Magnetic induction
- Cross sectioning/Microscopic Thickness Testing

These methods are individually suited to a specific set of coating(s)/deposits over specific substrates. Geometry of the part and the probe to the part must be considered to consistently get the correct thickness readings.

X-Ray Fluorescence proves to be the most accurate measurement method over most commercial thickness ranges. X-rays can be focused on extremely small areas making it the method of choice for small-diameter parts. When metals are subjected to x-ray bombardment of a known energy, some of the metal's electrons will gain energy and move to a shell of higher energy. When the electrons fall back to the vacated and stable shell they release a photon of x-ray energy unique to every metal. This release of energy by the fall back electron is known as fluorescence. The wavelength/energy of the fluorescent x-rays is proportional to the atomic number of the metal element and is uniquely characteristic for that particular element. The number of x-rays released will be proportional to the thickness of the metal (corrected for its density) being measured.

Beta Backscatter is used to measure single metal coatings and anodic coatings and is very accurate when measuring very thin gold deposits. Beta rays are electrons emitted from unstable radioactive isotopes of an element (like Carbon 14 or Strontium 90). When a tightly directed beta source impacts a plated sample (gold over nickel) the electrons will penetrate the plating material and be reflected/scattered backwards toward the source. The electrons are then counted by a Geiger-Mueller tube and converted into a coating thickness. Accurate measurements can only be obtained if the coating metals atomic number is sufficiently greater or lesser than (at least four atomic numbers) the atomic number of the base metal. So, it cannot be used to measure nickel over a copper base.

Eddy-current techniques are excellent for measuring both non-magnetic (paints, e-coats, powder coatings) and metallic coatings (cadmium, copper, zinc, etc.) over steel. Eddy-current can also measure non-conductive coatings (paints, e-coats, and powder coatings) over non-ferrous metals such as copper or anodized aluminum. Changes in the probe circuitry from the eddy-currents generated when a conductive material is subjected to an AC magnetic field from a probe are used to give a thickness. Non-conductive coatings cause a gap/separation between the probe and the base material. The loss in eddy current produced by this gap is compared to a standard measured directly on the base material to determine coating thickness.

The Magnetic Induction principle is used for measuring the thickness of a non-magnetic coating (zinc, cadmium, paint, powder coating, etc.) over a steel/magnetic substrate.

Eddy-current and Magnetic Induction methods can be combined in a single probe/instrument.

In **Cross sectioning/Microscopic Thickness Testing** the deposit thickness is measured by enlarging the cross-sectioned image of the coating. Good metallographic procedures are the key to getting correct readings. Mounting, polishing and etching must all be done accurately or errors can accumulate. Results are very operator-dependent.

An important point to remember is that for any given application one method may not be more accurate than any other method. For instance, just because an x-ray fluorescence unit with more bells and whistles and costs more does not mean that it is more accurate than a beta backscatter system depending on the application.

Adhesion tests can run from a simple tape test to very advanced quantitative tests: Ollard, Plug, and Ring Shear, which can reproduce results to about 5 per cent.

Salt Spray Testing: ASTM B 117 "Standard Practice for Operating Salt Spray (Fog) Apparatus" is the most widely used form of corrosion testing for protective coatings. In use for almost a century as an accelerated test in order to determine the degree of protection offered by a given system for either/or both inorganic and organic coatings on a metallic substrate. Testing can range from as little as 4 hours to over 10,000 hours, depending on the coating or finish tested. Results can vary.

The **Taber Abraser Test** can be used to measure wear resistance of metallic and anodic coatings. The test panels rotate while the weighted wheels turn and provide a consistent rubbing action. After testing, the panels can be examined visually and by weight loss. Many different coatings/deposits can be tested because the Taber machine comes with a wide range of wheels and weights.

Quality/testing has many functions in plating and anodizing, one being to provide feedback that expands thinking and encourages evaluation of developing testing technologies. The industry has had to emphasize a commitment to achieving customers' needs and satisfaction on an ongoing basis. ■

Continued from page 1

woodworkers this is not an option. They still require products that will cure fast, are easy to work with, and are basically trouble free. If they work with low VOC solvent based finishes, they need to calculate the solids at application and not how the product is in its original form." Pecore explains, "All low VOC products should only be applied at spray application, when the product is mixed and ready to spray. For example, Sivams white urethane primer is 70 per cent solids. After catalyzed and reduced for spray application the solid content is still quite high at 58 per cent. If your customer can produce the same quality with fewer coats they can save 25 per cent of their finishing costs, if the system they use goes from 4 to 3 coats. Even if the cost of the finishing material for low VOC (high solids) coatings is higher, most customers will look at the overall picture before making any changes in their operation. Also, by switching to lower VOC solvent based products they look to eliminate some of the residual odours that linger after finishing, i.e.: formaldehyde. This off-gassing is one concern my customers constantly try to eliminate."

"Water based coatings are also high on the list for finishers to look at for lower VOCs," says Pecore. "There is a good possibility that these will one day be all that is accepted by government standards, but some issues surrounding water based coatings are still not resolved. Water based coatings need to work just as well as solvent based finishes for drying, sanding, durability, etc."

"Although problems do occur with all coatings, resolving problems with solvent based finishes are quite easy; you can fix the problem and get back to production," says Pecore. "Problems with water based finishes are more complex and sometimes harder to resolve. When looking at lowering VOCs with water based coatings I advise my customers that the best method when switching is to run a small production run once a month, with different production batches in different situations each time. The idea is to see if we have a problem or if all batches are consistent. It is important to do this on a monthly basis, as temperature may have an effect on the finishing."

He concludes, "Lowering VOCs is an important and never ending topic, but the overall feeling is it must reduce your finishing costs and improve productivity in a very tough business climate."

Jeffrey Caron of Schwartz Chemical Corporation says, "The industry was challenged in September 2010 with meeting VOC regulations while also meeting customer expectations." He adds, "We would describe our floor finishers/end users as: The refinisher who focuses on quality workmanship, uses quality products and is willing to adapt to changing products and markets. With this type of user, new VOC compliant finishes are well received and the premium dollar associated to quality VOC compliant products is also well received. The second type of end user offers more resistance to change. These value/economy refinishers are the same ones who, prior to Sept 2010, made sure to stock up. By stock up, I am talking about full warehouses."

"Although manufacturers were required by law to transition their manufacturing to VOC compliant finishes (gallon size + packaging) as of Sept 2010, the laws also allowed for a sell-through period of two years for resellers (flooring wholesalers)," explains Caron. "Most wholesalers stocked up in Sept 2010 knowing full well that they have until Sept 2012 to sell the older non-compliant, less expensive technologies." Caron continues, "Furthermore, some manufacturers opted to use regulatory loop holes, such as the one that allows a manufacturer to package traditional technologies in quart containers (<946ml). Some manufacturers opted to use these loop holes rather than reformulate or promote new VOC compliant products."

"In our case," explains Caron, "we transitioned to VOC compliant sealers and finishes as soon as regulations changed." He adds, "We had been developing a compliant finish well before the September 2010 deadline. In some instances, more manufacturers of 'popular brands' decided to stockpile inventory to carry them through to the deadline of Sept 2011."

"The refinishers with whom we work closely," says Caron, "are looking for VOC compliant finishes that work." He explains, "All manufacturers have had to reformulate, some of us did this prior to 2010 and have successfully launched products that work. To date, not all manufacturers have been successful at reformulating and refinishers are being used as a testing ground." He adds, "Refinishers want the feel of conventional finishes during application; they

are demanding VOC compliant products with similar dry times, build, leveling, sheen and smell of the conventional finishes. This is a rather tall order and difficult to accomplish using the VOC exempt technologies that are available for formulating."

Caron continues, "Because of the various market conditions mentioned above, pricing is a significant challenge. Refinishers are going to great lengths to find conventional value-priced products and this is making it a hard sell for manufacturers and wholesalers who are promoting the merits of VOC compliant finishes. We anticipate that markets will reach equilibrium as non-VOC products reach their sell-through deadline at wholesale level. This deadline (to our understanding) is Sept 2012."

Rob Penfold, Product & Marketing Manager, Wood Coatings Group – Canada, **The Valspar Corporation** says, "We have found in Canada that the demand for more environmentally responsible wood coatings seems to be less centered around VOC than in the past. There is a trend to much "greener" coatings than VOCs. There has been a tremendous interest in Greenguard certified coatings and products that are formaldehyde free. Yes, there are still customers who require lower VOC products for programs like LEEDs and we are happy to provide them, but other factors seem to be a priority at the moment. For Valspar low VOC are a huge part of our business in the United States, especially in places like California."

THE LOWDOWN ON NEW PRODUCTS

Pecore of Premium Finishes says, "If we are talking still about low VOCs, I have been involved in importing paints from Italy for eleven years and for whatever the reason, Europe seems to be more involved in environmentally accepted products. When importing from anywhere it's so important that you are consistent from batch to batch. If you bring in 48 pails of a primer and it has a problem, you can be in deep trouble trying to rectifying the problem and rushing in a new batch." He explains, "I can honestly say I have never had any batch problems since I started to work with these finishes, both solvent based and water based. Their solvent based product are all high solids and formaldehyde free, which is not an issue in production where all safety concerns are met, but when the end product is shipped to the customer." He says Sivam Vernici keeps up to the latest technologies and are going more into water-based development, both interior and exterior finishes.

Premium Finishes is bringing in a new non-greening accelerator for polyester finishes. Pecore explains, "Over the years, in order to produce full high gloss finishes with non yellowing systems, acrylics were the best products to use. However, there were multiple steps to build the finish, and if not properly finished could leave the plant looking very good, but in several months lose the gloss due to shrink back. Result: You have a very unhappy customer that has a very expensive finish. This polyester system remains very clear, can build to a full finish with 2-3 coats and top-coated with an acrylic high gloss clear finish and have little or no shrink back. Polyesters are relatively easy to apply, are high in solids (90 per cent) and are cost effective in doing high build finishes."

Caron of Schwartz says, "We are working on breakthrough technologies for our coating systems that are based on renewable resources, innovative nano-base technologies to improve the service life of our finishing systems and various new manufacturing and application processes for high performance Water-Based Systems.

The Schwartz Premium Polyurethane Floor Finish Water-Based System is one of the best finishes designed and manufactured by Schwartz Chemical Corporation. No mixing and blending required, this low-odour finish is ready for use. Refinishers appreciate its ease of use, oil feel application and non-foaming properties. Developed and tested to perform in high traffic areas, the Schwartz Premium Polyurethane Floor Finish goes down smooth and is high build, ideal for projects that require performance and minimal VOC content."

Penfold of Valspar says, "With respect to Low VOC wood finishes, Valspar has a 275/250 VOC line of products and have had for some time. Our waterborne Zenith products are the lowest VOC products we make and have been hugely successful for Valspar in both the US and Canada. Water based UV has been a big driver of our low VOC program lately. Responding to the demands of our customer base has focused a lot on Greenguard certified coatings like our 2K Urethane, and formaldehyde free coatings like our new Z-Form Conversion Varnish."

Research and development in low volatile organic compound wood finishes is an ongoing process and manufacturers strive to meet quality and demand while keeping costs reasonable. ■

Editor's Note: contributors to this article can be reached at:
www.valspar.com
www.schwartzchem.com
www.premiumfinishes.com

Continued from page 1

new Binks Airless 75 and new Binks AA1600 air assist airless guns, along with the DeVilbiss Compact TransTech and HVLP guns."

Justin Hooper, Protective Coatings Market Manager for **Binks, DeVilbiss, Ransburg and BGK (ITW-FEA)** adds, "Wood and metal customers are demanding more versatility and efficiency in their equipment by requiring that each gun fits the majority of their processes. The DeVilbiss Compact gun continues to deliver that through material reduction, increased line production and overall reliability. A recent multi-gun purchase of the DeVilbiss Compact was due to finish quality and the fact that during a one year gun trial, they spent $0 on spare parts."

Pat Landymore, Product Development, **Lemmer Spray Systems Ltd.**, Calgary, AB says customers are looking for, "A gun compatible with waterbase fine finish coatings and good value, as many of the guns in this market segment are quite expensive."

Brendan Johnesee from **Walther Pilot** North America says, "Customers are looking for a spray gun that suits their specific needs. Whether is be the overall weight and size of the spray gun, better transfer efficiency, or using extensions in order to spray into tight areas."

Jim Bunnell, **Can-Am Engineered Products**, Inc. says, "Transfer efficiency is almost always something a customer wants but is afraid to demand because many wrongly assume it always involves other compromises." He adds, "Once it is demonstrated that you can maintain the same speed and finish quality while greatly reducing paint consumption, most customers get very excited."

Michael Hornbaker, Liquid Division, **Wagner Systems Inc.** says, "Customers are demanding a good feeling and good quality gun. They like the ergonomic features, which most guns have in the market today."

Vanessa Klay, **Eurotech Spray Products Ltd.** For Sata Canada says, "Customers need a high application process security, low maintenance requirements, long-term spare parts availability and individual solutions for their needs. This is all characterized by the SATA high efficiency pressure fed manual spray guns."

WHAT'S NEW?

Hartley says, "There is a rising trend in the usage of waterborne materials. For high production facilities that use manual electrostatic guns, waterborne materials present a challenge. Waterborne isolation systems are not suited for some facilities and conventional guns do not deliver the transfer efficiency of an electrostatic gun."

Graco's PRO Xs® WB external charge gun can be used for spraying waterborne materials on circulation systems. It reduces operating costs and material usage, offers superior atomization and ultimately delivers higher quality finishes. The internal power supply allows for quick installation and easy service. And because the fluid remains grounded in the gun, no isolation system is needed for operation. By delivering higher transfer efficiency and higher productivity than conventional air spray guns, the PRO Xs WB gives customers exceptional cost savings. "And because of this, smart consumers are replacing existing conventional air spray guns with waterborne electrostatic spray guns on a circulation system like the PRO XS WB," says Hatley.

Graco's PRO Xs WB External Charge Gun.

The new alternative for spraying waterborne materials with electrostatics is an external charging electrostatic applicator – Graco's PRO Xs WB external charge gun is ideal for spraying waterborne materials on circulation systems, reduces operating costs and material usage.

The rugged Graco PRO Xs WB external charge gun delivers superior atomization for a high quality finish while the internal power supply allows for quick installation and easy service. Because the fluid remains grounded in the gun, no isolation system is needed for operation.

By delivering higher transfer efficiency and higher productivity than a conventional air spray gun, the PRO Xs WB offers exceptional cost savings. And because of this, smart consumers are replacing existing conventional air spray guns with waterborne electrostatic spray guns on a circulation system like the PRO XS WB.

DeVilbiss Compact Performance Series of Spray Guns quickly acquired a large installed base in the wood, metal, aerospace and protective coatings markets since its introduction. Available in high efficiency Trans-Tech, HVLP and Conventional Advanced technologies, this smaller gun brings a bigger payback. Built for ergonomic comfort, energy savings and environmental responsibility, these guns are recognized for the superior finish performance they provide. An additional benefit is the DeVilbiss Compact's dependability.

"We've seen a large increase in the number of requests for help from Binks and DeVilbiss due to the spraying of formaldehyde-free and waterborne coat-

DeVilbiss Compact Spray Guns Performance Series.

ings, along with custom blends. Binks and DeVilbiss guns use stainless steel or anodized passages and specific air caps to support these coatings," says Chuck Scott, Wood Market Manager for Binks, DeVilbiss, Ransburg and BGK (ITW-FEA).

Liz Lisiecki, Atomization Product Manager for Binks and DeVilbiss (ITW-FEA) says, "Manufacturing facilities are now running a diverse amount of coatings. Binks and DeVilbiss guns have a wide variety of air caps available for every gun to support these plants. By using the same gun for multiple coatings via simply changing air caps, common parts can be stocked to reduce inventory levels and make gun maintenance faster and easier."

At EXEL North America Inc., the New Xcite Airmix Manual Spraygun delivers a very high transfer efficiency of 86 per cent to achieve minimal overspray.

Airmix has become a standard in the industry by providing better atomization, low paint particle velocities, low air consumption and extremely high transfer efficiencies.

The following materials can be sprayed with the Xcite Airmix Spraygun:

- Solvent and/or water based
- Lacquers & varnishes
- Polyurethanes
- Two components
- High solids
- Stains
- UV curing
- WB glues

New Xcite Airmix Manual Spraygun.

Kremlin Rexson provides the Xtra fine tips that are excellent for spraying waterborne materials while delivering an extra fine finish.

Bunnell from Can-Am says, "Currently we are developing a new turbine-powered hand spray gun with a quickly removable plastic head that can be removed as a single unit containing the entire fluid and air passageways along with the nozzle and air cap. This offers several advantages including easier cleanup and the ability to quickly swap gun heads for material changes on spray lines that use several different colours/materials and don't want to buy multiple guns or spend the time cleaning between changes. It also greatly reduces the chances that you'll have to buy a whole new gun if it sustains damage. Finally, the feel of the trigger has been improved and features a very light pull." At press time a photo of the new gun was not yet available.

The new A-910 Stainless Steel conventional spray gun from Lemmer is a top quality unit offering the fit

A-910 Stainless Steel conventional spray gun from Lemmer.

and finish of a premium water-base gun at a value-oriented price.

All parts of the fluid passage on the A-910SS are in stainless steel. The suction version features the 3M PPS fluid container, which is compatible with both water and solvent borne products. An additional feature is that the gun can work on any angle without spray flutter, and the disposable liners make cleanup fast and easy. The A-910SS is also available in a pressure feed version.

"The Pilot Premium-AR is our newest spray gun," says Johesee. "Walther Pilot is planning on releasing a few new spray guns this year that are still in testing."

Developed by WALTHER PILOT for optimum atomization, the Premium AR's wear resistant nozzle is designed for the extreme requirements of abrasive media such as ceramics, enamel and slurries. Good for Brick, Tile and Porcelain manufacturing, also Enamel and Ceramic processing.

Advantages include: forged aluminum body with high-quality chrome surface, stainless steel wetted parts, material duct with large cross-section, adjustable packing, low maintenance and only a few single parts. Multiple nozzle sizes are available.

More than 30 years of experience in AirCoat technology has led to the introduction of WAGNER's newest manual AirCoat gun: GM 4700AC. (See photo from cover) The gun is lightweight, weighing only 19.3 oz., and the handle is designed with ergonomics in mind. Swivel joints at both the material and air connections make the gun easy to maneuver while spraying.

WALTHER PILOT's Premium AR.

A unique feature of the GM 4700AC is the new cage filter designed to meet customer's needs. The filter comes in a variety of mesh sizes and has 53 per cent more capacity to collect dirt compared to current In-Line filters and thus lasts longer. The tool-free, hand-tight filter is easy to remove and reduces downtime.

A new air cap design reduces material pressure so the spray pattern becomes more homogenous, creating a softer and smoother spray pattern. The fine, soft atomization combined with a homogenous particle size increases the transfer efficiency up to 93 per cent. Fan adjustment is right at the gun enabling the operator to change the spray width up to three times. The GM 4700AC is available in two versions: 2320 psi and 3625 psi.

The high efficiency SATAjet 3000 K is designed for high material delivery over large surfaces. These versatile pressure fed spray guns have a large product offering with an extensive range of accessories for optimum results for almost any type of application. The finest material atomization and a large spray pattern leads to the best finishing results and a homogeneous paint application.

Manufacturers of Manual Liquid Paint Spray Guns have the answer to every Finisher's need. ■

Editor's Note: Companies contributing to this article can be reached at:
www.canamengineered.com
www.devilbiss.com.
www.graco.com
www.lemmer.com
www.satacanada.com
www.wagnersystemsinc.com
www.waltherpilotna.com

Canada to Get its own FABTECH show with Launch of FABTECH CANADA 2012

Premiere event for fabricating, metal forming, welding and more to take place at the Toronto Congress Centre, March 20-22, 2012

The Society of Manufacturing Engineers (SME), Fabricators & Manufacturers Association, Intl. (FMA) and American Welding Society (AWS) announced plans today to launch the first-ever FABTECH Canada, to be held in 2012 at the Toronto Congress Centre on March 20-22.

The event will feature the most comprehensive showcase of the latest technologies, tools and trends – with a special focus on fabricating technology – geared towards the needs of Canada's estimated 1.5 million manufacturing employees in industries ranging from automotive and energy to transportation and construction.

"FABTECH has an unsurpassed reputation across North America and we're thrilled to bring a uniquely Canadian version to the marketplace here," said Janine Saperson, Show Manager with SME. "FABTECH Canada 2012 will be a one-stop venue for solutions for welding, lasers, fabricating, bending, forming and more, tailored to the unique needs of our country's growing manufacturing sector, as well as any business that either produces or relies on equipment and machinery in its day-to-day operations."

Being launched in response to growing demand in metal fabrication and to better represent an important industry that many Canadian businesses rely on every day, FABTECH Canada will unveil new products and innovations to the Canadian market through an extensive exhibitor pavilion. It will also provide opportunities for learning and networking with technology experts via a three-day conference and Town Hall panel session.

Champion Race Car Driver Andrew Comrie-Picard To Kick Off First-Ever FABTECH Canada Event

He has rolled over a rally car in the middle of the woods at night and yet still found his way to the finish line to win. He has performed motorcycle repairs across Africa in the basements of strangers using batteries as welding equipment. He has even stopped in the hills outside of Morocco to repair a Volkswagen minivan using whatever was at hand – including a stick of chewing gum.

Now, TV personality and champion race car driver Andrew Comrie-Picard is coming to Toronto to deliver the keynote address at the first-ever FABTECH Canada event, to be held March 20-22 at the Toronto Congress Centre, where he will inspire attendees to stay in touch with the "human side" of engineering as they search for ways to re-invent or re-style their businesses in the face of challenging times.

"We're smarter than we think," says Comrie-Picard, whose presentation is being sponsored by Autodesk, a leader in 3D design, engineering and entertainment software. "The great thing about the human mind is that we can be endlessly innovative when we have to be."

Comrie-Picard will encourage the fabricating industry to think outside of the box. This, he says, is a skill he relies on whether he's trying to come first in a rally race or attempting to turn a car into an airplane in three days on a television series. The real message, he says, is to learn to trust human intuition when it comes to devising solutions to problems, especially in pressure situations like a tough economy.

"Engineering at its best is really a marrying of the best available technology with the best intuitive, sensible input from humans," says Comrie-Picard, who holds five university degrees, including a Master's degree in Political Theory from Oxford, and who left a high-profile law career in New York City to pursue his racing passion full-time. "Sometimes, under pressure out in the field, engineering may be inexact, yet perfect for the job at hand," he adds, noting that his race team once used a spare tire storage strap to re-fasten a front strut.

To help demonstrate what it means to "engineer on the fly," he is bringing an extremely rare Ford Escort Cosworth to the show for display purposes, a car he once used to win the 2006 Black Bear Rally in Ontario. Meanwhile, he will draw on his personal experience to demonstrate that there's always a solution to a problem if you're willing to dig

deep to find it.

"If you're asked to do something unusual – perhaps a pressing or a stamping that's never been done before – all that means is that it's never been done before," he says. "You may have to re-style your company, but if you recognize your strengths and build on them, you will end up more successful than ever."

Autodesk will be presenting Andrew Comrie-Picard's keynote speech at FABTECH Canada 2012 on Tuesday, March 20 from 9:00 a.m. to 10:00 am. For more information, to exhibit or to register for the event, visit www.fabtech-canada.com. Show updates are also available on Twitter and LinkedIn.

The Society of Manufacturing Engineers (SME) is the world's leading resource for manufacturing information and knowledge. With Canadian headquarters in Toronto, the society promotes an increased awareness of the value of manufacturing among industry professionals and the general public, while supporting educational initiatives and introducing career options for those entering the industry. For half a million manufacturing engineers, executives and members in more than 70 countries around the globe, SME is the source for knowledge, networking and skills development opportunities that help them advance their careers, their companies and their industries. www.sme.org

The Fabricators & Manufacturers Association, headquartered in Rockford, Ill., is a non-profit educational association dedicated exclusively to metal forming and fabricating professionals. Founded in 1970, it is considered the world's largest educational association for its industry, with thousands of members worldwide. FMA provides in-depth technical information and educational opportunities through conferences, award-winning magazines, extensive research services, and co-sponsorship of FABTECH. www.fmanet.org

The American Welding Society (AWS) was founded in 1919 as a multifaceted, non-profit organization with a mission to advance the science, technology and application of welding and allied joining and cutting processes, including brazing, soldering, and thermal spraying. Headquartered in Miami, Fla., and led by a volunteer organization of officers and directors,

AWS serves more than 70,000 members worldwide and consists of 22 districts with 250 sections and student chapters. www.aws.org

FABTECH CANADA 2012 EXHIBITING FINISHERS AND FINISHING SUPPLIERS

Here is a list of exhibiting Finishers and Finishing Suppliers only, (Complete as of February 22, 2012).

3M	2238	Latem	1132
ABB	1933	Magnus	1539
Bex	1233	Marktech	2817
Candet	2219	NACE	1918
Caps'n Plugs	2018	Norton	2319
CFCM	2741	OFF-Site Industries	2111
Colourific Coatings	1106	Osborn	2017
Comairco	2335	Pearl	2107
Dynabride	1228	Spray Tech	2754
EXEL NA	1818	Tiger Vac	2020
Gema	2828	Vibra Finish	2531
Global Finishing Solutions	1229	Wagner Industrial	1105
Henkel	1633	Walther Pilot	2120
Klingspor	2324	Yaskawa Motoman	2235

VAPOUR DEGREASING = REDUCED ENERGY COSTS

Vapour Degreasing is just one of four common precision cleaning processes, the others being hydrocarbon, aqueous and semi-aqueous. Each has its strengths and disadvantages. A challenge with aqueous and semi-aqueous cleaning is the quantity of electricity needed. However, Aqueous processes do have advantages when it comes to health and safety concerns.

Ken Lemke of Canadian Finishing Systems Ltd. (CFS) says his company deals in Vapour Degreasing and precision cleaning mostly for the aerospace and related industries so their work tends to be "specification driven."

HEALTH AND SAFETY ISSUES

With respect to vapour degreasing, the major solvent had been Trichlorethylene (TCE), but in 2003 a Canadian regulation was passed which froze companies' use (in excess of 1000 kg) of TCE and Perchlorothylene (PERC) for 2004, 2005 and 2006. Starting in 2007, companies had to reduce their consumption of TCE and PERC by 65 per cent and annual reporting requirements came into effect.

"We as a supplier must report annually how much TCE and PERC we sold, to whom and how much each individual company purchased," says Lemke.

Trichlorethylene or trichlor is a clear, water-white liquid at ordinary temperatures. It is volatile, sweet-smelling, and completely miscible with most organic liquids. It has high solvency, high stability and vapour density, low specific heat, relatively high boiling point, low latent heat of vaporization, no flash point or fire point. It can help prevent solvent breakdown caused by acids, alkalis, metal chips and fines, and exposure to oxygen, light and heat. Trichlor is used primarily for vapour degreasing of zinc, aluminum, brass, bronze and steel parts during fabrication. Grades are also available for a variety of special applications. The con of course is that its inhalation has known to cause irritation of the respiratory tract, dizziness, nausea, headache, loss of coordination, unconsciousness and even death. Long-term exposure to trichlorethylene vapour has been linked to liver and kidney damage and even cancer.

Vapour Degreasing equipment by Baron-Blakeslee SFC, Inc.

Proper ventilation is a must.

Companies have reacted in a variety of ways:

1) Elimination of vapour degreasing and subcontracting their cleaning work out.
2) Continued to use TCE but purchased "TCE credits" from other companies so that they could acquire enough TCE to meet their requirements.
3) Some companies eliminated vapour degreasing and went to aqueous based cleaners.
4) The large majority of companies began using n-Propyl Bromide (nPB) in their vapour degreasers.

Another product of concern is n-Propyl Bromide (nPB), which in many cases has been used in place of Trichlor. nPB has seen increased use as a solvent for vapour degreasing of metals in industrial processes. All chemicals, and solvents, should be handled with the utmost care. The use of nPB is no different in that regard.

"nPB is a preferred solvent from an environmental point of view as it is not considered to be a Hazardous Air Pollutant while TCE is," says Lemke. "nPB is not NESHAP regulated, while TCE is. nPB does not have an ACGIH Cancer classification, TCE is an A5."

"Some companies have not switched


Vapour Degreasing equipment by Baron-Blakeslee SFC, Inc.

to nPB as they are concerned that it will also become regulated in the not too distant future," says Lemke. "My own investigation has found no evidence that nPB is on anyone's 'radar' in Canada or the USA with respect to enhanced environmental regulations."

He adds, "My own personal feeling is that we will see a total elimination of chlorinated solvents such as TCE, PERC and methylene chloride before nPB is even considered, which would put any nPB regulations well into the future."

CFS does sell TCE, but their focus is on marketing nPB for solvent degreasing, as well as what is termed "Precision Cleaning Products".

"Precision cleaning products encompass, aqueous based cleaners, semi-aqueous cleaners and solvent-based cleaners. The solvent-based cleaners are proprietary blends of solvents and are designed to replace more hazardous solvents like acetone, isopropyl alcohol, methyl ethyl ketone (MEK), and mineral spirits.

Even though newer products are better from a health and safety point of view, are better for the environment and perform as well (if not better), their cost is higher and this does hold companies back from making the switch to these safer products," says Lemke.

When it comes to precision cleaning Baron Blakeslee manufactures cleaning equipment for vapour degreasing, aqueous chemistries, semi-aqueous and hydrocarbon at their facility in Williamstown, WV.

Patrick Oliver of Baron-Blakeslee explains, "In the 1930's, the Company began its entry into industrial cleaning by providing vapour degreasing machines and solvent to the Ford Motor Company. Following the Montreal Protocol of the 1990's, which banned the manufacture of Trichloroethane for environmental reasons, solvent vapour degreasing lost popularity as the methodology of choice for removing organic soils. However, with the evolution of tighter, more efficient degreaser system designs and non-hazardous cleaning solvents, there is a significant return to this technology for precision cleaning. For critical cleaning of organic soils, solvent vapour degreasing is the standard by which all other cleaning methodologies are compared."

Baron-Blakeslee SFC, Inc., is a wholly-owned subsidiary of Service Filtration Corporation (SERFILCO).

"The most effective method of removing organic soils from piece parts prior to plating, anodizing, or coating, is by solvent vapour degreasing. This method provides clean and dry parts in the smallest process footprint, in the least amount of time, " says Silvio J. Pioli Chief Executive Officer, Service Filtration Corporation. "The vapour degreasing process inherently recycles the cleaning chemistry through distillation." He adds, "The only negative is the misguided regulation against solvent chemistry."

VAPOUR DEGREASERS

Vapour degreasers tend to be a fast, reliable and consistent cleaning technology offering the lowest cost-per-part-cleaned. A vapour degreaser is a type of still that boils a solvent in the boil sump, creating vapours. The vapours rise out of the boil sump, but are stopped when they reach the condensing coils. The vapours are condensed back into liquid form and returned to the rinse sump to be re-used. The rinse sump gradually overflows and replenishes the boil sump, which is where the heaviest cleaning is performed and where the contamination becomes concentrated.

Most vapour degreaser fluids boil at very modest temperatures, usually about 40°C-65°C (100°F-165°F). Lower temperatures boost worker safety and keep energy costs down. Many modern vapour degreasers are energy-efficient, operating on 25 amps or less.

Variations on this simple process include ultrasonics and spray wands. Vapour degreasing delivers the quality cleaning in the shortest possible time, with the least risk of damage to the components. Vapour degreasers come in all sizes, from small benchtop models containing four liters (one gallon) to massive machines holding 15,000 liters (4,000 gallons).

There are several environmentally friendly cleaning solvents on the market suitable for vapour degreasing.

Unlike aqueous or hydrocarbon cleaning, vapour degreasing requires special fluids with a unique combination of characteristics. Ideally, these cleaners should be nonflammable, immiscible with water, have a low boiling point, an appropriate Kari-Butanol (Kb) value, a high density, low surface tension, low viscosity, a low specific heat and a low latent heat of vaporization. Developing fluids with all of these characteristics has been a challenge for DuPont, 3M, and other suppliers, but they are stepping up to the task.

After cleaning, most cleaning systems evaporate the cleaning fluid from the surface of the parts. Once a liquid begins to change phase – that is, change from a liquid into vapour –specific heat is no longer used.

AQUEOUS CLEANING

Most aqueous cleaners are horizontal designs, which use hoists or conveyors to move the parts through a series of dip tanks. A typical aqueous batch system has one wash tank and between two to five reverse-flow, cascading rinse tanks that require 2-5 gallons/minute of deionized water. These systems typically will be 50-150 per cent larger than vapour degreasers of the same capacity, simply because of the need for more tanks, larger pumps, blowers and filters. Typically these machines use about 8-10 kW of electricity per hour of operation. Most aqueous cleaning systems have three or more tanks with ultrasonics, adding another 1-2 kW of energy consumption.

Aqueous system cleaning cycles tend to run longer than vapour degreasers. Cleaning cycles of 20-40 minutes are not uncommon. Most vapour degreasers clean in 5-12 minute cycles.

Removing excess water from parts at drying stations requires heat, motors, fans and compressors. Water pre-treatment and post-treatment systems are needed. Once the water is deionized, the water is usually heated to 140 - 160°F for the cleaning process which requires at least 2-3kW of power or more for the pumps and support equipment.

A general rule-of-thumb is that any aqueous cleaning system will use ten times the energy of a vapour degreaser of comparable capacity.

Vapour degreasing can dramatically reduce a company's energy budget devoted to cleaning processes. However, there is a slow move to other less harmful precision cleaning methods. Those in the industry need to make their own informed choices based on their budget and desired results. ■

SUR/FIN Show Issue. MAY/JUNE 2012

Bonus Circulation from our Booth at:

- **SUR/FIN 2012 Las Vegas NV June 11-13**
  www.nasf.org

Plating and Anodizing
- Hard Chrome and Alternatives
- Waste Water Control

Paint & Coatings Manufacturing
- High Performance Coating Manufacturing
- Waterborne Resins
- Paint and Solvent Recycling

Industrial Finishing
- Automatic Liquid Paint Spray Guns
- Spray Booths and Filters

Call today to book your ad.

AD Insertion Close:
April 25th

Ad Copy Deadline:
May 10th

Publisher and Sales:
Pete Wilkinson
Tel: 1-416-255-1808
Fax: 1-416-519-1313
pete.wilkinson@cfcm.ca

Editor:
Sandra Anderson
Tel: 1-519-442-4071
Fax: 1-519-442-1359
sandra.anderson@cfcm.ca

Accounting, Circulation and Sales
Brian Jones
Tel: 1-905-405-1500
brian.jones@cfcm.ca

CFCM
CANADIAN FINISHING & COATINGS MANUFACTURING MAGAZINE

www.cfcm.ca

Get Your Own Copy

Free Print and Electronic Subscription forQualified Canadian Readers.
Foreign Readers may receive the Electronic Edition Free

Check box ☐ I wish to receive the Print Edition only (Qualified Canadian Readers)

☐ I wish to receive the Electronic Edition only by e-mail notification (Universal)

☐ I wish to receive both the Print and Electronic editions (Qualified Canadian Readers)

Signature (required) _____

Name: _____ Date: _____

Position/Title: _____

Company: _____

Address: _____

City: _____ Province: _____ Postal Code: _____

Telephone: _____ Fax: _____

E-Mail: _____

Please Check the line that best describes your business.

Paint & Coating Manufacturing:
- Adhesive & Ink Manufacturer ☐
- Paint & Coating Manufacturer ☐
- Raw Material Supplier ☐
- Paint Manufacturing Equipment Supplier ☐

Industrial Finishing:
- Automotive & Transportation Products ☐
- Automotive Refinish ☐
- Commercial Coating Contractors ☐
- Custom Coaters & Job Shops ☐
- Electroplaters & Anodizers ☐
- Woodworking ☐
- General Manufacturing ☐
- Plastic Product Finishers ☐
- Supplier of Finishing Equipment ☐
- Manufacturing not otherwise classified ☐

Other:
- Consultants ☐
- Education & Government ☐

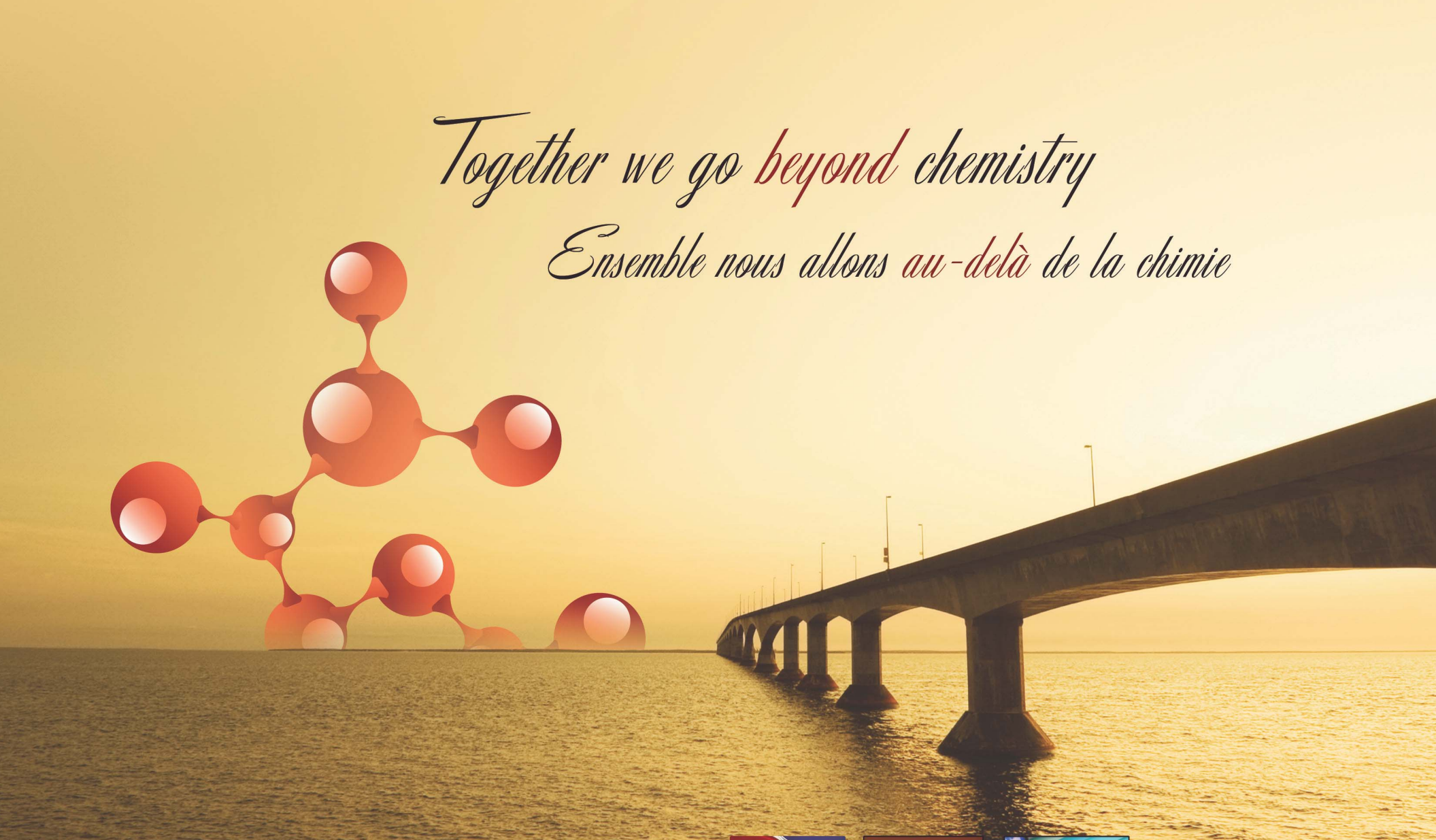
CFCM
CANADIAN FINISHING & COATINGS MANUFACTURING MAGAZINE

Please fax this signed form to: 1-416-519-1313
Or mail to:
Canadian Finishing & Coatings Manufacturing
250 The East Mall, Suite 1103
Toronto, Ontario, Canada, M9B 6L3

CLASSIFIED

AD INDEX

AkzoNobel Wood Coatings Chemcraft	5, 21
American UV	15
Andicor Specialty Chemicals	16
Angus/ Dow	14
Bex Spray Nozzles	27
Buckman Laboratories	16
Buhler Group- Nanotechnology	4
Can-Am Engineered Products	24
CFS Canadian Finishing Systems	28
CanLak	22
Caps'n Plugs	25
Chemroy Canada	10
CONN Blades	17, 30
DeFelsko Corp.	6, 20
Enclosed Track Conveyors	30
Eurotech/Sata	23
EXEL North America	24
Fabtech Canada Show	26
Fischer Technology	13
GEMA	8
Global Finishing Systems	6
Graco Inc.	8
HDTS	12
Inortech Chemie	IBC, OBC
Jena Industries	5
KW Containers	2
Nexeo Solutions	9
Quick Blades	15
Radtech UV Show	19
Sartomer	17
SEMicro	30
Specialty Polymers	13
Stone Tucker Instruments	11, 25
SURFIN Show	29
Trinity Resources	4
Unimin Canada	18
Univar CASE Specialties	7, 12
Valspar Canada	22
Venjakob	27
Wagner Inc.	27
Walther Pilot North America	24



Distributing specialty raw materials to the coatings, inks, plastics and adhesives industries.

We are the only Canadian distributor with a state of the art laboratory providing innovative solutions.

We are your active intermediate.

Distributeur de matières premières de spécialités aux industries de la peinture, de l'encre, du plastique et des adhésifs.

Nous sommes le seul distributeur canadien avec un laboratoire à la fine pointe de la technologie pour des solutions novatrices.

Nous sommes votre intermédiaire actif.

INORTECH CHIMIE INC.

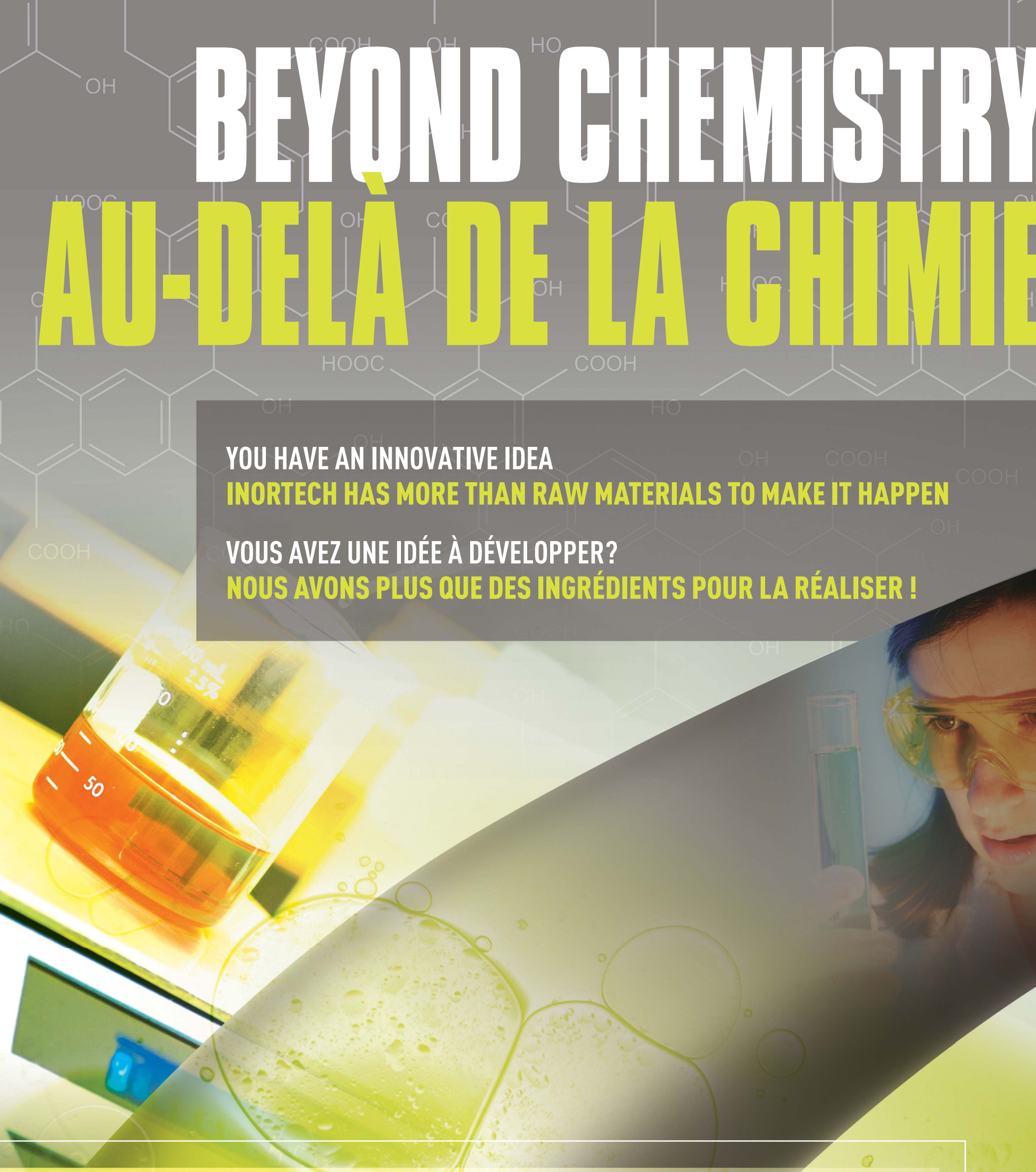
www.inortech.com

Customer Service: 1-800-661-2064

BEYOND CHEMISTRY
AU-DELÀ DE LA CHIMIE

YOU HAVE AN INNOVATIVE IDEA
INORTECH HAS MORE THAN RAW MATERIALS TO MAKE IT HAPPEN

VOUS AVEZ UNE IDÉE À DÉVELOPPER?
NOUS AVONS PLUS QUE DES INGRÉDIENTS POUR LA RÉALISER !



YOUR ACTIVE INTERMEDIATE
VOTRE INTERMÉDIAIRE ACTIF

INORTECH CHIMIE INC.

www.inortech.com

CUSTOMER SERVICE: 1-800-661-2064